

WEST VIRGINIA
SECRETARY OF STATE

JOE MANCHIN III

ADMINISTRATIVE LAW DIVISION

Form #5

Do Not Mark In This Box

FILED

2003 FEB 25 2:50

NOTICE OF AGENCY ADOPTION OF A PROCEDURAL OR INTERPRETIVE RULE
OR A LEGISLATIVE RULE EXEMPT FROM LEGISLATIVE REVIEW

AGENCY: West Virginia Board of Education TITLE NUMBER: 126

CITE AUTHORITY: W.Va. Constitution, Article XII, §2, W.Va. Code §18-2-5 and §18-9A-22

RULE TYPE: PROCEDURAL _____ INTERPRETIVE _____

EXEMPT LEGISLATIVE RULE X

CITE STATUTE(s) GRANTING EXEMPTION FROM LEGISLATIVE REVIEW

W.Va. Code §§29A-3B-1, et seq.; W.Va. Board of Education
v. Hechler, 180 W.Va. 451; 376 S.E.2d 839 (1988).

AMENDMENT TO AN EXISTING RULE: YES _____ NO X

IF YES, SERIES NUMBER OF RULE BEING AMENDED: _____

TITLE OF RULE BEING AMENDED: _____

IF NO, SERIES NUMBER OF NEW RULE BEING PROPOSED: 44C

TITLE OF RULE BEING PROPOSED: Science Content Standards and Objectives
for West Virginia Schools (2520.3)

THE ABOVE RULE IS HEREBY ADOPTED AND FILED WITH THE SECRETARY OF STATE. THE
EFFECTIVE DATE OF THIS RULE IS July 1, 2003.



Steven L. Paine
Deputy State Superintendent of Schools

\$20.20 w/out comments
\$62.00 w/ comments

EXECUTIVE SUMMARY

POLICY 2520.3 SCIENCE CONTENT STANDARDS AND OBJECTIVES FOR WEST VIRGINIA SCHOOLS

Background:

Policy 2520 defines the content standards and objectives for the programs of study required by Policy 2510 and establishes a standardized format for such. The original effective date of the policy was July, 1997. In October, 2001, a revision of the Policy incorporating the Content Standards and Objectives for Mathematics, Reading and English Language Arts, Science, Social Studies and Technology was presented to the West Virginia Board of Education. It was placed on public comment and was approved by the Board on December 13, 2001, to be effective July 1, 2003. A second revision incorporating content standards and objectives for adult and technical courses was approved by the Board on July 11, 2002, to be effective July 1, 2003.

Purpose:

The purpose of this Board item is to seek approval for Policy 2520.3 as it has been revised in response to comments received.

Summary of Comments:

There were a total of 120 comments received. Comments revolved around two main issues: the teaching of origins science and the continuation of coordinated and thematic science. Comments about the teaching of origins of life voiced concern that evolutionary concepts are emphasized to the exclusion of other theories. Comments about coordinated and thematic science advocated either total elimination of the program or a return at the high school level to the teaching of specific science disciplines.

Summary of Revisions:

To respond to concerns about the overemphasis on evolutionary theory, a statement was inserted in the introduction to the science content standards reinforcing the investigative nature of science. No change was made to the structure of the current coordinated and thematic science content standards.

126CSR44C

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**TITLE 126
LEGISLATIVE RULE
BOARD OF EDUCATION**

2003 FEB 25 P 2 55

SERIES 44C

STATE OF WEST VIRGINIA
COMPTROLLER OF PUBLIC ACCOUNTS

Science Content Standards and Objectives for West Virginia Schools (2520.3)

§126-44C-1. General.

1.1. Scope. West Virginia Board of Education Policy 2510 provides a definition of a delivery system for, and an assessment and accountability system for, a thorough and efficient education for West Virginia public school students. Policy 2520.1 defines the content standards (or instructional goals) and objectives for the science as required by W.Va. 126CSR42 (Policy 2510).

1.2. Authority. W.Va. Constitution, Article XII, §2, W. Va. Code §18-2-5 and §18-9A-2.

1.3. Filing Date. February 24, 2003.

1.4. Effective Date. July 1, 2003.

1.5. Repeal of former rule. This is a new legislative rule.

§126-44C-2. Purpose.

2.1. This policy defines the content standards (or instructional goals) and objectives for the program of study required by Policy 2510 in science.

§126-44C-3. Incorporation by Reference.

3.1. A copy of Science Content Standards and Objectives for West Virginia Schools is attached and incorporated by reference into this policy. Copies may be obtained in the Office of the Secretary of State and in the West Virginia Department of Education, Office of Instructional Services.

§126-44C-4. Summary of the Content Standards and Objectives.

4.1. The West Virginia Board of Education has the responsibility for establishing high quality standards pertaining to all educational standards pertaining to all education programs (W.Va. Code §18-9A-22). The content standards and objectives provide a focus for teachers to teach and students to learn those skills and competencies essential for future success in the workplace and further education. The document includes content standards for science; an explanation of terms; objectives that reflect a rigorous and challenging curriculum; and performance descriptors.

Foreword

The West Virginia Board of Education and the West Virginia Department of Education are pleased to present Policy 2520.3: Science Content Standards and Objectives for West Virginia Schools.

Committees of educators from across the state gathered to work on curriculum refinement. The committees incorporated content based on the most current research, national standards and best teaching practices in the field. Primary issues that have been addressed in the current revision work are building a rigorous and challenging curriculum, ensuring a curriculum that is accessible to every student, and designing a format that can easily be used and understood.

West Virginia educators have played a key role in shaping the content standards. Their contribution was critical in creating a policy that is meaningful for the classroom.

A primary change in Policy 2520.3 is that the content area begins with a set of content standards. Grade-level objectives are then organized under the standards, so that the focus stays on helping students achieve the comprehensive goals, not just mastering the incremental steps. The objectives (those incremental steps) are still there — curriculum committees worked very hard to consolidate, delete, sequence, and clarify as needed to produce a picture of the curriculum that is clear in its intent and manageable in its implementation.

Another change is the addition of performance descriptors. Performance descriptors answer the question “How well does the student perform on the content standards at any given grade level?” (See “Explanation of Terms” section for further discussion of this topic.)

The content standards, objectives and performance descriptors combine to give teachers a powerful resource for planning instruction. The sequencing of the grade level objectives and the levels of performance descriptors acknowledge that students acquire skills and knowledge in increments and at different rates. The focus throughout the document remains on achieving at a high level and on offering all students in West Virginia rigor and challenge.

**David Stewart
State Superintendent of Schools**

Explanation of Terms

Content Standards are broad descriptions of what students should know and be able to do in a content area. Content standards describe what students' knowledge and skills should be at the end of a K-12 sequence of study.

Objectives are incremental steps toward accomplishment of content standards. Objectives are listed by grade level and are organized around the content standards. Objectives build across grade levels as students advance in their knowledge and skills.

Performance Descriptors describe in narrative format how students demonstrate achievement of the content standards. Five performance levels have been proposed for West Virginia: distinguished, above mastery, mastery, partial mastery and novice. A general description of each of these categories is listed below:

- **Distinguished:** A student at this level has demonstrated exceptional and exemplary performance. The work shows a distinctive and sophisticated application of knowledge and skills that go beyond course or grade level expectations.
- **Above Mastery:** A student at this level has demonstrated competent and proficient performance and exceeds the standard. The work shows a thorough and effective application of knowledge and skills.
- **Mastery:** A student at this level has demonstrated fundamental knowledge and skills that meet the standard. The work is accurate, complete and fulfills all requirements. The work shows solid academic performance at the course or grade level.
- **Partial Mastery:** A student at this level has partially demonstrated fundamental knowledge and skills toward meeting the standard. The work shows basic but inconsistent application of knowledge and skills characterized by errors and/or omissions. Performance needs further development.
- **Novice:** A student at this level has not demonstrated the fundamental knowledge and skills needed to meet the standard. Performance at this level is fragmented and/or incomplete and needs considerable development.

Performance Descriptors serve two functions. Instructionally, they give teachers more information about the level of knowledge and skills they are building in their students. Performance levels and descriptors are also used to categorize and explain student performance on statewide assessment instruments.

Numbering of Standards

The number for each content standard is composed of three parts, each part separated by a period:

- The content area code is SC for Science;
- The letter S, for Standard; and
- The standard number.

Illustration: SC.S.1 refers to Science content standard #1.

Numbering of Objectives

The number of each objective is composed of four parts, each part separated by a period:

- The content area code or course code (e.g., HAP for Human Anatomy and Physiology);

- The grade level (Exceptions are grades 11-12 science courses);
- The number of the content standard addressed; and
- The objective number.

Illustrations: SC.6.2.3 refers to a Science sixth grade objective that addresses standard #2 in Science and that is the third objective listed under that standard.

Numbering of Performance Descriptors

The number for each group of five performance descriptors is composed of four parts, each part separated by a period:

- The content area or course code;
- The letters PD, for Performance Descriptors;
- The grade level (See exceptions noted above for grade level under numbering of objectives); and
- The standard number.

Illustration: SC.PD.9.2 refers to Science performance descriptors for ninth grade, content standard 2.

Unique Electronic Numbers (UENs)

Unique Electronic Numbers (or UENs) are numbers that help to electronically identify, categorize and link specific bits of information. Once Policy 2520.3 is available on the Web, each standard, each objective, and each group of five performance descriptors will have a Unique Electronic Number (UEN) that will always remain the same.

The codes printed in Policy 2520.3 form the basis of the UENs. The only additional set of numbers that will be added to each code to formulate its UEN will be a prefix that indicates the year and month that a particular version of Policy 2520.3 is approved by the State Board of Education.

The prefix for the UENs for each content area in Policy 2520.3 is noted at the top of each page containing standards, objectives and performance descriptors. As sections of 2520.3 are revised, UENs will be changed to reflect the new approval date.

UENs (Unique Electronic Numbers) are unique numbers that facilitate implementation of WV Standards into Electronic formats such as Databases and XML Files. The WV Department of Education encourages everyone who is going to use the WV Content Standards in any kind of electronic distribution, alignment, or software development to use the UENs so that all efforts can be cross-referenced and there is consistency across initiatives.

Illustration: The UEN for performance descriptors for fifth grade science, standard #2 will be "200302.SC.PD.5.2".

Abbreviations

Content Area

SC Science

High School Courses

Science

AB	Advanced Biology (11/12)
AC	Advanced Chemistry (11/12)
AP	Advanced Physics (11/12)
AES	Advanced Environmental Earth Science (11/12)
BTC	Biology – Technical Conceptual (11/12)
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HAP	Human Anatomy and Physiology (11/12)
PTC	Physics – Technical Conceptual (11/12)

Other Abbreviations

PD	Performance Descriptors
S	Standard (Content Standard)

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1.4. Effective Date. July 1, 2003.

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SCIENCE – POLICY 2520.3

The science content standards identify what students should know, understand and be able to do in the natural sciences throughout their K-12 education. Because each content standard utilizes the knowledge and skills of other standards, they are designed to be used as an integrated whole. Although material can be added to the content standards, using only a subset of the standards will leave gaps in the students' scientific literacy.

Doing Science:

- Standard 1 - History and Nature of Science
- Standard 2 - Science as Inquiry

Knowing Science:

- Standard 3 - Unifying Themes
- Standard 4 - Science Subject Matter/Concepts

Context of Science:

- Standard 5 - Scientific Design and Application
- Standard 6 - Science in Personal and Social Perspectives

A three-dimensional instructional strategy model must be utilized to address the science curriculum and assure students' depth of understanding and breadth of knowledge.

Standard 1: History and the Nature of Science

The study of science as a human endeavor provides for the acquisition of ideas leading toward the current knowledge base that represents science content. The nature of science encompasses the basic values and beliefs that make up the scientific world view, how scientists go about their work and the general culture of scientific enterprise. Studying historical and current discoveries of scientists and scientific milestones provides students with information about how discoveries have influenced current scientific thought and advancements. Students should understand that the continuous development of scientific knowledge shapes history. The study of the history and nature of science clarifies scientific inquiry and the role of science in the development of world cultures.

Standard 2: Science as Inquiry

Science is a process of discovery. Students will engage in active inquiry through investigations and hands-on activities a minimum of 50% of the instructional time. Developing scientific literacy requires a learning environment in which students actively participate in meaningful hands-on activities. These investigations explore the natural world, require critical thinking and develop process skills. Learning activities are sequenced to shape, modify and develop students' knowledge in order for them to become independent inquirers.

Standard 3: Unifying Themes

Broad unifying themes complement the perspectives presented in the other content standards. These themes are fundamental to understanding and unifying the various science disciplines. Major unifying themes are systems, models and changes.

Standard 4: Science Subject Matter/Concepts

Science subject matter focuses on the scientific facts, concepts, principles, theories and models that are important for all students to know, understand and apply. Through the integration of the fields of science and the development of unifying themes, students will understand the interrelationships among biology, chemistry, physics and the earth sciences. Scientifically literate students will make connections in the formal education setting and will apply their knowledge and skills to daily life experiences. The objectives describe the specific subject matter/concepts that students are to master at each grade level.

Standard 5: Scientific Design and Application

Scientific design and application permits the extension of senses, the enhancement of the knowledge base, transportation of materials and information, synthesizing of new products and the modification of the world. Students must learn to use technology to analyze situations, gather relevant information, generate and evaluate creative ideas, pose tangible solutions and communicate their analyses, results and suggestions concisely.

Standard 6: Science in Personal and Social Perspectives

Applying science and technological innovations to personal and social issues such as health, populations, resources and environment helps students to develop decision-making skills. As students expand their conceptual horizons, they should recognize that collective individual actions manifest as societal issues. Students must recognize that society cannot afford to deal only with symptoms; personal and societal actions must be focused on elimination of the causes of problems. Students should recognize that unless imposed by legislation social change involves negotiation among different interest groups. Students must be allowed to encounter and examine social change in a variety of current and historical contexts.

The Role of Technology

West Virginia's vision for education includes the integration of technology throughout the curriculum so that all West Virginia students have the opportunity to develop technology skills that support learning. Successful learning environments provide opportunities for students to use education technology interwoven with relevant curricular content. West Virginia teachers are responsible for integrating technology appropriately in the students' learning environment.

Organization of the Science Program of Study

The West Virginia Science Program of Study is drawn from the National Science Education Standards and the Project 2061 Benchmarks to promote a rigorous and challenging science curriculum. Through experiencing a spiraling, inquiry-based program of study, students in grades K-10 will develop foundational knowledge and skills in the physical sciences, the life sciences, and the earth and space sciences. To assure scientific literacy for all students, a coordinated, integrated approach is utilized in grades K-10. Students in the 11th and 12th grades participate in advanced in-depth laboratory-based elective courses designed to expand their conceptual understanding and enhance their research and laboratory skills.

Science Content Standards K-12

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolution of scientific knowledge,
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists, and
- demonstrate an understanding of the nature of science.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry,
- demonstrate understanding about scientific inquiry, and
- demonstrate the ability to think and act as scientists by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models, and explanation; constancy, change and measurement; equilibrium and evolution; form and function),
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes, and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives,
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences, and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology,
- demonstrate the ability to distinguish between natural and man-made objects,
- demonstrate abilities of technological design, and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues,
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices,
- predict the long-term societal impact of specific health, population, resource and environmental practices, and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Kindergarten Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Kindergarten objectives emphasize the process skills. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the physical sciences, the life sciences and the earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. CATS Kindergarten enhances the child's natural curiosity about the environment and augments the awe and wonder of inquiries and discoveries using the senses and by hands-on manipulation of objects to build a strong foundation of concepts blended with safety principles. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge,
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists, and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

SC.K.1.1 ask questions about themselves and their world.

SC.K.1.2 listen to stories about the lives and discoveries of scientists.

Performance Descriptors (SC.PD.K.1)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students construct questions about the lives and discoveries of scientists after listening to stories.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students retell in their own words stories about scientists' lives and discoveries after listening to stories.

■ Mastery

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **history and the nature of science**. Students sequence pictures representing stories about scientists' lives and discoveries.

■ Partial Mastery

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omission in **history and the nature of science**. Performance needs further development. Students cite facts about scientists' lives and discoveries after listening to stories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **history and the nature of science**. Performance needs considerable development. Students seldom cite facts about scientists' lives and discoveries after listening to stories.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiries,
- demonstrate understanding about scientific inquiry, and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.K.2.1 demonstrate curiosity, initiative and creativity by asking questions about the environment noting patterns and variations of natural objects (e.g., trees, leaves, animal structures).
- SC.K.2.2 explore and describe objects and events using the five senses to develop observational skills and make predictions based on personal observation.
- SC.K.2.3 use scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, magnets).
- SC.K.2.4 use safe and proper techniques for handling, manipulating and caring for science materials (e.g., follow safety rules, maintain a clean work area, treat living organisms humanely).
- SC.K.2.5 collect and record information in a variety of ways (e.g., drawings, weather calendar, graphs).

Performance Descriptors (SC.PD.K.2)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science as inquiry**. Students explore and describe objects and events using the five senses. Students select questions based on observed patterns and select predictions based on observations. Students explain scientific instruments used to investigate the natural world. Students use safety rules, and use safe and proper techniques for handling, manipulating and caring for science materials.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science as inquiry**. Students describe objects and events using the five senses. Students connect questions to observed patterns and connect predictions to observations. Students use scientific instruments to investigate the natural world. Students interpret safety rules, and demonstrate safe and proper techniques for handling, manipulating and caring for science materials.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science as inquiry**. Students explore and describe objects using the five senses. Students explore questions based on observed patterns and explore predictions based on observations. Students describe scientific instruments used to investigate the natural world. Students give examples of safety rules, and give examples of safe and proper techniques for handling, manipulating and caring for science materials.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omission in **science as inquiry**. Performance needs further development. Students describe objects using the five senses. Students make questions based

on observed patterns and make predictions based on observations. Students identify scientific instruments used to investigate the natural world. Students state safety rules, and state safe and proper techniques for handling, manipulating and caring for science materials.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science as inquiry**. Performance needs considerable development. Students seldom describe objects using the five senses. Students seldom make questions based on observed patterns and seldom make predictions based on observations. Students seldom identify scientific instruments used to investigate the natural world. Students seldom state safety rules, and seldom state safe and proper techniques for handling, manipulating and caring for science materials.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change, and measurement; equilibrium and evolution; form and function),
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models and changes, and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

SC.K.3.1 recognize that models are representations of real things.

SC.K.3.2 observe that change occurs gradually, repetitively, or randomly within the environment.

Performance Descriptors (SC.PD.K.3)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students draw conclusions about change that occurs gradually, repetitively, or randomly within the environment. Students create models that represent real things.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students illustrate change that occurs gradually, repetitively or randomly within the environment. Students explain models that represent real things.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **unifying themes of science**. Students explain that change occurs gradually, repetitively, or randomly within the environment. Students match models with the real things they represent.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omission in **unifying themes of science**. Performance needs further development. Students state that change occurs gradually, repetitively, or randomly within the environment. Students relate models with the real things they represent.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **unifying themes of science**. Performance needs considerable development. Students seldom state that change occurs gradually, repetitively, or randomly within the environment. Students seldom relate models with the real things they represent.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives,
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences, and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Characteristics of Organisms

SC.K.4.1 using the five senses, identify living and non-living things.

Life Cycles of Organisms

SC.K.4.2 observe the movement, growth and changes in plants and animals.

Organisms and Environments

SC.K.4.3 observe models of plants and animals in different environments (e.g., terrariums, aquariums, animals and plants in a forest, pond, field).

Properties of Objects and Materials

SC.K.4.4 describe, compare, sort and group objects in terms of what they are made of (clay, cloth, paper, metal, etc.) and their physical properties of size, shape, color, weight or texture.

SC.K.4.5 identify liquids and solids.

Light, Heat, Electricity and Magnetism

SC.K.4.6 identify colors.

SC.K.4.7 explore changes in energy (e.g., hot/cold and light/dark).

SC.K.4.8 explore magnetic properties of objects.

Position and Motion of Objects

SC.K.4.9 explore the different ways objects can be moved (e.g., straight, circular, fast, slow).

Changes in Earth and Sky

SC.K.4.10 observe and record daily changes in weather (e.g., clouds, air temperature).

Objects in the Sky

SC.K.4.11 identify objects in the day and night sky (e.g., moon, stars, sun).

Properties of Earth Materials

SC.K.4.12 observe and compare differences in earth materials.

Performance Descriptors (SC.PD.K.4)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students relate scientific facts, concepts, principles, theories and models to daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students apply interconnections among the above categories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students interpret scientific facts, concepts, principles, theories and models found in daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students summarize interconnections among the above categories.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science subject matter/concepts**. Students discuss scientific facts, concepts, principles, theories and models found in daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students describe interconnections among the above categories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omission in **science subject matter/concepts**. Performance needs further development. Students identify scientific facts, concepts, principles, theories and models found in daily life experiences. Students demonstrate knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students recognize interconnections among the above categories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science subject matter/concepts**. Performance needs considerable development. Students seldom identify

scientific facts, concepts, principles, theories and models found in daily life experiences. Students seldom demonstrate knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students seldom match interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology,
- demonstrate the ability to distinguish between natural and man-made objects,
- demonstrate abilities of technological design, and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives.

Students will:

SC.K.5.1 observe the uses of tools and appliances at home and at play.

Performance Descriptors (SC.PD.K.5)

- **Distinguished**
The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **scientific design and application**. Students classify tools and appliances used at home and at play.
- **Above Mastery**
The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **scientific design and application**. Students give examples of tools and appliances used at home and at play.
- **Mastery**
The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **scientific design and application**. Students describe how tools and appliances are used at home and at play.
- **Partial Mastery**
The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omission in **scientific design and application**. Performance needs further development. Students identify tools and appliances used at home and at play.
- **Novice**
The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **scientific design and application**. Performance needs considerable development. Students seldom identify tools and appliances used at home and at play.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues,

- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices,
- predict the long-term societal impact of specific health, population, resource and environmental practices, and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives.

Students will:

SC.K.6.1 work in groups, listen to and be tolerant of different viewpoints.

Performance Descriptors (SC.PD.K.6)

- **Distinguished**
The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students work in groups, listen to and discover different viewpoints.
- **Above Mastery**
The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students work in groups, listen to and explore different viewpoints.
- **Mastery**
The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science in personal and social perspectives**. Students work in groups, listen to and give examples of different viewpoints.
- **Partial Mastery**
The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omission in **science in personal and social perspectives**. Performance needs further development. Students listen to and recognize different viewpoints.
- **Novice**
The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science in personal and social perspectives**. Performance needs considerable development. Students seldom listen to and seldom recognize different viewpoints.

First Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) One objectives build on the process skills and add data gathering and reporting. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics, and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes, and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. CATS One continues the excitement of learning about the natural world and allows the beginning of experimentation and data collection to emphasize the tools of science and the properties of matter. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge,
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists, and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

SC.1.1.1 ask questions about themselves and their world.

SC.1.1.2 discuss the lives and discoveries of scientists after listening to stories about their lives and discoveries.

Performance Descriptors (SC.PD.1.1)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students examine contributions of diverse cultures and scientists. Students illustrate stories about the lives and discoveries of scientists after listening to stories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students illustrate contributions of diverse cultures and scientists. Students discuss stories about scientists' lives and discoveries after listening to stories.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **history and the nature of science**. Students describe contributions of diverse cultures and scientists. Students retell stories about scientists' lives and discoveries after listening to stories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **history and the nature of science**. Performance needs further development. Students identify contributions of diverse cultures and scientists. Students cite facts about scientists' lives and discoveries after listening to stories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **history and the nature of science**. Performance needs considerable development. Students seldom identify contributions of diverse cultures and scientists. Students seldom cite facts about scientists' lives and discoveries after listening to stories.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry,
- demonstrate understanding about scientific inquiry, and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

SC.1.2.1 demonstrate curiosity, initiative and creativity by questioning observations of changes in the environment (e.g., life cycles; motion of celestial objects; sun and shadow).

- SC.1.2.2 use scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, magnets, thermometer, seeds, rocks).
- SC.1.2.3 use safe and proper techniques for handling, manipulating and caring for science materials (e.g., follow safety rules, maintain a clean work area, treat living organisms humanely).
- SC.1.2.4 collect, record and compare information using a variety of classification systems (e.g., ordering, sorting, sequencing) and using a variety of communication techniques (e.g., sketches, pictographs, models).

Performance Descriptors (SC.PD.1.2)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science as inquiry**. Students apply a variety of classification and communication methods when collecting, recording and comparing information. Students apply scientific instruments to investigate the natural world. Students explain safety rules, and explain safe and proper techniques for handling, manipulating and caring for science materials.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science as inquiry**. Students demonstrate a variety of classification and communication methods when collecting, recording and comparing information. Students demonstrate the use of scientific instruments used to investigate the natural world. Students demonstrate safety rules, and demonstrate safe and proper techniques for handling, manipulating and caring for science materials.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science as inquiry**. Students describe a variety of classification and communication methods used to collect, to record and to compare information. Students describe scientific instruments used to investigate the natural world. Students use safety rules, and use safe and proper techniques for handling, manipulating and caring for science materials.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science as inquiry**. Performance needs further development. Students identify a variety of classification and communication methods used to collect, to record and to compare information. Students label scientific instruments used to investigate the natural world. Students state safety rules, and state safe and proper techniques for handling, manipulating and caring for science materials.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science as inquiry**. Performance needs considerable development. Students seldom identify a variety of classification and communication methods used to collect, to record and to compare information. Students seldom label scientific instruments used to investigate the natural world. Students seldom state safety rules, and seldom state safe and proper techniques for handling, manipulating and caring for science materials.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function),
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models and changes, and

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- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.1.3.1 identify that systems are made of parts that interact with one another.
- SC.1.3.2 use models as representations of real things.

Performance Descriptors (SC.PD.1.2)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students illustrate systems that are made of parts that interact with one another. Students explain models that represent real things.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students describe systems that are made of parts that interact with one another. Students illustrate models that represent real things.

■ Mastery

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **unifying themes of science**. Students discuss systems that are made of parts that interact with one another. Students describe models that represent real things.

■ Partial Mastery

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **unifying themes of science**. Performance needs further development. Students name systems that are made of parts that interact with one another. Students show models that represent real things.

■ Novice

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **unifying themes of science**. Performance needs considerable development. Students seldom name systems that are made of parts that interact with one another. Students seldom show models that represent real things.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives,
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences, and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Characteristics of Organisms

SC.1.4.1 classify objects as living or non-living.

SC.1.4.2 identify that most living things need water, food, light and air.

Life Cycles of Organisms

SC.1.4.3 recognize changes in life cycle of living organisms.

SC.1.4.4 identify the parts of growing plants as they develop.

Organisms and Environments

SC.1.4.5 depict movement of living things in air, water and on land. (e.g., birds flying, fish swimming, worms burrowing in soil).

Properties of Objects and Materials

SC.1.4.6 recognize that materials are composed of smaller parts that may be seen with a magnifier.

SC.1.4.7 recognize that materials can be recycled and used again, sometimes in different forms.

SC.1.4.8 recognize that water can be a solid or a liquid, and can change from one form to another.

SC.1.4.9 predict and investigate the buoyancy of objects in water.

Light, Heat, Electricity and Magnetism

SC.1.4.10 classify objects as magnetic or non-magnetic.

SC.1.4.11 observe and record shadows at different times of the day.

Position and Motion of Objects

SC.1.4.12 describe the changes in the motion of objects (e.g., slowing, speeding up, curving).

SC.1.4.13 demonstrate that sounds are produced by vibrations.

Changes in Earth and Sky

SC.1.4.14 observe, identify and record changes in weather and effects on living organisms.

SC.1.4.15 recognize that the sun, moon, and stars appear to move.

Objects in the Sky

SC.1.4.16 observe and discuss the importance of objects in the day and night sky.

Properties of Earth Materials

SC.1.4.17 use a model to compare land and water features on the Earth.

SC.1.4.18 identify important uses of air.

SC.1.4.19 investigate and compare the properties of soil (e.g., sand, clay, humus).

Performance Descriptors (SC.PD.1.4)■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students explain scientific facts, concepts, principles, theories and models found in daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students compare and contrast interconnections among the above categories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students relate scientific facts, concepts, principles, theories and models found in daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects

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- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students examine interconnections among the above categories.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science subject matter/concepts**. Students describe scientific facts, concepts, principles, theories and models found in daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students interpret interconnections among the above categories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science subject matter/concepts**. Performance needs further development. Students examine scientific facts, concepts, principles, theories and models found in daily life experiences. Students demonstrate knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students give examples of interconnections among the above categories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science subject matter/concepts**. Performance needs considerable development. Students seldom examine scientific facts, concepts, principles, theories and models found in daily life experiences. Students seldom demonstrate knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky

- Objects in the Sky
- Properties of Earth Materials

Students seldom give examples of interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology,
- demonstrate the ability to distinguish between natural and man-made objects,
- demonstrate abilities of technological design, and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

SC.1.5.1 distinguish between natural and man-made objects.

Performance Descriptors (SC.PD.1.5)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **scientific design and application**. Students compare and contrast natural and man-made objects.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **scientific design and application**. Students examine natural and man-made objects.

■ Mastery

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **scientific design and application**. Students describe natural and man-made objects.

■ Partial Mastery

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **scientific design and application**. Performance needs further development. Students label natural and man-made objects.

■ Novice

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **scientific design and application**. Performance needs considerable development. Students seldom label natural and man-made objects.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues,
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices,
- predict the long-term societal impact of specific health, population, resource and environmental practices, and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

SC.1.6.1 listen to and be tolerant of different viewpoints while working in collaborative groups.

SC.1.6.2 develop respect and responsibility for the environment by engaging in conservation practices (e.g., recycling, trash clean-up).

Performance Descriptors (SC.PD.1.6)

- **Distinguished**
The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students work in groups, listen to and discover different viewpoints. Students explain the importance of conservation practices.
- **Above Mastery**
The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students work in groups, listen to and explore different viewpoints. Students illustrate conservation practices.
- **Mastery**
The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science in personal and social perspectives**. Students work in groups, listen to and give examples of different viewpoints. Students give examples of conservation practices.
- **Partial Mastery**
The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science in personal and social perspectives**. Performance needs further development. Students identify conservation practices.
- **Novice**
The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science in personal and social perspectives**. Performance needs considerable development. Students seldom listen to and seldom recognize different viewpoints. Students seldom identify conservation practices.

Second Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Two objectives build upon the early stages of experimentation and maintenance of natural curiosity. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. CATS Two will provide opportunities for developmental and academic growth. The activities will introduce the concepts that science and technology are interrelated. The curricular thrust will be to develop early problem-solving skills through observation, experimenting and concluding. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge,
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists, and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.2.1.1 recognize science as the human's search for an understanding of the world by asking questions about themselves and their world.
- SC.2.1.2 discuss the lives and discoveries of scientists of different cultures and backgrounds.
- SC.2.1.3 identify and discuss the role of community people in science careers.

Performance Descriptors (SC.PD.2.1)

- **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students generate questions about themselves and their world. Students classify contributions of diverse cultures and scientists. Students categorize science careers in the community.

- **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students prioritize questions about themselves and their world. Students examine contributions of diverse cultures and scientists. Students compare science careers in the community.

- **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **history and the nature of science**. Students discover questions about themselves and their world. Students give examples of contributions of diverse cultures and scientists. Students illustrate science careers in the community.

- **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **history and the nature of science**. Performance needs further development. Students discuss questions about themselves and their world. Students identify contributions of diverse cultures and scientists. Students list science careers in the community.

- **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **history and the nature of science**. Performance needs considerable development. Students seldom discuss questions about themselves and their world. Students seldom identify contributions of diverse cultures and scientists. Students seldom list science careers in the community.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry,
- demonstrate understanding about scientific inquiry, and
- demonstrate the ability to think and act as scientists.

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.2.2.1 demonstrate curiosity, initiative and creativity by observing, classifying and comparing the patterns, variations and interactions of natural objects in the environment.
- SC.2.2.2 manipulate scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, balance, thermometer, metric ruler, magnets, weather instruments, calculators).

- SC.2.2.3 measure the length and width of various objects using standard and non-standard units (e.g., metric ruler, paper clips, counting bears).
- SC.2.2.4 use safe and proper techniques for handling, manipulating, and caring for science materials (e.g., follow safety rules, maintain a clean work area, treat living organisms humanely).
- SC.2.2.5 conduct simple investigations; observe, collect and record information using a variety of classification systems; describe trends of data; and make predictions based on that data (e.g., seasonal changes and plants; temperature and weather).

Performance Descriptors (SC.PD.2.2)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science as inquiry**. Students classify scientific instruments and materials used to investigate the natural world. Students explain safety rules, and explain safe and proper techniques for handling, manipulating and caring for science materials. Students compare measurements of objects using standard and non-standard units. Students explain simple investigations.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science as inquiry**. Students determine appropriate scientific instruments and materials to investigate the natural world. Students demonstrate safety rules, and demonstrate safe and proper techniques for handling, manipulating and caring for science materials. Students determine measurements of objects using standard and non-standard units. Students interpret simple investigations.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science as inquiry**. Students use appropriate scientific instruments and materials to investigate the natural world. Students use safety rules, and use safe and proper techniques for handling, manipulating and caring for science materials. Students interpret measurements of objects using standard and non-standard units. Students describe simple investigations.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science as inquiry**. Performance needs further development. Students identify appropriate scientific instruments and materials used to investigate the natural world. Students tell safety rules, and tell safe and proper techniques for handling, manipulating and caring for science materials. Students identify measurements of objects using standard and non-standard units. Students name simple investigations.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science as inquiry**. Performance needs considerable development. Students seldom identify appropriate scientific instruments and materials used to investigate the natural world. Students seldom tell safety rules, and seldom tell safe and proper techniques for handling, manipulating and caring for science materials. Students seldom identify measurements of objects using standard and non-standard units. Students seldom name simple investigations.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function),
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes, and

- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.2.3.1 identify that systems are made of parts that interact with one another.
- SC.2.3.2 use models as representations of real things.
- SC.2.3.3 observe that changes occur gradually, repetitively, or randomly within the environment.

Performance Descriptors (SC.PD.2.3)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students explain systems are made of parts that interact with one another. Students compare and contrast changes that occur within systems. Students construct models that represent real things.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students illustrate systems made of parts that interact with one another. Students explore changes that occur within systems. Students explain models that represent real things.

■ Mastery

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **unifying themes of science**. Students discuss systems made of parts that interact with one another. Students interpret changes that occur within systems. Students examine models that represent real things.

■ Partial Mastery

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **unifying themes of science**. Performance needs further development. Students identify systems made of parts that interact with one another. Students label changes that occur within systems. Students match models that represent real things.

■ Novice

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **unifying themes of science**. Performance needs considerable development. Students seldom identify systems made of parts that interact with one another. Students seldom label changes that occur within systems. Students seldom match models that represent real things.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives,
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences, and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Characteristics of Organisms

- SC.2.4.1 identify that plants and animals have different structures.
- SC.2.4.2 identify the structures of physical characteristics of living things and explain their functions (e.g., wings for flying, fins for swimming; roots for support and obtaining water).

Life Cycles of Organisms

SC.2.4.3 sequence pictures of events to illustrate the changes in the life cycle of plants and animals.

SC.2.4.4 relate observations of the butterfly's life cycle to student's own growth and change.

Organisms and Environments

SC.2.4.5 observe and compare simple models of different kinds of habitats, including a forest and a stream.

Properties of Objects and Materials

SC.2.4.6 identify materials as a solid, a liquid or a gas and recognize that matter can change from one state to another.

SC.2.4.7 demonstrate that solids, liquids and gases take up space.

Light, Heat, Electricity and Magnetism

SC.2.4.8 demonstrate that a magnet can attract or repel objects.

SC.2.4.9 recognize that some materials and colors conduct heat better than others.

SC.2.4.10 demonstrate that a shadow is cast when an object blocks light.

Position and Motion of Objects

SC.2.4.11 compare the effects of force on the motion of an object.

SC.2.4.12 recognize that sound can change in pitch and volume.

Changes in Earth and Sky

SC.2.4.13 examine changes in the earth's surface (e.g., weathering, erosion).

SC.2.4.14 identify the effects of wind movement.

SC.2.4.15 observe and describe different types of precipitation.

SC.2.4.16 compare seasonal changes.

SC.2.4.17 explain how the rotation of the Earth on its axis causes day and night.

Objects in the Sky

SC.2.4.18 understand that the moon has phases.

Properties of Earth Materials

SC.2.4.19 describe how fossils are formed.

SC.2.4.20 match a fossil or a picture of a fossil, with a picture of its original organism (e.g., dinosaur bones, shell, fern).

Performance Descriptors (SC.PD.2.4)■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students compare and contrast scientific facts, concepts, principles, theories and models found in daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students construct interconnections among the above categories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students apply scientific facts, concepts, principles, theories and models found in daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

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- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students analyze interconnections among the above categories.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science subject matter/concepts**. Students summarize scientific facts, concepts, principles, theories and models found in daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students demonstrate interconnections among the above categories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science subject matter/concepts**. Performance needs further development. Students identify scientific facts, concepts, principles, theories and models found in daily life experiences. Students demonstrate knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students discuss interconnections among the above categories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science subject matter/concepts**. Performance needs considerable development. Students seldom identify scientific facts, concepts, principles, theories and models found in daily life experiences. Students seldom demonstrate knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments

- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students seldom discuss interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology,
- demonstrate the ability to distinguish between natural and man-made objects,
- demonstrate abilities of technological design, and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

SC.2.5.1 recognize that common objects and events incorporate science (e.g., CD players, Velcro, weather) to solve human problems and enhance the quality of life.

Performance Descriptors (SC.PD.2.5)

- **Distinguished**
The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **scientific design and application**. Students explain common objects and events that incorporate science to solve human problems and enhance the quality of life.
- **Above Mastery**
The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **scientific design and application**. Students illustrate common objects and events that incorporate science to solve human problems and enhance the quality of life.
- **Mastery**
The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **scientific design and application**. Students describe common objects and events that incorporate science to solve human problems and enhance the quality of life.
- **Partial Mastery**
The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **scientific design and application**. Performance needs further development. Students identify common objects and events that incorporate science to solve human problems and enhance the quality of life.
- **Novice**
The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **scientific design and application**. Performance needs considerable development. Students seldom identify common objects and events that incorporate science to solve human problems and enhance the quality of life.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues,

- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices,
- predict the long-term societal impact of specific health, population, resource and environmental practices, and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.2.6.1 listen to and be tolerant of different viewpoints while working in collaborative groups.
- SC.2.6.2 develop respect and responsibility for the environment by engaging in conservation practices (e.g., recycling, trash clean-up, power consumption reduction).

Performance Indicators (SC.PD.2.6)

- **Distinguished**
The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students work in groups, listen to and explain different viewpoints. Students model conservation practices.
- **Above Mastery**
The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students work in groups, listen to and classify viewpoints. Students select conservation practices.
- **Mastery**
The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science in personal and social perspectives**. Students work in groups, listen to and discuss different viewpoints. Students examine conservation practices.
- **Partial Mastery**
The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science in personal and social perspectives**. Performance needs further development. Students listen to and give examples of different viewpoints. Students describe conservation practices.
- **Novice**
The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science in personal and social perspectives**. Performance needs considerable development. Students seldom listen to and seldom give examples of different viewpoints. Students seldom describe conservation practices.

Third Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Three objectives build upon problem-solving and experimentation and move into a more in-depth study of science. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes, and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. CATS Three highlights science-related careers. The study of geology and astronomy expands in

CATS Three. Collecting materials, testing the materials, recording data and developing concepts related to physics and chemistry are introduced to expand investigative abilities that lead to logical conclusions. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.3.1.1 recognize that scientific explanations may lead to new discoveries (e.g., new knowledge leads to new questions).
- SC.3.1.2 study the lives and discoveries of scientists of different cultures and backgrounds.
- SC.3.1.3 explore science careers in the community.

Performance Descriptors (SC.PD.3.1)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students assess changes in scientific knowledge over time. Students assess science careers in the community.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students explain changes in scientific knowledge over time. Students categorize science careers in the community.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **history and the nature of science**. Students state changes in scientific knowledge over time. Students examine science careers in the community.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **history and the nature of science**. Performance needs further development. Students describe changes in scientific knowledge over time. Students list science careers in the community.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **history and the nature of science**. Performance needs considerable development. Students seldom describe changes in scientific knowledge over time. Students seldom list science careers in the community.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.3.2.1 demonstrate curiosity, initiative and creativity by planning and conducting simple investigations.
- SC.3.2.2 recognize that developing solutions to problems takes time, patience and persistence through individual and cooperative ventures.
- SC.3.2.3 support statements with facts found through research in reference books, science-related magazines and the Internet.
- SC.3.2.4 use scientific instruments and everyday materials to investigate the natural world (e.g., graduated cylinder, hand lens, metric ruler, magnets, weather instruments, thermometer, calculators).
- SC.3.2.5 use safe and proper techniques for handling, manipulating and caring for science materials (e.g., follow safety rules, maintain a clean work area, treat living organisms humanely).
- SC.3.2.6 apply mathematical skills and use metric units in measurements.
- SC.3.2.7 interpret data presented in a table, graph, map or diagram and use it to answer questions and make predictions and inferences based on patterns of evidence.
- SC.3.2.8 test variables (e.g., those that affect plant growth; speed; action of water on soil; shadow formation)

Performance Descriptors (SC.PD.3.2)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science as inquiry**. Students select appropriate scientific instruments and materials to investigate the natural world. Students recommend safety rules, and recommend safe and proper techniques for handling, manipulating and caring for science materials. Students select mathematical skills and metric units in measurements. Students draw conclusions from data presented in a table, graph, map or diagram. Students defend predictions and inferences based on patterns of evidence. Students assess variables in simple investigations.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science as inquiry**. Students classify appropriate scientific instruments and materials to investigate the natural world. Students explain safety rules, and explain safe and proper techniques for handling, manipulating and caring for science materials. Students combine mathematical skills and metric units in measurements. Students analyze data presented in a table, graph, map or diagram. Students create predictions and inferences based on patterns of evidence. Students draw conclusions about variables in simple investigations.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science as inquiry**. Students use appropriate scientific instruments and materials to investigate the natural world. Students demonstrate safety rules, and demonstrate safe and proper techniques for handling, manipulating and caring for science materials. Students apply mathematical skills and metric units in measurements. Students explain data presented in a table, graph, map or diagram. Students examine predictions and inferences based on patterns of evidence. Students interpret variables in simple investigations.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science as inquiry**. Performance needs further development. Students identify appropriate scientific instruments and materials to investigate the natural world. Students list safety rules, and list safe and proper techniques for handling,

manipulating and caring for science materials. Students associate mathematical skills and metric units in measurements. Students apply data presented in a table, graph, map or diagram. Students define predictions and inferences based on patterns of evidence. Students list variables in simple investigations.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science as inquiry**. Performance needs considerable development. Students seldom identify appropriate scientific instruments and materials to investigate the natural world. Students seldom list safety rules, and seldom list safe and proper techniques for handling, manipulating and caring for science materials. Students seldom associate mathematical skills and metric units in measurements. Students seldom apply data presented in a table, graph, map or diagram. Students seldom define predictions and inferences based on patterns of evidence. Students seldom list variables in simple investigations.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.3.3.1 identify that systems are made of parts that interact with one another.
- SC.3.3.2 use models as representations of real things.
- SC.3.3.3 observe that changes occur gradually, repetitively, or randomly within the environment and question causes of changes.
- SC.3.3.4 given a set of objects, group or order the objects according to an established scheme (e.g., celestial objects, patterns of motion, constellations).
- SC.3.3.5 given a set of events, objects, shapes, designs, or numbers, find patterns of constancy or regularity.

Performance Descriptors (SC.PD.3.3)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students analyze systems made of parts that interact with one another. Students draw conclusions about changes that occur within systems. Students select models that represent real things.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students explain systems made of parts that interact with one another. Students compare and contrast changes that occur within systems. Students create models that represent real things.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **unifying themes of science**. Students illustrate systems made of parts that interact with one another. Students describe changes that occur within systems. Students relate models that represent real things.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **unifying themes of science**. Performance needs further development. Students name systems made of parts that interact with one another. Students identify changes that occur within systems. Students show models that represent real things.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **unifying themes of science**. Performance needs considerable development. Students seldom name systems made of parts that interact with one another. Students seldom identify changes that occur within systems. Students seldom show models that represent real things.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Characteristics of Organisms

SC.3.4.1 identify the structures of living things, including their systems and explain their functions (e.g., roots absorb water, circulatory system to move materials).

Life Cycles of Organisms

SC.3.4.2 observe, measure and record changes in living things (e.g., growth and development, variations within species).

Organisms and Environments

SC.3.4.3 compare physical characteristics and behaviors of living organisms and explain how they are adapted to a specific environment (e.g., beaks and feet in birds, seed dispersal, camouflage, different types of flowers).

SC.3.4.4 observe and describe relationships among organisms in an ecosystem (e.g., sequencing food chains, behavior, adaptations, factors that effect populations, predator-prey relationships).

Properties of Objects and Materials

SC.3.4.5 relate the buoyancy of an object to its density.

SC.3.4.6 identify physical and chemical properties.

SC.3.4.7 relate changes in states of matter to changes in temperature.

SC.3.4.8 investigate the dissolving of solids in liquids.

Light, Heat, Electricity and Magnetism

SC.3.4.9 investigate the absorption, reflection and refraction of light by objects.

SC.3.1.10 relate how the color of an object is based upon the absorption or reflection of light.

Position and Motion of Objects

SC.3.4.11 recognize that it takes work to move objects over a distance.

SC.3.4.12 recognize that speed, distance, and time are interrelated.

SC.3.4.13 recognize that the greater a force is exerted on an object, the greater the change of its motion will be.

SC.3.4.14 identify examples of potential and kinetic energy.

Changes in Earth and Sky

SC.3.4.15 identify fossils as a record of time (e.g., what organisms once lived on Earth, where they lived).

SC.3.4.16 explore the eroding of different materials by water and wind (e.g., sand, mud pile and rocks).

SC.3.4.17 describe how volcanoes and earthquakes change the Earth.

Objects in the Sky

SC.3.4.18 recognize the relative movement of the Sun and Moon in relationship to the Earth's position.

SC.3.4.19 describe the similarities and differences among the planets.

Properties of Earth Materials

SC.3.4.20 identify properties of minerals and recognize that rocks are composed of different minerals.

SC.3.4.21 explain how igneous, sedimentary and metamorphic rocks are formed.

SC.3.4.22 identify geographical features using a model or map (e.g., mountains, rivers, valleys, lakes, glaciers, volcanoes).

SC.3.4.23 describe the layers of the Earth and their various features.

Performance Descriptors (SC.PD.3.4)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students critique scientific facts, concepts, principles, theories and models found in daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students generate interconnections among the above categories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students compare and contrast scientific facts, concepts, principles, theories and models found in daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students draw conclusions about the interconnections among the above categories.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science subject matter/concepts**. Students interpret scientific facts, concepts, principles, theories and models found in daily life experiences. Students comprehend and apply knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms

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- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students explain interconnections among the above categories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science subject matter/concepts**. Performance needs further development. Students recall scientific facts, concepts, principles, theories and models found in daily life experiences. Students demonstrate knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students identify interconnections among the above categories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science subject matter/concepts**. Performance needs considerable development. Students seldom recall scientific facts, concepts, principles, theories and models found in daily life experiences. Students seldom demonstrate knowledge of the objectives at the level indicated in Standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students seldom identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.3.5.1 cite examples of the uses of science and technology in common daily events and in the community.
- SC.3.5.2 explain a simple problem and identify a specific solution describing the use of tools and/or materials to solve the problem or to complete the task.

Performance Descriptors (SC.PD.3.5)

- **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **scientific design and application**. Students assess uses of science and technology in the community. Students assess the tools and materials used to solve problems.

- **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **scientific design and application**. Students compare and contrast the uses of science and technology in the community. Students apply the tools and materials used to solve problems.

- **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **scientific design and application**. Students examine science and technology in the community. Students select the tools and materials to solve problems. Students distinguish between natural and manmade objects.

- **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **scientific design and application**. Performance needs further development. Students identify uses of science and technology in the community. Students identify the tools and materials used to solve problems.

- **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **scientific design and application**. Performance needs considerable development. Students seldom identify uses of science and technology in the community. Students seldom identify the tools and materials used to solve problems.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.3.6.1 recognize that a solution to one scientific problem often creates new problems (e.g., recycling, pollution, conservation, waste disposal).
- SC.3.6.2 listen to and be tolerant of different viewpoints by engaging in collaborative activities and be willing to modify ideas when new and valid information is presented.
- SC.3.6.3 develop respect and responsibility for the environment by engaging in conservation practices.

- SC.3.6.4 describe how modern tools and appliances have positively and/or negatively impacted their daily lives.

Performance Descriptors (SC.PD.3.6)

- **Distinguished**
The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students work in groups, listen to and assess different viewpoints. Students select conservation practices. Students assess the impact of personal choices on the quality of life.
- **Above Mastery**
The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students work in groups, listen to and analyze different viewpoints. Students explain conservation practices. Students analyze the impact of personal choices on the quality of life.
- **Mastery**
The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science in personal and social perspectives**. Students work in groups, listen to and examine different viewpoints. Students demonstrate conservation practices. Students determine the impact of personal choices on the quality of life.
- **Partial Mastery**
The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science in personal and social perspectives**. Performance needs further development. Students work in groups, listen to and describe different viewpoints. Students contrast conservation practices. Students predict the impact of personal choices on the quality of life.
- **Novice**
The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science in personal and social perspectives**. Performance needs considerable development. Students seldom work in groups, seldom listen to and seldom describe different viewpoints. Students seldom contrast conservation practices. Students seldom predict the impact of personal choices on the quality of life.

Fourth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Four objectives build on the study of geology, astronomy, chemistry and physics. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. CATS Four promotes cooperative learning, group decisions, cultural diversity, careers and expands the development of hands-on exploration. Basic science concepts are developed and problem-solving abilities are augmented. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolution of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.4.1.1 contrast changes in scientific knowledge resulting from new discoveries (e.g., new knowledge leads to new questions).
- SC.4.1.2 study the lives and discoveries of scientists of different cultures and backgrounds.
- SC.4.1.3 explore science careers in West Virginia.

Performance Descriptors (SC.PD.4.1)■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students analyze changes in scientific knowledge over time. Students compare and contrast science careers in West Virginia.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students contrast changes in scientific knowledge over time. Students explain science careers in West Virginia.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **history and the nature of science**. Students describe changes in scientific knowledge over time. Students recognize and describe science careers in West Virginia.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **history and the nature of science**. Performance needs further development. Students identify changes in scientific knowledge over time. Students recognize science careers in West Virginia.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **history and the nature of science**. Performance needs considerable development. Students seldom identify changes in scientific knowledge over time. Students seldom recognize science careers in West Virginia.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.4.2.1 demonstrate curiosity, initiative and creativity by developing questions that lead to investigations; designing simple experiments; and trusting observations of discoveries when trying new tasks and skills.
- SC.4.2.2 recognize that developing solutions to problems requires persistence, flexibility, open-mindedness, and alertness for the unexpected.
- SC.4.2.3 support statements with facts found through research in reference books, science-related magazines, multimedia and the Internet.
- SC.4.2.4 use scientific instruments and everyday materials to investigate the natural world (e.g., hand lens, telescope, thermometer, balances, magnets, tuning forks, bulbs and batteries, graduated cylinders, calculators, computers).
- SC.4.2.5 demonstrate safe and proper techniques for handling, manipulating and caring for science materials.
- SC.4.2.6 construct a hypothesis when provided a problem.
- SC.4.2.7 establish variables and controls in an experiment; test variables through experimentation.
- SC.4.2.8 interpret data presented in a table, graph, or diagram and use it to answer questions and make decisions.
- SC.4.2.9 draw and support conclusions, make predictions and inferences based on patterns of evidence (e.g., weather maps, change of speed in a given amount of time, change in wave motions with changes in energy, variation of plants).
- SC.4.2.10 apply mathematical skills and use metric units in measurements and calculations.

Performance Descriptors (SC.PD.4.2)

- **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science as inquiry**. Students develop questions and propose solutions; use scientific instruments to make observations, measure and collect data; and extract information from charts, tables and graphs.

- **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science as inquiry**. Students develop questions, use scientific instruments to make observations, measure and collect data; and extract information from charts, tables and graphs. Students routinely apply safety techniques.

- **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science as inquiry**. When provided a problem, students construct a hypothesis. Students make observations using scientific instruments and develop questions. Students routinely apply safety techniques.

- **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science as inquiry**. ~~Performance~~ ^{Performance} needs further development. Students make observations using scientific instruments. Students frequently apply safety techniques.

- **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science as inquiry**. Performance needs considerable development. Students are inconsistent in using safety techniques.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.4.3.1 identify that systems are made of parts that interact with one another.
- SC.4.3.2 use models as representations of real things.
- SC.4.3.3 observe that changes occur gradually, repetitively, or randomly within the environment and question causes of changes.
- SC.4.3.4 given a set of objects, group or order the objects according to an established scheme.
- SC.4.3.5 given a set of events, objects, shapes, designs, or numbers, find patterns of constancy or regularity.

Performance Descriptors (SC.PD.4.3)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students compare and contrast the relationships between the forms of objects or systems and their functions. Students will predict changes in and draw conclusions about systems. Students differentiate between models that represent systems.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students explain the relationship between the form of an object or system and its function. Students compare models that represent systems.

■ Mastery

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **unifying themes of science**. Students identify and describe how modifications to the parts of a system affect interactions between its parts. Students describe models that represent systems.

■ Partial Mastery

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **unifying themes of science**. Students identify observable changes to the parts of the system. Students label models that represent systems.

■ Novice

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **unifying themes of science**. Performance needs considerable development. Students seldom identify observable changes to the parts of the system. Students inaccurately label models that represent systems.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding, and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Characteristics of Organisms

- SC.4.4.1 describe the different characteristics of plants and animals which help them to survive in different niches and environments.
- SC.4.4.2 associate the behaviors of living organisms to external and internal influences (e.g., hunger, climate, seasons).
- SC.4.4.3 identify and classify variations in structures of living things including their systems and explain their functions (e.g., skeletons, teeth, plant needles, leaves).

Life Cycles of Organisms

- SC.4.4.4 compare and sequence changes in plant and animal life cycles.
- SC.4.4.5 understand that plants and animals closely resemble their parents and that some characteristics are inherited from the parents and others result from interaction with the environment.

Organisms and Environments

- SC.4.4.6 identify human uses of plants and animals (e.g., food sources, medicines).
- SC.4.4.7 describe environmental barriers to the migration of animals.
- SC.4.4.8 construct and explain models of habitats, food chains, and food webs.

Properties of Objects and Materials

- SC.4.4.9 investigate how properties can be used to identify substances.
- SC.4.4.10 investigate and compare the dissolving of different solids in a given liquid.
- SC.4.4.11 examine simple chemical changes (e.g., tarnishing, rusting, burning).
- SC.4.4.12 understand that materials including air mass, take up space and are made of parts that are too small to be seen without magnification.
- SC.4.4.13 identify various changes in states of matter to heat loss or gain.
- SC.4.4.14 investigate variables that affect the rate of evaporation of a liquid.
- SC.4.4.15 investigate the density of liquids.

Light, Heat, Electricity and Magnetism

- SC.4.4.16 identify different forms of energy and describe energy transformations that occur between them (e.g., electrical to heat, light to mechanical).
- SC.4.4.17 examine types and properties of waves (e.g., transverse, longitudinal, frequency, wavelengths).
- SC.4.4.18 investigate static electricity and conductors/nonconductors of electricity.
- SC.4.4.19 construct simple electrical circuits.
- SC.4.4.20 understand the relationship between a compass and a magnetic field.

Position and Motion of Objects

- SC.4.4.21 relate motion of an object to its frame of reference.
- SC.4.4.22 predict and investigate the motion of an object if the applied force is changed.
- SC.4.4.23 explore that sounds are produced by vibrating objects and columns of air and explore the relationship between frequency and pitch of sound.
- SC.4.4.24 investigate the change in the length, tension, or thickness of the vibrating object on the frequency of vibration (e.g., string, wire, rubber band).

Changes in Earth and Sky

- SC.4.4.25 become familiar with the geologic time scale.
- SC.4.4.26 locate and identify patterns of stars and their seasonal changes.
- SC.4.4.27 compare and explain the relative time differences to erode materials (e.g., a sand pile, mud pile, rock pile).
- SC.4.4.28 investigate the cause and effects of volcanoes, earthquakes and landslides.
- SC.4.4.29 interpret a weather chart or map.

Objects in the Sky

- SC.4.4.30 identify the sun as a star.
- SC.4.4.31 describe the orbits of the Sun and Moon.
- SC.4.4.32 describe and explain the planets orbital paths.

Properties of Earth Materials

SC.4.4.33 describe the rock cycle.

SC.4.4.34 explain the relationship between the rate of cooling and crystal size of igneous rocks.

SC.4.4.35 compare ocean water and fresh water.

Performance Descriptors (SC.PD.4.4)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge, applications of the objectives in standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students analyze interconnections among the above categories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students generate and explain interconnections among the above categories.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science subject matter/concepts**. Students demonstrate knowledge of the objectives in standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students draw conclusions about interconnections among the above categories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science subject matter/concepts**.

Performance needs further development. Students demonstrate limited knowledge of the objectives in standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students identify interconnections among the above categories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science subject matter/concepts**. Performance needs considerable development. Students demonstrate incomplete knowledge of the objective in standard 4 in the following categories:

- Characteristics of Organisms
- Life Cycles of Organisms
- Organisms and Environments
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Changes in Earth and Sky
- Objects in the Sky
- Properties of Earth Materials

Students seldom identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.4.5.1 identify and explain a simple problem or task to be completed; identify a specific solution; and list task requirements.
- SC.4.5.2 use an appropriate engineering design to solve a problem or complete a task.

Performance Descriptors (SC.PD.4.5)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **scientific design and application**. Students develop an appropriate engineering design for a given task and produce a product or process that exceeds the task requirements. Students utilize technology to gather data, analyze statistics and develop conclusions.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **scientific design and application**. Students compare, contrast and select an engineering design for a given task and

produce a product that meets task requirements. Students utilize technology to gather data, display it, and interpret it.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **scientific design and application**. Students select an appropriate engineering design for a given task and produce a product or process to meet the task requirements. Students utilize technology to gather data and to display the data.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **scientific design and application**. Performance needs further development. Students select an engineering design for a given task and produce a product or process that does not meet all of the task requirements. Students utilize technology to gather data.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **scientific design and application**. Performance needs considerable development. Students seldom select an engineering design for a given task that produce a product or process that meets requirements. Students inaccurately use technology to gather data.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.4.6.1 recognize that a solution to one scientific problem often creates new problems (e.g., recycling, pollution, conservation, waste disposal, need for technology).
- SC.4.6.2 listen to and be tolerant of different viewpoints by engaging in collaborative activities and modifying ideas when new and valid information is presented from a variety of resources.
- SC.4.6.3 describe the positive and negative consequences of the application of technology on personal health and the environment.
- SC.4.6.4 develop respect and responsibility for the environment by engaging in conservation practices.

Performance Descriptors (SC.PD.4.6)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students analyze and evaluate positive and negative consequences of human choices and technology applications on personal health populations and the environment.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students describe the positive and negative consequences of human choices and technology applications on personal health, populations and the environment.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science in personal and social perspectives**. Students identify positive and negative consequences of human choices on personal health, populations and the environment.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science in personal and social perspectives**. Performance needs further development. Students list consequences of human choices on personal health and the environment.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science in personal and social perspectives**. Performance needs considerable development. Students seldom list consequences of human choices on personal health and the environment.

Fifth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Five objectives identify, compare, classify and explain our living and designed worlds. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics, and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations, and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. CATS Five reviews earth and the sky, life cycles and habitats of organisms, properties, positions and motions of objects and energy. New major concepts introduced at the fifth grade level include changes in properties of matter, structures, functions and adaptations of organisms, and the structure of the earth's system. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.5.1.1 realize that scientists formulate and test their explanations of nature using observation and experiments.
- SC.5.1.2 recognize scientific knowledge is subject to modification as new scientific information challenges current explanations.
- SC.5.1.3 examine the careers and contributions of men and women of diverse cultures to the development of science
- SC.5.1.4 articulate the historical significance of scientific discoveries.

Performance Descriptors (SC.PD.5.1)■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students evaluate changes in scientific knowledge over time. Students compare and contrast the careers and contributions of men and women from diverse cultures and articulate the historical significance of their scientific discoveries.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students analyze changes in scientific knowledge over time. Students explain the careers and contributions of men and women from diverse cultures and articulate the historical significance of their scientific discoveries.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **history and the nature of science**. Students compare changes in scientific knowledge over time. Students recognize and describe the scientific contributions of men and women from diverse cultures throughout history.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **history and the nature of science**. Performance needs further development. Students identify changes in scientific knowledge over time. Students recognize science careers of men and women from diverse cultures throughout history.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **history and the nature of science**. Performance needs considerable development. Students seldom identify changes in scientific knowledge over time. Students seldom recognize a science career of men and women from diverse cultures.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.5.2.1 cooperate and collaborate to ask questions, find answers, solve problems, conduct investigations to further an appreciation of scientific discovery.
- SC.5.2.2 formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
- SC.5.2.3 apply skepticism, careful methods, logical reasoning and creativity in investigating the observable universe.
- SC.5.2.4 use a variety of materials and scientific instruments to conduct explorations, investigations and experiments of the natural world (e.g., barometer, anemometer, microscope, computer).
- SC.5.2.5 demonstrate safe techniques for handling, manipulating and caring for science materials, equipment, natural specimens and living organisms.
- SC.5.2.6 utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, identifying dependent and independent variables).

- SC.5.2.7 construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
- SC.5.2.8 use inferential reasoning to make logical conclusions from collected data.

Performance Descriptors (SC.PD.5.2)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science as inquiry**. Students develop questions, generate hypothesis, propose solutions and draw conclusions. Students use scientific instruments to make observations and to measure and collect data. Students organize and display data in charts, tables and graphs. Students extract information from the charts, tables and graphs. Students identify a constant and variable in an experiment. Students routinely apply safety techniques.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science as inquiry**. Students develop questions and generate hypothesis. Students use scientific instruments to make observations, measure and collect data. Students display and interpret information in charts, tables and graphs. Students name a constant and a variable in an experiment. Students routinely apply safety techniques.

■ Mastery

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science as inquiry**. Students develop questions and generate a hypothesis. Students make observations through use of scientific instruments. Students measure and collect data. Students display information in charts, tables or graphs. Students routinely apply safety techniques.

■ Partial Mastery

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science as inquiry**. Performance needs further development. Students use scientific instruments to make observations, collect data and read charts, tables and graphs. Students frequently apply safety techniques.

■ Novice

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science as inquiry**. Performance needs considerable development. Students inaccurately collect data and make observations. Students are inconsistent in using safety techniques.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.5.3.1 compare and contrast the relationship between the parts of a system to the whole system (e.g., take a part or build mechanical, electrical, or biological systems).
- SC.5.3.2 construct a variety of useful models of an object, event, or process.
- SC.5.3.3 compare and contrast changes that occur in an object or a system to its original state.

- SC.5.3.4 identify the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, flight characteristics of different-sized model airplanes).

Performance Descriptors (SC.PD.5.3)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students analyze and evaluate the relationships between the forms of objects or systems and their functions. Students design models to represent systems. Students predict changes and present supporting details to draw conclusions.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students incorporate model to compare and contrast the relationships between the forms of objects or systems and their functions. Students predict changes in and draw conclusions about systems.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **unifying themes of science**. Students use models to explain the relationship between the form of an object or system and its function. Students predict changes in systems.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **unifying themes of science**. Performance needs further development. Students use models to identify that there is a relationship between the form of an object or system and its function.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **unifying themes of science**. Performance needs considerable development. Students seldom use models to identify that there is a relationship between the form of an object or system and its function.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

- SC.5.4.1 demonstrate an understanding of the interconnections of biological, earth and space, and physical science concepts.

Structure and Function in Living Systems

- SC.5.4.2 identify and explain common energy conversions in cycles of matter including photosynthesis and carbon dioxide cycle.

- SC.5.4.3 identify the structures of living organisms and explain their function.

- SC.5.4.4 observe and identify cells of organisms using a microscope.

Life Cycles of Organisms: Reproduction and Heredity

- SC.5.4.5 compare variations of plant growth and reproduction.

Populations and Ecosystems

- SC.5.4.6 explain how the different characteristics of plants and animals help them to survive in different niches and environments including adaptations, natural selection, extinction.
- SC.5.4.7 explore the extinction of a species due to environmental conditions.
- SC.5.4.8 trace and describe the pathways of the sun's energy through producers, consumers and decomposers using food webs and pyramids.

Properties of Objects and Materials

- SC.5.4.9 explain that the mass of a material is conserved whether it is together, in parts, or in a different state.
- SC.5.4.10 recognize that elements are composed of only one type of matter.
- SC.5.4.11 using the periodic table, identify common elements according to their symbols.
- SC.5.4.12 identify substances by their relative densities (e.g., floating; sinking).

Light, Heat, Electricity and Magnetism

- SC.5.4.13 analyze diagrams of electrical circuits.
- SC.5.4.14 use SI (metric) measurement units of volts, amps and watts as they apply to electricity.
- SC.5.4.15 investigate the properties of an electromagnet.

Position and Motion of Objects

- SC.5.4.16 describe how the variables of gravity and friction affect the motion of objects.
- SC.5.4.17 compare and contrast the change in length, tension, or thickness of a vibrating object on the frequency of vibration.

Structure of the Earth System

- SC.5.4.18 describe the layers of the earth and their various features.
- SC.5.4.19 identify and describe natural landforms, how they change and impact weather and climate.
- SC.5.4.20 use a variety of instruments and sources to collect and display weather data to describe weather patterns (e.g., temperatures, wind direction, wind speed, precipitation).
- SC.5.4.21 compare and explain the different rates of weathering, erosion and deposition in certain materials.
- SC.5.4.22 identify land features and elevations on a topographical map.
- SC.5.4.23 identify resources as being renewable or non-renewable.

Earth's History

- SC.5.4.24 explore and explain how fossils and geologic features can be used to determine the relative age of rocks and rock layers.
- SC.5.4.25 identify that the Earth is made of plates (plate tectonics).

Performance Descriptors (SC.PD.5.4)■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 of the following categories:

- Structure and function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Structure of the Earth System
- Earth's History

Students analyze interconnections among the above categories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 in the following categories:

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- Structure and function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Structure of the Earth System
- Earth's History

Students explain interconnections among the above categories.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science subject matter/concepts**. Students demonstrate knowledge of the objectives in standard 4 in the following categories:

- Structure and function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Structure of the Earth System
- Earth's History

Students identify interconnections among the above categories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science subject matter/concepts**. Performance needs further development. Students demonstrate knowledge of the objectives in Standard 4 in the following categories:

- Structure and function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Structure of the Earth System
- Earth's History.

Students identify interconnections among the above categories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science subject matter/concepts**. Performance needs considerable development. Students demonstrate incomplete knowledge of the objectives in standard 4 in the following categories:

- Structure and function in Living Systems
- Life Cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Properties of Objects and Materials
- Light, Heat, Electricity and Magnetism
- Position and Motion of Objects
- Structure of the Earth System
- Earth's History.

Students seldom identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

SC.5.5.1 research everyday applications and interactions of science and technology.

SC.5.5.2 implement engineering solutions for given tasks and measure their effectiveness.

Performance Descriptors (SC.PD.5.5)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **scientific design and application**. Students contrast the interactions between science and technology in daily living. Given a task, students design an engineering solution, measure and evaluate its effectiveness. Students utilize technology to gather data, analyze statistics and develop conclusions.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **scientific design and application**. Students describe the interactions between science and technology. Students utilize technology to gather, display and interpret data.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **scientific design and application**. Students identify interactions between science and technology in daily living. Given a task, students select an engineering solution and measure its effectiveness. Students utilize technology to gather and display data.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **scientific design and application**. Performance needs further development. Students identify interactions between science and technology in daily living. Students utilize technology to gather data.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **scientific design and application**. Performance needs considerable development. Students seldom identify interactions between science and technology in daily living. Students inaccurately use technology to gather data.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.5.6.1 use scientific reasoning and the knowledge of science and technology to make informed personal decisions at the local and global levels.
- SC.5.6.2 evaluate and critically analyze mass media reports of scientific developments and events.
- SC.5.6.3 critically analyze the effects and impacts of science and technology on global and local problems (e.g., mining, manufacturing, recycling, farming, water quality).
- SC.5.6.4 explore the connections between science, technology, society and career opportunities.
- SC.5.6.5 analyze the positive and negative effects of technology on society and the influence of societal pressures on the direction of technological advances.

Performance Descriptors (SC.PD.5.6)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students evaluate the causes/effects of science and technology on global and local problems. Students identify and describe the connections between science, technology, society and career opportunities.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students analyze the causes/effects of science and technology on global and local problems. Students identify the connections between science, technology, society and career opportunities.

■ Mastery

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science in personal and social perspectives**. Students list causes/effects of science and technology on local problems. Students state connections between science, technology, society and career opportunities.

■ Partial Mastery

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science in personal and social perspectives**. Performance needs further development. Students list causes/effects of science and technology on local problems.

■ Novice

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science in personal and social perspectives**. Performance needs considerable development. Students seldom list causes/effects of science and technology on local problems.

Sixth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Six objectives demonstrate, differentiate, and apply concepts of the living and designed worlds. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics, and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of major science themes of systems, changes and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. CATS Six reviews changes in the properties of matter, structures, functions and adaptations of organisms, and the

structure of the earth's systems. New major concepts introduced at the sixth grade level include motions and forces, ecosystems, diversity of life, energy transformations, plate tectonics, earth's resources and weather. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.6.1.1 explain that scientists formulate and test their explanations of nature using observation and experiments.
- SC.6.1.2 recognize that scientific knowledge is subject to modification as new scientific information challenges current theories.
- SC.6.1.3 examine the careers and contributions of men and women of diverse cultures to the development of science.
- SC.6.1.4 articulate the historical significance of scientific discoveries as influenced by technological demands, competition, controversy, world events, personalities and societal issues.

Performance Descriptors (SC.PD.6.1)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students provide evidence of how careers relate with scientific fields of study. Students recall and relate the response of the scientific community to a specific historical setting.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students identify careers when given a scientific field of study. Students relate the response of the scientific community to a specific historical setting.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **history and the nature of science**. Students match careers with specific scientific fields of study. Students recognize that scientific discovery is influenced by the historical climate.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **history and the nature of science**. Performance needs further development. Students identify specific scientific fields of study. Students chronologically order major scientific discoveries.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **history and the nature of science**. Performance needs considerable development. Students recall a job/career from any field. Students seldom recognize that scientists formulate and test their explanations. Students recognize that scientific knowledge increases over time.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.6.2.1 cooperate and collaborate to ask questions, find answers, solve problems, conduct investigations to further an appreciation of scientific discovery.
- SC.6.2.2 formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
- SC.6.2.3 apply skepticism, careful methods, logical reasoning and creativity in investigating the observable universe.
- SC.6.2.4 use a variety of materials and scientific instruments to conduct explorations, investigations and experiments of the natural world (e.g., barometer, anemometer, microscope, computer).
- SC.6.2.5 demonstrate safe techniques for handling, manipulating and caring for science materials, equipment, natural specimens and living organisms.
- SC.6.2.6 utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, identifying dependent and independent variables).
- SC.6.2.7 construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
- SC.6.2.8 use inferential reasoning to make logical conclusions from collected data.
- SC.6.2.9 use appropriate technology solutions to gather data; graph data; interpret data; and analyze information.

Performance Descriptors (SC.PD.6.2)

- **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science as inquiry**. Students describe the influence that skepticism, bias, methodology, logical reasoning and creativity have on scientific investigations. Students choose selected scientific processes and skills to formulate questions, explain and relate dependent and independent variables, make predictions, and form hypothesis for a given problem; analyze records for consistency and accuracy; construct appropriate charts, tables and graphs. Students explain safety techniques and choose proper equipment to solve the problems (Science Subject Matter/Concept appropriate).

- **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science as inquiry**. Students can match the effects of skepticism, recognizing bias, methodology, logical reasoning and creativity with results in scientific investigations. Students apply scientific processes and skills to formulate questions, identify dependent and independent variables, make predictions and form hypothesis; maintain consistent and accurate records; organize data into appropriate charts, tables and graphs. Students explain safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate).

- **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science as inquiry**. Students identify skepticism, bias, methodology, logical reasoning and creativity in scientific investigations. Students describe scientific process and skills needed to formulate questions, identify dependent and independent variables, make predictions and form hypothesis; maintain

consistent and accurate records; select appropriate data on charts, tables and graphs. Students routinely apply safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate).

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science as inquiry**. Performance needs further development. Students can define skepticism, bias, methodology, logical reasoning and creativity as they apply to scientific investigations. Students identify scientific process and skills used to examine questions, choose hypothesis; maintain records; select data from charts, tables and graphs. Students occasionally demonstrate safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate).

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science as inquiry**. Performance needs considerable development. Students name factors such as skepticism, bias, methodology, logical reasoning and creativity, which influence scientific investigations. Students name scientific process and skills used to examine questions, choose hypothesis; maintain records; select data from charts, tables and graphs. Students can explain safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models, and explanation; constancy, change, and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze, and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.6.3.1 compare and contrast the relationship between the parts of a system to the whole system (e.g., take apart or build mechanical, electrical, or biological systems).
- SC.6.3.2 construct a variety of useful models of an object, event, or process.
- SC.6.3.3 compare and contrast changes that occur in an object or a system to its original state.
- SC.6.3.4 identify the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, flight characteristics of different-sized model airplanes).

Performance Descriptors (SC.PD.6.3)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students evaluate the accuracy of models (e.g., physical, pictorial) of objects or systems and predict how to manipulate variables to improve the model.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students design models (e.g., physical, pictorial) of objects or systems and predict how variables affect their function.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **unifying themes of**

science. Students compare and contrast models (e.g., physical, pictorial) of objects or systems and predict how variables affect their function.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **unifying themes of science**. Performance needs further development. Students examine models (e.g., physical, pictorial) of objects or systems and realize that changing variables and/or scale affects its function.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **unifying themes of science**. Performance needs considerable development. Students inconsistently connect the model with what it represents.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

SC.6.4.1 demonstrate an understanding of the interconnections of biological, earth and space and physical science concepts.

Structure and Function in Living Systems

SC.6.4.2 describe the interactions of various cycles that provide energy through decomposition, photosynthesis, respiration, transpiration in the food web; nitrogen cycle.

SC.6.4.3 classify living organisms according to their structure and functions.

SC.6.4.4 compare the similarities of internal features of organisms which can be used to infer relatedness.

SC.6.4.5 explain how abiotic and biotic factors affect the interdependence among organisms.

SC.6.4.6 construct models of plant and animal cells which show the basic parts (e.g., cytoplasm, cell wall, cell membrane, nucleus, chloroplasts).

Life Cycles of Organisms: Reproduction and Heredity

SC.6.4.7 compare growth patterns in different plants (e.g., mosses, ferns, perennials, biennials, woody plants, herbaceous plants).

Populations and Ecosystems

SC.6.4.8 demonstrate changes in populations of organisms due to limiting environmental factors (e.g., food supply, predators, disease, habitat).

SC.6.4.9 analyze the ecological consequences of human interactions with the environment (e.g., renewable and non-renewable resources).

Structure and Properties of Matter

SC.6.4.10 classify and investigate properties and processes (changes) as either physical or chemical.

SC.6.4.11 investigate the composition of matter concluding that matter is composed of tiny particles and that the particles are the same for the same type of matter.

SC.6.4.12 investigate the formation and separation of simple mixtures.

SC.6.4.13 use indicators to identify substances as acidic, basic or neutral.

SC.6.4.14 identify the symbols of elements.

SC.6.4.15 use the periodic table to identify elements as solids, liquids and gases, metals or nonmetals.

SC.6.4.16 describe properties of matter (e.g., inertia, specific heat, malleability, melting point, density).

Energy

- SC.6.4.17 investigate the properties electromagnetic spectrum (e.g., wavelengths, frequencies, visible light); relate wave lengths and/or frequency to position on electromagnetic spectrum (e.g., colors, x-ray).
- SC.6.4.18 identify factors affecting reflection and refraction (e.g., nature of surfaces, color, density of medium).
- SC.6.4.19 explain absorption and reflection of light by different objects of various colors and textures (e.g., transparent, translucent, opaque, different colors).
- SC.6.4.20 describe the flow of heat between objects (e.g., hot air rises, absorption and release of heat by metals).
- SC.6.4.21 diagram simple parallel and series circuits (e.g., bulbs, battery, wires, switch).

Motion and Forces

- SC.6.4.22 interpret the relationship of mass to gravitational force (e.g., larger the mass the larger the gravitational force, the closer the objects the stronger the force).
- SC.6.4.23 examine simple machines and the forces involved; apply the effects of balanced and unbalanced forces on motion of objects.
- SC.6.4.24 explain motion in terms of frames of reference and analyze graphs depicting motion and predicted future motion.

Structure of the Earth System

- SC.6.4.25 track major atmospheric events.
- SC.6.4.26 describe and demonstrate the forces and results of plate tectonics.

Earth's History

- SC.6.4.27 describe changes in the rock record due to geologic and physical events over time. (e.g., rock cycle as it relates to plate tectonics.).

Earth and the Solar System

- SC.6.4.28 recognize the phases of the Moon.
- SC.6.4.29 investigate models of Earth-Moon-Sun relationships (e.g., gravity, time, tides).
- SC.6.4.30 compare the Earth's tilt and revolution to the seasonal changes.

Performance Descriptors (SC.PD.6.4)■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 of the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students analyze interconnections among the above categories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 of the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter

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- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students explain interconnections among the above categories.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 of the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students identify interconnections among the above categories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science subject matter/concepts**. Performance needs further development. Students demonstrate knowledge of the objectives in standard 4 in the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students identify interconnections among the above categories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science subject matter/concepts**. Performance needs considerable development. Students demonstrate incomplete knowledge of the objectives in standard 4 in the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students seldom identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.6.5.1 given a set of attributes, produce a product or process and cite how design priorities (e.g., space, safety) and available materials impact the outcome.
- SC.6.5.2 evaluate the appropriateness of the materials and procedures in given engineering solutions.

Performance Descriptors (SC.PD.6.5)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **scientific design and application**. Students propose and defend alternative materials for use in natural and designed structures.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **scientific design and application**. Students predict the consequences of using inappropriate materials in a natural or designed structure.

■ Mastery

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **scientific design and application**. Students describe the appropriateness of properties for materials used in natural and designed structures.

■ Partial Mastery

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **scientific design and application**. Performance needs further development. Students identify properties of materials used in natural and designed structures.

■ Novice

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **scientific design and application**. Performance needs considerable development. Students name some of the materials that have been used in natural and designed structures.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.6.6.1 use scientific reasoning and the knowledge of science and technology to make informed personal decisions at the local and global levels.
- SC.6.6.2 evaluate and critically analyze mass media reports of scientific developments and events.
- SC.6.6.3 critically analyze the effects and impacts of science and technology on global and local problems (e.g., mining, manufacturing, recycling, farming, water quality).
- SC.6.6.4 explore the connections between science, technology, society and career opportunities.
- SC.6.6.5 analyze the positive and negative effects of technology on society and the influence of societal pressures on the direction of technological advances.

Performance Descriptors (SC.PD.6.6)

- **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students describe the science/technology/society effects on a global or local problem.

- **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students identify the science/technology/society effects on a global or local problem.

- **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science in personal and social perspectives**. Students match science/technology/society effects with global or local problems.

- **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science in personal and social perspectives**. Performance needs further development. Students relate science/technology/society effects to global or local problems.

- **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science in personal and social perspectives**. Performance needs considerable development. Students recognize global and local problems.

Seventh Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Seven objectives evaluate, interpret, and predict conditions and phenomena of the living and designed worlds. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. CATS Seven reviews motions and forces, ecosystems, diversity of life, energy transformations, plate tectonics, earth's resources and weather. Major concepts expanded at the seventh grade level include elements, mixtures, and compounds, populations/ecosystems, conservation of matter and energy and earth's history. West Virginia teachers are responsible for analyzing the

benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.7.1.1 realize that scientists formulate and test their explanations of nature using observation, experiments and theoretical models.
- SC.7.1.2 recognize and appreciate that scientific knowledge is subject to modification as new scientific information challenges current theories.
- SC.7.1.3 examine the careers and contributions of men and women of diverse cultures to the development of science.
- SC.7.1.4 articulate the historical significance of scientific discoveries as influenced by technological demands, competition, controversy, world events, personalities and societal issues.

Performance Descriptors (SC.PD.7.1)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students evaluate choices made by the scientific community in response to the historical setting. Students can select discipline specific activities when given a chosen scientific career.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students recall and relate the response of the scientific community to a specific historical setting. Students provide evidence of how careers relate with scientific fields of study.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **history and the nature of science**. Students relate the response of the scientific community to a specific historical setting. Students identify careers when given a scientific field of study.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **history and the nature of science**. Performance needs further development. Students recognize that the scientific community is influenced by the historical climate. Students match careers with specific scientific fields of study.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **history and the nature of science**. Performance needs considerable development. Students chronologically order major scientific discoveries. Students identify specific scientific fields of study.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and

- demonstrate the ability to think and act as scientists by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.7.2.1 cooperate and collaborate to ask questions, find answers, solve problems, conduct investigations to further an appreciation of scientific discovery.
- SC.7.2.2 formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
- SC.7.2.3 examine the role of skepticism, careful methods, logical reasoning and creativity in investigating the observable universe.
- SC.7.2.4 use a variety of materials and scientific instruments to conduct explorations, investigations and experiments of the natural world (e.g., barometer, anemometer, microscope, computer).
- SC.7.2.5 demonstrate safe techniques for handling, manipulating and caring for science materials, equipment, natural specimens and living organisms.
- SC.7.2.6 utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, identifying dependent and independent variables).
- SC.7.2.7 construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
- SC.7.2.8 use appropriate technology solutions to gather data; graph data; interpret data; and analyze information.
- SC.7.2.9 use inferential reasoning to make logical conclusions from collected data.

Performance Descriptors (SC.PD.7.2)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science as inquiry**. Students design an experiment that incorporates independent, dependent, controlled variables; use multiple trials in an experiment for reliability; suggest multiple alternative approaches to investigations. Students apply safety techniques and choose the proper equipment to solve problems (Science Subject Matter/Concept appropriate). Students predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science as inquiry**. Students can select an experiment that incorporates independent, dependent, and controlled variables; use multiple trials in an experiment for reliability; suggest multiple alternative approaches to investigations. Students apply safety techniques and choose the proper equipment to solve problems (Science Subject Matter/Concept appropriate). Students describe the influence that skepticism, bias, methodology, logical reasoning and creativity have on scientific investigations.

■ Mastery

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science as inquiry**. Students identify independent, dependent, and controlled variables; and explain why multiple trials in an experiment are necessary for reliability. Students suggest an alternative approach to investigations. Students apply safety techniques using proper equipment to solve problems (Science Subject Matter/Concept appropriate). Students can match the effects of skepticism, recognizing bias, methodology, logical reasoning and creativity with results in scientific investigations.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science as inquiry**. Performance needs further development. Students define independent, dependent, and controlled variables; and use multiple trials in an experiment for reliability. Students can only justify using the given approach in solving an investigation. Students apply safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate). Students identify skepticism, bias, methodology, logical reasoning and creativity in scientific investigations.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science as inquiry**. Performance needs considerable development. Students seldom recognize dependent, independent and controlled variables; they do not recognize the need for multiple trials. Students are inconsistent in the use of proper equipment and safety techniques to solve problems. Students define skepticism, bias, methodology, logical reasoning and creativity as they apply to scientific investigations.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.7.3.1 compare and contrast the relationship between the parts of a system to the whole system (e.g., take apart or build mechanical, electrical or biological systems).
- SC.7.3.2 construct a variety of useful models of an object, event or process.
- SC.7.3.3 compare and contrast changes that occur in an object or a system to its original state.
- SC.7.3.4 identify the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, flight characteristics of different-sized model airplanes).

Performance Descriptors (SC.PD.7.3)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students justify the design models of objects or systems and predict how variables and scale affect their function.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students construct scale models and predict the influences that a variation in scale will have on an object or system.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **unifying themes of science**. Students design models of objects or systems when given scale and defined variables.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **unifying themes of science**. Performance needs further development. Students compare models of objects or systems and predict how variables and scale affect their function.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **unifying themes of science**. Performance needs considerable development. Students examine models (e.g., physical, pictorial) of objects or systems and realize that changing variables and/or scale affects its function.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding, and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

SC.7.4.1 demonstrate an understanding of the interconnections of biological, earth and space and physical science concepts.

Structure and Function in Living Systems

SC.7.4.2 identify and describe disease causing organisms (such as bacteria, viruses, protozoa, fungi) and the diseases they cause.

SC.7.4.3 explain how the skeletal, muscular and integumentary systems work together in the human body.

SC.7.4.4 compare the level of organization of cells, tissues and organs in living things.

SC.7.4.5 construct simple keys to differentiate among living things with similar characteristics.

SC.7.4.6 use pictures to show cyclical processes in nature (e.g., water cycle, nitrogen cycle, and carbon cycle).

Life Cycles of Organisms: Reproduction and Heredity

SC.7.4.7 evaluate how the different adaptations and life cycles of plants and animals help them to survive in different niches and environments (e.g., inherited and acquired adaptations).

SC.7.4.8 analyze how changes in the environment have led to reproductive adaptations through natural selection.

SC.7.4.9 relate how an organism's behavior response is a combination of heredity and environment.

SC.7.4.10 analyze the differences in the growth, development and reproduction of flowering and non-flowering plants.

Populations and Ecosystems

SC.7.4.11 predict the trends of interdependent populations if one of the limiting factors is changed.

SC.7.4.12 evaluate the consequences of the introduction of chemicals into the ecosystem (e.g., environmental consequences, human health risks, mutations).

Structure and Properties of Matter

SC.7.4.13 differentiate among elements, compounds, homogeneous and heterogeneous mixtures.

SC.7.4.14 evaluate types of solutions (e.g., solutes and solvents relative concentrations, conductivity, pH).

Chemical Reactions

SC.7.4.15 study chemical reactions involving acids and bases by monitoring color changes of indicator(s) and identifying the salt formed in the neutralization reaction.

SC.7.4.16 write word equations to describe chemical reactions.

Energy

- SC.7.4.17 describe the behavior of individual particles and verify the conservation of matter (e.g., melting and freezing of pure substances).
- SC.7.4.18 trace the energy flow during phase changes
- SC.7.4.19 define characteristics of light and sound waves and describe how sound is perceived by the ear and light is perceived by the eye.
- SC.7.4.20 investigate application of lenses to science (e.g., microscopes, telescopes, magnifying glass, periscopes).
- SC.7.4.21 identify characteristics of AC and DC circuits.
- SC.7.4.22 explain conservation of matter and energy qualitatively and recognize that energy can be changed from one form to another.

Motion and Forces

- SC.7.4.23 perform experiments with simple machines to demonstrate the relationship between forces and distance; use vectors to represent motion.
- SC.7.4.24 explain the effect of gravity on falling objects (e.g., $g = 9.8\text{m/s}^2$, object dropped on earth and on moon).
- SC.7.4.25 analyze motion graphically and use vectors to represent direction of motion.

Structure of the Earth System

- SC.7.4.26 depict and relate causes of tides, surfs and currents.
- SC.7.4.27 examine the relationships among air masses, oceans, weather, convection currents and the sun's energy.
- SC.7.4.28 interpret and create topographical maps.

Earth's History

- SC.7.4.29 compare and contrast periods of geologic time using rocks and rock layers.

Earth and the Solar System

- SC.7.4.30 explain and model using manipulatives how the Earth's tilt and revolution determine the seasonal changes and weather patterns.
- SC.7.4.31 recognize the changes involved in the life cycle of a star.
- SC.7.4.32 describe and compare the physical characteristics of celestial objects.
- SC.7.4.33 compare the characteristics of the members of our solar system.

Performance Descriptors (SC.PD.7.4)■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 of the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students analyze interconnections among the above categories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 of the following categories:

- Structure and Function in Living Systems

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- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students explain interconnections among the above categories.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 of the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students identify interconnections among the above categories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science subject matter/concepts**. Performance needs further development. Students demonstrate knowledge of the objectives in standard 4 in the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students identify interconnections among the above categories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science subject matter/concepts**. Performance needs considerable development. Students demonstrate incomplete knowledge of the objectives in standard 4 in the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces

- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students seldom identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.7.5.1 make and compare different proposed solutions to an identified problem in light of specified criteria.
- SC.7.5.2 test and evaluate different types of materials and/or design approaches in building objects or completing tasks.

Performance Descriptors (SC.PD.7.5)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **scientific design and application**. Students propose and defend alternative materials for use in natural and designed systems.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **scientific design and application**. Students analyze the properties and characteristics of materials that make them appropriate for use in natural and designed systems.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **scientific design and application**. Students predict the consequences of using inappropriate materials in natural and designed systems.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **scientific design and application**. Performance needs further development. Students identify inappropriate materials for use in natural and designed systems.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **scientific design and application**. Performance needs considerable development. Students name some of the materials that have been used in natural and designed structures.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;

- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.7.6.1 use scientific reasoning and the knowledge of science and technology to make informed personal decisions at the local and global levels.
- SC.7.6.2 evaluate and critically analyze mass media reports of scientific developments and events.
- SC.7.6.3 critically analyze the effects and impacts of science and technology on global and local problems (e.g., mining, manufacturing, recycling, farming, water quality).
- SC.7.6.4 explore the connections between science, technology, society and career opportunities.
- SC.7.6.5 analyze the positive and negative effects of technology on society and the influence of societal pressures on the direction of technological advances.

Performance Descriptors (SC.PD.7.6)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students analyze and evaluate effects of science/technology/society on global and local problems.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students describe the science/technology/society effects on a global or local problem.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science in personal and social perspectives**. Students identify the science/technology/society effects on a global or local problem.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science in personal and social perspectives**. Performance needs further development. Students can match science/technology/society effects with global or local problems.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science in personal and social perspectives**. Performance needs considerable development. Students relate science/technology/society effects to global or local problems.

Eighth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Eight objectives analyze, quantify, and explain conditions and phenomena of the living and designed worlds. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy in the fields of biology, chemistry, physics and earth and space sciences. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes and models. Students will engage in active inquiries, investigations

and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. CATS Eight reviews elements, mixtures, and compounds, populations/ecosystems, conservation of matter and energy and earth's history. Major concepts introduced at the eighth grade level include reproduction, genetics, behavior, chemical reactions and environmental concerns. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.8.1.1 realize that scientists formulate and test their explanations of nature using observation, experiments and theoretical models.
- SC.8.1.2 recognize and appreciate that scientific knowledge is subject to modification as new scientific information challenges current theories.
- SC.8.1.3 examine the careers and contributions of men and women of diverse cultures to the development of science.
- SC.8.1.4 articulate the historical significance of scientific discoveries as influenced by technological demands, competition, controversy, world events, personalities and societal issues.

Performance Descriptors (SC.PD.8.1)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students predict the response the scientific community would choose given a hypothetical historical setting. Students identify the educational experiences needed to enter a specified science career.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students evaluate choices made by the scientific community in response to the historical setting. Students can select discipline specific activities when given a chosen science-related career.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **history and the nature of science**. Students recall and relate the response of the scientific community to a specific historical setting. Students provide evidence of how careers relate to scientific fields of study.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **history and the nature of science**. Performance needs further development. Students relate the response of the scientific community to a specific historical setting. Students identify careers when given a scientific field of study.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **history and the nature of**

science. Performance needs considerable development. Students recognize that scientific discovery is influenced by the historical climate. Students match careers with specific scientific fields of study.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.8.2.1 cooperate and collaborate to ask questions, find answers, solve problems, conduct investigations to further an appreciation of scientific discovery.
- SC.8.2.2 formulate conclusions through close observations, logical reasoning, objectivity, perseverance and integrity in data collection.
- SC.8.2.3 apply skepticism, careful methods, logical reasoning and creativity in investigating the observable universe.
- SC.8.2.4 use a variety of materials and scientific instruments to conduct explorations, investigations and experiments of the natural world (e.g., barometer, anemometer, microscope, computer).
- SC.8.2.5 demonstrate safe techniques for handling, manipulating and caring for science materials, equipment, natural specimens and living organisms.
- SC.8.2.6 utilize experimentation to demonstrate scientific processes and thinking skills (e.g., formulating questions, predicting, forming hypotheses, quantifying, identifying dependent and independent variables).
- SC.8.2.7 construct and use charts, graphs and tables to organize, display, interpret, analyze and explain data.
- SC.8.2.8 use appropriate technology solutions to gather, graph and interpret data and analyze information.
- SC.8.2.9 use inferential reasoning to make logical conclusions from collected data.

Performance Descriptors (SC.PD.8.2)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science as inquiry**. Students can design an experiment that solves a problem; collect, organize and graph the data applying the measurement of central tendency and frequency to draw conclusions. Students can explain and relate dependent, independent, and controlled variables. Students apply safety techniques and use proper equipment to solve the problem (Science Subject Matter/Concept appropriate). Students, when given a completed scientific investigation, critically evaluate the motives and identify the role of skepticism, recognizing bias, methodology, logical reasoning and creativity in scientific investigations.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science as inquiry**. Students perform experiments and will organize, graph, analyze data and draw conclusions from data collected; calculate measures of central tendency (mean, median, mode) and frequency. Students can explain and relate dependent, independent, and controlled variables. Students apply safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate). Students predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science as inquiry**. Students perform experiments and will organize, graph, analyze data, and draw conclusions from data collected in experiments. Students can explain and relate dependent, independent, and controlled variables. Students apply safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate). Students describe the influence that skepticism, bias, methodology, logical reasoning and creativity have on scientific investigations.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science as inquiry**. Performance needs further development. Students can organize, graph, and form conclusions from given data. Students identify independent, dependent, controlled variables. Students routinely apply safety techniques and use proper equipment to solve problems (Science Subject Matter/Concept appropriate). Students can match the effects of skepticism, recognizing bias, methodology, logical reasoning and creativity with results in scientific investigations.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science as inquiry**. Performance needs considerable development. Students have a beginning knowledge of organizing, graphing, and forming conclusions from given data. Students are beginning to identify independent, dependent, controlled variables. Students are inconsistent in the application of safety techniques use proper equipment to solve problems (Science Subject Matter/Concept appropriate). Students identify skepticism, bias, methodology, logical reasoning and creativity in scientific investigations.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.8.3.1 compare and contrast the relationship between the parts of a system to the whole system (e.g., take apart or build mechanical, electrical, or biological systems).
- SC.8.3.2 construct a variety of useful models of an object, event, or process.
- SC.8.3.3 compare and contrast changes that occur in an object or a system to its original state.
- SC.8.3.4 identify the influence that a variation in scale will have on the way an object or system works. (e.g., cooling rates of different-sized containers of water, strength of different-sized constructions from the same material, flight characteristics of different-sized model airplanes).

Performance Descriptors (SC.PD. 8.3)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students provide evidence to justify the appropriateness of a design of model of an object or system and design methods to demonstrate how variables and scale affect their function.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students evaluate the design of models of objects or systems and predict how variables and scale affect their function.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **unifying themes of science**. Students construct scale models and predict the influences that a variation in scale will have on an object or system.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **unifying themes of science**. Performance needs further development. Students design models of objects or systems when given scale and defined variables.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **unifying themes of science**. Performance needs considerable development. Students compare scale models of an object or system. Students describe the effects of variation in scale on the object or system.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

- SC.8.4.1 demonstrate an understanding of the interconnections of biological, earth and space, and physical science concepts.

Structure and Function in Living Systems

- SC.8.4.2 identify and explain the structures and functions of cell organelles.

- SC.8.4.3 explain how the circulatory, respiratory and reproductive systems work together in the human body.

- SC.8.4.4 compare the variations in cells, tissues and organs of the circulatory, respiratory and reproductive systems of different organisms.

- SC.8.4.5 demonstrate how living cells obtain the essentials of life through chemical reactions of transpiration, respiration and photosynthesis.

Life Cycles of Organisms: Reproduction and Heredity

- SC.8.4.6 analyze how behaviors of organisms lead to species continuity (e.g., reproductive/mating behaviors, seed dispersal).

- SC.8.4.7 demonstrate the basic principles of genetics to include Mendel's laws, DNA, monohybrid crosses, production of sperm and egg, production of body cells, genes, chromosomes, inherited traits.

- SC.8.4.8 examine how patterns of human development are similar to other vertebrates.

Populations and Ecosystems

- SC.8.4.9 group unknown organisms based on observable characteristics (e.g., use dichotomous keys).

- SC.8.4.10 trace matter and energy flow in a food web as it goes from sunlight to producers to consumers, design an environment in which the chemical and energy needs for the growth, reproduction and development of plants are met (e.g., food pyramids, decomposition).

Structure and Properties of Matter

- SC.8.4.11 use the periodic table to locate and classify elements as metallic, non-metallic or metalloid.
- SC.8.4.12 trace the development of the model of the atom (e.g., Crookes, Thompson, Becquerel, Rutherford, Bohr).
- SC.8.4.13 determine the number of protons, neutrons and electrons and use information to draw a Bohr model of the atom.
- SC.8.4.14 assign an element to its chemical family on the periodic table and note similarities in outer energy level electrons within each family.
- SC.8.4.15 evaluate gaseous systems noting the variation in diffusion rates and examine the expansion of gases at elevated temperatures.

Chemical Reactions

- SC.8.4.16 conduct and classify chemical reactions by reaction type (synthesis, decomposition, single replacement or double replacement); energy type (endothermic and exothermic); and write word equations for the chemical reactions.
- SC.8.4.17 identify chemical reaction factors that might affect the reaction rates including catalysts, temperature changes, light energies and particle size.

Energy

- SC.8.4.18 identify types of energy and their sources (e.g., petroleum refinement, windmills, geothermal).
- SC.8.4.19 interpret and illustrate changes in waves as they pass through various mediums (e.g., sound through water and metal, light through thicknesses of glass).
- SC.8.4.20 apply the conservation of energy theory to energy transformations (e.g., electrical/heat, heat/mechanical).
- SC.8.4.21 quantitatively represent work, power, pressure (e.g., $W=fd$, $P=W/t$, pressure = force/area).

Motion and Forces

- SC.8.4.22 graph and interpret the relationships (e.g., distance versus time, speed versus time, acceleration versus time).
- SC.8.4.23 describe Newton's Laws of Motion; identify examples; illustrate qualitatively and quantitatively drawing vector quantities.
- SC.8.4.24 illustrate quantitatively mechanical advantage of simple machines.

Structure of the Earth System

- SC.8.4.25 summarize problems related to water on earth as a life sustaining substance (e.g., quality and quantity of surface and ground water).
- SC.8.4.26 identify the principle forces of plate tectonics and related geological events.
- SC.8.4.27 relate global patterns of atmospheric movement on local weather and the impact of oceans on weather and climate.

Earth's History

- SC.8.4.28 relate rock formations to the types of fossil fuels.
- SC.8.4.29 describe the factors involved in mining resources.
- SC.8.4.30 construct and interpret rock layer models through stratigraphic interpretation.

Earth and the Solar System

- SC.8.4.31 recognize societal concerns with exploration and colonization of space.
- SC.8.4.32 diagram the motions of the Sun, Moon and Earth and explain the phenomena associated with these motions (e.g., glacial periods, eclipses, tides, meteor showers).
- SC.8.4.33 compare and contrast the orbits of planets and comets.
- SC.8.4.34 compare and contrast the different types of galaxies (e.g., shape, size, components).

Performance Descriptors (SC.PD.8.4)■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 of the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity

- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students analyze interconnections among the above categories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 of the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students explain interconnections among the above categories

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in standard 4 of the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students identify interconnections among the above categories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science subject matter/concepts**. Performance needs further development. Students demonstrate knowledge of the objectives in standard 4 in the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System

- Earth's History
- Earth and the Solar System

Students identify interconnections among the above categories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science subject matter/concepts**. Performance needs considerable development. Students demonstrate incomplete knowledge of the objectives in standard 4 in the following categories:

- Structure and Function in Living Systems
- Life cycles of Organisms: Reproduction and Heredity
- Populations and Ecosystems
- Structure and Properties of Matter
- Chemical Reactions
- Energy
- Motion and Forces
- Structure of the Earth System
- Earth's History
- Earth and the Solar System

Students seldom identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.8.5.1 research applications of space technology in everyday life (e.g., Velcro, Teflon, weather satellites).
- SC.8.5.2 compare scientific inquiry and technological design processes.
- SC.8.5.3 explain why no technological design is perfect (e.g., constraints lead to tradeoffs).
- SC.8.5.4 design and construct engineering solutions to problems according to specified constraints.

Performance Descriptors (SC.PD.8.5)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **scientific design and application**. Students evaluate the appropriateness of materials and procedures in natural and designed systems and suggest alternatives.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **scientific design and application**. Students analyze the properties and characteristics in natural and designed systems.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **scientific design and application**. Students describe the properties and characteristics of materials that make them well suited to specific natural and designed systems.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **scientific design and application**. Performance

needs further development. Students identify the properties and characteristics of materials in a natural or designed system.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **scientific design and application**. Performance needs considerable development. Students name some of the materials that have been used in a natural or designed system.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.8.6.1 use scientific reasoning and the knowledge of science and technology to make informed personal decisions at the local and global levels.
- SC.8.6.2 evaluate and critically analyze mass media reports of scientific developments and events.
- SC.8.6.3 critically analyze the effects and impacts of science and technology on global and local problems (e.g., mining, manufacturing, recycling, farming, water quality).
- SC.8.6.4 explore the connections between science, technology, society and career opportunities.
- SC.8.6.5 analyze the positive and negative effects of technology on society and the influence of societal pressures on the direction of technological advances.

Performance Descriptors (SC.PD.8.6)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students design a strategy to counteract the negative effects of science/technology/society on a global or local problem.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students analyze and evaluate effects of science/technology/society on global and local problems.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science in personal and social perspectives**. Students describe the science/technology/society effects on a global or local problem.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science in personal and social perspectives**. Performance needs further development. Students identify the science/technology/society effects on a global or local problem.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science in personal and**

social perspectives. Performance needs considerable development. Students can match science/technology/society effects with global or local problems.

Ninth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Nine objectives continue the development of foundational knowledge in biology, chemistry, physics, and the earth and sciences. Through a spiraling, inquiry-based program of study, all students will demonstrate scientific literacy across these major fields of science. Subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes, and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50 percent of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated in all activities. Building on the knowledge and skills acquired in CATS Eight, students in CATS Nine will expand and deepen their understanding of major concepts such as energy interactions, genetic probabilities, chemical changes and mineral composition of local rock layers. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.9.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- SC.9.1.2 recognize that science has practical and theoretical limitations.
- SC.9.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- SC.9.1.4 conclude that science is a blend of creativity, logic and mathematics.
- SC.9.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.

Performance Descriptors (SC.PD.9.1)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students evaluate experimental data in comparison to predicted results derived by scientific laws and explanations. Measures of variance and sources of error should be determined.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students use appropriate scientific laws or explanations to analyze a set of data or observations.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **history and the nature of science**. Students select the scientific laws or explanations that would be appropriate for evaluating a set of data or observations.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **history and the nature of science**. Performance needs further development. Students will name and describe some scientific laws.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **history and the nature of science**. Performance needs considerable development. Students will name or describe a scientific law.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.9.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- SC.9.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- SC.9.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- SC.9.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- SC.9.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- SC.9.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- SC.9.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives and applying).
- SC.9.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Performance Descriptors (SC.PD.9.2)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science as inquiry**. Students design and conduct investigations, collect data, graph trends in the data, identify patterns in the experimental results within the context of scientific theory. Investigations will be evaluated for safety and ethics.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science as inquiry**. Students conduct investigations, collect data, graph the data and use the experimental evidence to draw conclusions. Investigations will be performed in a safe and ethical manner.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science as inquiry**. Students conduct investigations, collect data, represent the data in appropriate graphical form. Investigations will be performed in a safe and ethical manner.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science as inquiry**. Performance needs further development. Students conduct safe and ethical investigations from a stepwise set of laboratory instructions. Data collected will be accurately recorded.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science as inquiry**. Performance needs considerable development. Students participate in investigations in a safe manner and collect data.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.9.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- SC.9.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- SC.9.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- SC.9.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Performance Descriptors (SC.PD.9.3)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **unifying themes of science**. The student will interpret multiple graphical representations of data to predict changes including the relationship between independent and dependent variables.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **unifying themes of science**. The student will make predictions about a set of experimental data using graphical representations.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **unifying themes of science**. The student will accurately locate specific data points on a graph of collected data.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **unifying themes of science**. Performance needs further development. The student will identify changes in data as presented by a line graph.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **unifying themes of science**. Performance needs considerable development. The student will demonstrate that graphs may be pictorial representations of numbers.

Standard 4: Science Subject Matter/Concepts

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives (SC.S.4)

Students will:

SC.9.4.1 demonstrate an understanding of the interconnections of biological, earth/space and physical science concepts.

The Cell and Molecular Basis for Heredity

SC.9.4.2 analyze and explain the principles of genetics (e.g., monohybrid and dihybrid crosses, mutations, genotypes, phenotypes, X and Y chromosomes, multiple alleles, DNA, probability, diversity).

SC.9.4.3 illustrate meiosis and mitosis and relate to chromosome number and production of sperm, egg and body cells.

The Interdependence of Organisms

SC.9.4.4 mathematically illustrate changes in populations of organisms.

SC.9.4.5 identify and describe microscopic organisms and foreign substances in the environment and their harmful effects (e.g., microorganisms, mutagens, carcinogens).

SC.9.4.6 design an environment that demonstrates the interdependence of plants and animals (e.g., energy and chemical cycles, adaptations of structures and behaviors).

Matter, Energy, and Organization in Living Systems

SC.9.4.7 explain how excretory, digestive systems work together in the human body.

SC.9.4.8 identify and compare the structure and function of cell, tissues and systems of different organisms.

SC.9.4.9 identify the organisms and the chemical processes involved in the decay of materials.

SC.9.4.10 trace the transfer of matter and energy in the chemical/molecular processes of photosynthesis, respiration and fermentation.

Structure and Properties of Matter

SC.9.4.11 using the element's position on the Periodic Table, predict physical and chemical properties.

SC.9.4.12 describe the characteristics of radioactivity substances including alpha particles, beta particles and gamma rays; the half life of a radioactive isotope; a chain reaction; and differentiate between fission and fusion.

SC.9.4.13 investigate the relationship between the density of an object, its mass, and its volume.

SC.9.4.14 investigate physical states of matter including descriptions of the behavior of atoms and molecules in terms of the Kinetic Molecular Theory.

Chemical Reaction

- SC.9.4.15 write formulas and name compounds given oxidation numbers of monatomic and polyatomic ions.
- SC.9.4.16 identify the various types of chemical bonds and the resulting compounds that are formed (e.g., ionic, nonpolar covalent, polar covalent).
- SC.9.4.17 experimentally determine the products of chemical reactions; write balanced chemical equations; classify type of reaction; and describe energy changes.

Energy

- SC.9.4.18 identify, describe and differentiate various forms of energy and energy transformations.
- SC.9.4.19 relate absorption and dissipation of heat to the composition of a material.
- SC.9.4.20 demonstrate and diagram a magnetic field using bar magnets.
- SC.9.4.21 hypothesize and experiment when different components are substituted in an electrical circuit; define and solve electrical problems involving potential difference, Ohm's Law and power.

Motions and Forces

- SC.9.4.22 relate the forces between charged objects to the charge on the objects and the distance between them.
- SC.9.4.23 review foundational concepts of kinematics (e.g., speed-distance-time relationships, graphs) and dynamics (e.g., Newton's Laws, simple machines).
- SC.9.4.24 experiment with a pendulum to determine which variables (amplitude, mass, length) will affect the motion of the pendulum.
- SC.9.4.25 investigate types of waves and their properties including interference, diffraction, refraction, resonance; differences and similarities between transverse and longitudinal waves; wave equation to determine the relationships among speed, wavelength and frequency.

Energy in the Earth System

- SC.9.4.26 investigate formation and destruction of landforms.
- SC.9.4.27 demonstrate the relationships of temperature, air pressure, wind speed, wind direction and humidity as elements of weather.
- SC.9.4.28 compare and analyze the characteristics of oceans, including their lateral and vertical motions.

Geochemical Cycles

- SC.9.4.29 employ a variety of tests to identify common rock-forming minerals.
- SC.9.4.30 analyze and describe common rock samples using grain size and shape, and mineral composition.
- SC.9.4.31 use models to describe interactive cycles such as the water, the nitrogen and the carbon dioxide cycles.

Origin and Changes in the Earth Systems and Universe

- SC.9.4.32 examine how scientists use seismographic evidence in determining structure and composition of the Earth's interior.
- SC.9.4.33 determine the relative age of materials using time-stratigraphic and bio-stratigraphic relationships.
- SC.9.4.34 estimate the absolute age of materials using existing radio isotopic data.
- SC.9.4.35 describe the effects of the movement of subsurface water.
- SC.9.4.36 relate changes in the Earth's surface to the motion of lithospheric plates.
- SC.9.4.37 summarize and discuss the evidentiary basis for the Theory of Plate Tectonics.
- SC.9.4.38 research and describe the life cycles of various stellar types.
- SC.9.4.39 interpret topographic maps, weather maps and charts, and astronomical models such as solar systems, galaxies, constellations, stellar types and stellar evolution.

Performance Descriptors (SC.PD.9.4)■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science subject**

matter/concepts. Students demonstrate knowledge, applications and interconnections of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Interdependence of Organisms
- Matter, Energy, and Organization in Living Things
- Structures and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Changes in the Earth Systems and Universe

Students analyze interconnections among the above categories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Interdependence of Organisms
- Matter, Energy, and Organization in Living Things
- Structures and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Changes in the Earth Systems and Universe

Students generate and explain interconnections among the above categories.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science subject matter/concepts**. Students demonstrate knowledge of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Interdependence of Organisms
- Matter, Energy, and Organization in Living Things
- Structures and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Changes in the Earth Systems and Universe

Students draw conclusions about interconnections among the above categories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science subject matter/concepts**. Performance needs further development. Students demonstrate limited knowledge of some of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Interdependence of Organisms

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- Matter, Energy, and Organization in Living Things
- Structures and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Changes in the Earth Systems and Universe

Students identify interconnections among the above categories.

■ Novice

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science subject matter/concepts**. Performance needs considerable development. Students demonstrate incomplete knowledge of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Interdependence of Organisms
- Matter, Energy, and Organization in Living Things
- Structures and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Changes in the Earth Systems and Universe

Students seldom identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.9.5.1 identify the scientific concepts underlying simple technological innovations.
- SC.9.5.2 cite examples of the interdependence of science and technology (e.g., new technologies have lead to development of new scientific knowledge).
- SC.9.5.3 apply scientific skills and technological tools to design a solution that addresses a personal or societal need.
- SC.9.5.4 analyze the consequences of imposed constraints on an engineering solution.

Performance Descriptors (SC.PD.9.5)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **scientific design and application**. Students develop proposed alterations in natural and designed systems and evaluate consequences of these changes.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **scientific design and**

application. Students analyze multiple effects of an alteration to a component of natural and designed systems.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **scientific design and application**. Students describe the consequences of alterations to natural and designed systems.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **scientific design and application**. Performance needs further development. Students identify alterations that have occurred in natural and designed systems.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **scientific design and application**. Performance needs considerable development. Students list natural and designed systems.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.9.6.1 research uses and values of natural resources.
- SC.9.6.2 research current environmental issues (e.g., effects of pollution, solid waste management, local, national, and global issues).
- SC.9.6.3 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- SC.9.6.4 explore occupational opportunities in science and technology including the academic preparation necessary.
- SC.9.6.5 engage in decision making activities and actions to resolve science-technology-society issues.

Performance Descriptors (SC.PD.9.6)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students evaluate public policy decisions affecting health practices, population changes, resource utilization and environmental practices from the multiple perspectives.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students describe how public policy decisions impact health practices, population changes, resource utilization and environmental practices.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science in personal and social perspectives**. Students identify public policy decisions that impact health practices, population changes, resource utilization and environmental practices.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science in personal and social perspectives**. Performance needs further development. Students identify a policy decision that has impacted health practices, population changes, resource utilization or environmental practices.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science in personal and social perspectives**. Performance needs considerable development. Students state that a health practice, population change, resource utilization or environmental practice may be affected by outside causes.

Tenth Grade Science Content Standards and Objectives

The Coordinated and Thematic Science (CATS) Ten objectives conclude the development of foundational knowledge of biology, chemistry, physics, and the earth and space sciences. Through the spiraling, inquiry-based program of study, all students will demonstrate scientific literacy across these major fields of science. The subject matter is delivered through a coordinated, integrated approach with an emphasis on the development of the major science themes of systems, changes, and models. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50 percent of the instructional time to develop conceptual understanding and research laboratory skills. Safety instruction is integrated in all activities. Building on the knowledge and skills acquired in CATS Nine, students in CATS Ten will expand their depth of understanding of major concepts such as energy transformation qualifications; cellular biology; molecular genetics; embryology; physical, chemical and nuclear changes; fossils and environmental concerns. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolution of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- SC.10.1.1 formulate scientific explanations based on historical observations and experimental evidence, accounting for variability in experimental results.
- SC.10.1.2 recognize that science has practical and theoretical limitations.
- SC.10.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- SC.10.1.4 conclude that science is a blend of creativity, logic and mathematics.

SC.10.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.

Performance Descriptors (SC.PD.10.1)

- **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students evaluate the development in scientific knowledge and changes in society as a whole and how the specific change affects daily life.

- **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **history and the nature of science**. Students explain how technological and societal advancements affect the progression of scientific thought.

- **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **history and the nature of science**. Students identify major events and the work of major contributors in the development of a scientific thought.

- **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **history and the nature of science**. Performance needs further development. Students describe the components of a scientific explanation (e.g., students should cite several models of the atom leading to the current theory).

- **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **history and the nature of science**. Performance needs considerable development. Students state that scientific models, theories and ideas have changed over time.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- SC.10.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- SC.10.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- SC.10.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- SC.10.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- SC.10.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- SC.10.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and present and communicate conclusions.

- SC.10.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, and applying).
- SC.10.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Performance Descriptors (SC.PD.10.2)

■ Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science as inquiry**. Students design and conduct investigations, collect data, graph trends in the data, identify central tendency and variance and explain the experimental results within the context of scientific theory. Investigations will be evaluated for safety and ethics.

■ Above Mastery

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science as inquiry**. Students conduct investigations, collect data, graph the data and use the experimental evidence to draw conclusions. Investigations will be performed in a safe and ethical manner.

■ Mastery

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science as inquiry**. Students conduct investigations, collect data, represent the data in appropriate graphical form. Investigations will be performed in a safe and ethical manner.

■ Partial Mastery

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science as inquiry**. Performance needs further development. Students conduct safe and ethical investigations from a stepwise set of laboratory instructions. Data collected will be accurately recorded.

■ Novice

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science as inquiry**. Performance needs considerable development. Students participate in investigations in a safe manner and collect data.

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models, and explanation; constancy, change, and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze, and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- SC.10.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- SC.10.3.2 apply evidence from models to make predictions about interactions and changes in systems.

- SC.10.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- SC.10.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Performance Descriptors (SC.PD.10.3)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students model changes in data using a variety of graphical and mathematical techniques. Students interpolate and extrapolate beyond observed data to make predictions.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **unifying themes of science**. Students interpret a variety of graphical representations to predict changes in data including the relationship between independent and dependent variables.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **unifying themes of science**. Students accurately draw a line graph to represent a simple set of collected data.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **unifying themes of science**. Performance needs further development. Students identify some differences in graphs of different data sets.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **unifying themes of science**. Performance needs considerable development. Students demonstrate that graphs can represent collected data.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

- SC.10.4.1 demonstrate an understanding of the interconnections of biological, earth and space and physical science concepts.

The Cell and Molecular Basis for Heredity

- SC.10.4.2 identify and explain the structure and function of cell organelles (e.g., Golgi bodies, endoplasmic reticulum, mitochondria, chloroplasts, ribosomes, lysosomes, vacuoles).
- SC.10.4.3 compare the variations in cells, tissues and organs of different organisms (e.g., endocrine, nervous, digestion and immune systems).
- SC.10.4.4 identify mechanisms for the movement of materials into and out of cells (e.g., active and passive transport, endo- and exocytosis).
- SC.10.4.5 explore the discovery of DNA and its structure by constructing a model to demonstrate the nucleotide bonding and the double helix structure.
- SC.10.4.6 relate the role of DNA analysis to genetic disorders, forensic science, molecular genetics, and biotechnology (e.g., protein synthesis, heredity, cell division, cellular functions).

SC.10.4.7 review principles of genetics (e.g., number of chromosomes, mutations, crossover, Punnett squares, linkage).

Evolution and Interdependence of Organisms

SC.10.4.8 compare the embryonic development of invertebrate and vertebrate animals (e.g., ontogeny and phylogeny, diversity, taxonomy).

SC.10.4.9 construct and manipulate models which show variations in living things.

SC.10.4.10 recognize that fossil records provide a scientific explanation for variation in the species and common ancestors.

SC.10.4.11 relate the role of natural selection to the development, diversity and or extinction of a species.

Matter, Energy, and Organization in Living Systems

SC.10.4.12 construct diagrams showing energy flow and cycles of matter between chemical and biological systems including photosynthesis, stored chemical energy, decomposition, carbon and nitrogen cycles.

SC.10.4.13 explain how the nervous, endocrine and immune systems work together in the human body.

SC.10.4.14 review the needs of growing plants and the environments supplying those needs.

SC.10.4.15 review factors that affect succession, populations and communities (e.g., use maps, graphs, charts, tables).

SC.10.4.16 trace matter and energy flow through the respiration process (e.g., ATP, carbon, oxygen, water).

Structure and Properties of Matter

SC.10.4.17 investigate the properties of solutions including density, conductivity, solubility, concentration, pH and colligative properties.

Chemical Reaction

SC.10.4.18 differentiate among physical, chemical and nuclear changes and reactions.

Energy

SC.10.4.19 investigate the relationships among temperature, pressure and volume in gases and interpret graphs that depict these relationships (e.g., Charles' Law, Boyle's Law, Gay-Lussac's Law).

SC.10.4.20 investigate and measure changes in thermal energy in physical and chemical changes.

SC.10.4.21 compare and contrast the characteristics and uses of waves in various parts of the electromagnetic spectrum; calculate the frequency of a particular wavelength.

SC.10.4.22 summarize the relationship between frequency and speed (e.g., Doppler effect).

SC.10.4.23 qualitatively explain the relationship between electricity and magnetism and describe how electrical components of a circuit function.

SC.10.4.24 qualitatively and quantitatively describe the conservation of energy (e.g., thermal, chemical, mechanical).

Motions and Forces

SC.10.4.25 apply Newton's Laws of Motion to depict the relationship among rate, force, momentum, work, and time using kinematics graph and mathematical models.

SC.10.4.26 describe and quantify how machines can provide mechanical advantages.

SC.10.4.27 determine the effect of different forces on vibrating systems (e.g., pendulums, springs).

SC.10.4.28 demonstrate qualitative and quantitative understanding of pressure in various systems (e.g., water pipes, circuits, blood vessels).

Energy in the Earth System

SC.10.4.29 relate the characteristics and behavior of mechanical waves to earth processes (e.g., explain the formation of water waves as a function of wind velocity, duration, and fetch).

SC.10.4.30 relate the cause of tides to their height and frequency.

SC.10.4.31 investigate effects of geological events on weather and climate (e.g., ocean currents and atmospheric conditions).

SC.10.4.32 observe and describe the effects of water on the earth's surface (e.g., changes in particle size, slope, velocity).

SC.10.4.33 relate Earth's electromagnetic field to the dynamics of the magnetosphere.

SC.10.4.34 discuss theories for the causes of plate tectonics.

Geochemical Cycles

SC.10.4.35 discuss physical and chemical relationships between minerals in rock cycle.

Origin and Evolution in the Earth Systems and Universe

SC.10.4.36 investigate fossils as evidence for evolution and indicators of paleo-environments.

SC.10.4.37 compare and contrast morphological features of fossils to present-day organisms.

SC.10.4.38 use fossil evidence to estimate the relative and absolute ages of rock layers.

SC.10.4.39 compare and contrast the characteristics of Earth and the other planets relative to their distance from the Sun.

SC.10.4.40 interpret apparent motion of constellations and their relationship to the rotation of the earth.

Performance Descriptors (SC.PD.10.4)

■ **Distinguished**

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge, applications and interconnections of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Evolution and Interdependence of Organisms
- Matter, Energy, and Organization in Living Systems
- Structure and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Evolution in the Earth Systems and Universe

Students analyze interconnections among the above categories.

■ **Above Mastery**

The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science subject matter/concepts**. Students demonstrate knowledge and applications of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Evolution and Interdependence of Organisms
- Matter, Energy, and Organization in Living Systems
- Structure and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Evolution in the Earth Systems and Universe

Students generate and explain interconnections among the above categories.

■ **Mastery**

The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science subject matter/concepts**. Students demonstrate knowledge of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Evolution and Interdependence of Organisms
- Matter, Energy, and Organization in Living Systems
- Structure and Properties of Matter

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- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Evolution in the Earth Systems and Universe

Students draw conclusions about interconnections among the above categories.

■ **Partial Mastery**

The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science subject matter/concepts**. Performance needs further development. Students demonstrate limited knowledge of some of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Evolution and Interdependence of Organisms
- Matter, Energy, and Organization in Living Systems
- Structure and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Evolution in the Earth Systems and Universe

Students identify interconnections among the above categories.

■ **Novice**

The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science subject matter/concepts**. Performance needs considerable development. Students demonstrate incomplete knowledge of the objectives in Standard 4 in the following categories:

- The Cell and Molecular Basis for Heredity
- Evolution and Interdependence of Organisms
- Matter, Energy, and Organization in Living Systems
- Structure and Properties of Matter
- Chemical Reaction
- Energy
- Motions and Forces
- Energy in the Earth System
- Geochemical Cycles
- Origin and Evolution in the Earth Systems and Universe

Students seldom identify interconnections among the above categories.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- SC.10.5.1 investigate and analyze the interdependence of science and technology.
- SC.10.5.2 research and design solutions to a personal or a societal problem created by technology.
- SC.10.5.3 compare and test modifications to an engineering design.

SC.10.5.4 utilize technology to communicate designs, results and conclusions.

Performance Descriptors (SC.PD.10.5)

- **Distinguished**
The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **scientific design and application**. Students suggest improvements to structural components of a life, Earth or physical design and indicate how these changes affect the overall function.
- **Above Mastery**
The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **scientific design and application**. Students analyze how physical and chemical properties of structural components of a life, Earth or physical system affect the function of the system as a whole.
- **Mastery**
The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **scientific design and application**. Students describe relationships between the structure and function of designs in life, Earth and physical systems.
- **Partial Mastery**
The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **scientific design and application**. Performance needs further development. Students identify relationships between the structure and function of designs in life, Earth and physical systems.
- **Novice**
The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **scientific design and application**. Performance needs considerable development. Students name some functional parts of a structure.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- SC.10.6.1 investigate the effects of natural phenomena on the habitat and habitat change.
- SC.10.6.2 research current environmental issues (e.g., depletion of fossil fuels, global warming, destruction of rainforest pollution).
- SC.10.6.3 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- SC.10.6.4 explore occupational opportunities in science and technology including the academic preparation necessary.
- SC.10.6.5 engage in decision making activities and actions to resolve science-technology-society issues.

Performance Descriptors (SC.PD.10.6)

- **Distinguished**
The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students predict the future societal impact of innovations in health practices, population changes, resource utilization and environmental practices.
- **Above Mastery**
The student demonstrates competent and proficient performance and shows a thorough and effective application of knowledge and skills that exceeds the standard in **science in personal and social perspectives**. Students use a variety of perspectives to analyze the societal impact of historical innovations in health practices, population changes, resource utilization and environmental practices.
- **Mastery**
The student demonstrates fundamental course or grade level knowledge and skills by showing consistent and accurate academic performance that meets the standard in **science in personal and social perspectives**. Students describe the societal impact of historical innovations in health practices, population changes, resource utilization and environmental practices.
- **Partial Mastery**
The student demonstrates basic but inconsistent performance of fundamental knowledge and skills characterized by errors and/or omissions in **science in personal and social perspectives**. Performance needs further development. Students identify some changes in health practices, population changes, resource availability and environmental practices that have had an impact on society.
- **Novice**
The student demonstrates substantial need for the development of fundamental knowledge and skills, characterized by fragmented and incomplete performance in **science in personal and social perspectives**. Performance needs considerable development. Students list some health practices, population changes, resource utilizations and environmental practices.

Eleventh and Twelfth Grade Science Content Standards and Objectives

Advanced Biology (11/12) Content Standards and Objectives

This is an advanced level course designed for students who have completed Coordinated and Thematic Science (CATS) 10 and desire a broader, in-depth study of the content found in many biological fields of endeavor. This course is designed to build upon and extend the Biology concepts, skills and knowledge from the CATS 7-10 program. Students interested in health and scientific related careers will build and expand their laboratory skills and experiences. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;

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- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- AB.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- AB.1.2 recognize that science has practical and theoretical limitations.
- AB.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- AB.1.4 conclude that science is a blend of creativity, logic and mathematics.
- AB.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- AB.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- AB.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- AB.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- AB.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- AB.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- AB.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- AB.2.6 use computers and other electronic technologies (e.g., computer, CBL, probe interfaces, laser discs) to collect, analyze and/or report data, interact with simulations, and conduct research.
- AB.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, applying).
- AB.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models, and explanation; constancy, change, and measurement; equilibrium and evolution; form and function);

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- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- AB.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- AB.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- AB.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- AB.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Chemical Foundations

- AB.4.1 review foundational chemical concepts including atomic structure, bonding, chemical reactions, water and pH as they relate to living systems.
- AB.4.2 investigate the molecules of life and their function in the living systems.

Cell Function and Genetics

- AB.4.3 identify the structure, functions, and interactions of eukaryotic cell organelles and their products.
- AB.4.4 analyze the chemistry and structure of the cell membrane as it relates to import and export of molecules necessary for life, exploring osmosis, diffusion, active and passive transport and dialysis.
- AB.4.5 research the diversity/uniqueness of cell types (compare differences in prokaryotic/eukaryotic, plant/animal cells; explore nerve cells, blood cells, gametes, etc.).
- AB.4.6 explore capture and release of energy as demonstrated by photosynthesis, cellular respiration, fermentation, and the role of coenzymes and vitamins.
- AB.4.7 investigate and discuss homeostasis.
- AB.4.8 recognize and describe the phases of eukaryotic and prokaryotic cell cycles.
- AB.4.9 identify the stages of mitotic and meiotic eukaryotic cell division and explain significance of the stages.
- AB.4.10 investigate and discuss DNA as the agent of heredity.
- AB.4.11 investigate and discuss the importance of replication and mutation in the diversity of life.
- AB.4.12 evaluate the advantages of asexual and sexual reproduction.
- AB.4.13 identify Mendel's 1st Law and 2nd Law of Genetics and apply these laws to predict phenotypic and genotypic ratios from mono and dihybrid crosses.
- AB.4.14 explore basic phenotypic and genotypic genetics beyond Mendel including such things as incomplete dominance, gene interaction, codominance, multi-alleles, crossing over, genetic recombination; and influences of environment, development, sex and age.
- AB.4.15 identify the function of DNA in replication and transfer of the genetic code.

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- AB.4.16 identify the function of the RNAs; messenger, transfer and ribosomal in the transcription and translation process of protein formation.
- AB.4.17 recognize that differentiation is regulated through the expression of different genes.
- AB.4.18 discuss the regulatory process in controlling gene function.
- AB.4.19 introduce genetic engineering through current DNA technology practices and the social issues that it raises.
- AB.4.20 discuss gene mutations.

Evolution

- AB.4.21 discuss evidence of evolution and natural selection, including examples such as peppered moth, fossil records, biogeography, molecular biology and comparative anatomy.
- AB.4.22 investigate and discuss that behavioral response is a set of actions determined in part by heredity and in part from experience.
- AB.4.23 research pioneers and current authors of evolutionary ideas.

Classification of Organisms

- AB.4.24 present overview of the taxonomy and systematics of living organisms comparing DNA as the modern basis of classification to older methods based on morphology.
- AB.4.25 discuss reasons why viruses are not included in the modern classification system.

Human Systems

- AB.4.26 explore the various systems of the human organism and their interactions.

Environment and Ecosystems

- AB.4.27 investigate and discuss responses of organisms to internal and environmental stimuli.
- AB.4.28 investigate and discuss that extinction of a species occurs when the environment changes and the adaptive characteristics of a species are insufficient to allow its survival.
- AB.4.29 investigate and discuss ecology as the interaction of living organisms and their nonliving environment.
- AB.4.30 trace the energy flow through an ecosystem.
- AB.4.31 investigate and discuss that the number of organisms any environment can support depends on the resources available.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- AB.5.1 summarize technological advances in the biological sciences.
- AB.5.2 investigate and analyze the interdependence of science and technology.
- AB.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- AB.5.4 describe the scientific concepts underlying technological innovations.
- AB.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data, and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;

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- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- AB.6.1 investigate and discuss the impact that humans may have on the quality of the biosphere such as depletion of the rainforest, pollution of estuaries, strip mining, depletion of fossil fuels and deterioration of ozone layer.
- AB.6.2 investigate the effects of natural phenomena on the environment (e.g., oceanographic, meteorologic).
- AB.6.3 research current environmental issues (e.g., depletion of fossil fuels, global warming, destruction of rainforest pollution).
- AB.6.4 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- AB.6.5 explore occupational opportunities in science and technology including the academic preparation necessary.
- AB.6.6 engage in decision making activities and actions to resolve science-technology-society issues.

Biology - Technical Conceptual (11/12) Content Standards and Objectives

This is an advanced level course designed for students who have completed Coordinated and Thematic Science (CATS) 10 and who are interested in the field of technical biology with the scientific knowledge and opportunities to develop the inquiry, problem solving and decision making abilities necessary for their future vocation. Biology - Technical Conceptual (11/12) is an alternative to Advanced Biology (11/12) and is designed to prepare students for technical careers. The course will provide an in-depth study in the chemical nature of life, cellular functions, microbiology, ecology, biotechnology, zoology and botany with application emphasis. It builds on the fundamental concepts developed in CATS 7-10 in a rigorous and integrated manner. Students will engage in active inquiries, investigations, and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolution of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- BTC.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- BTC.1.2 recognize that science has practical and theoretical limitations.

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- BTC.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- BTC.1.4 conclude that science is a blend of creativity, logic and mathematics.
- BTC.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- BTC.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- BTC.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- BTC.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- BTC.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- BTC.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- BTC.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- BTC.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- BTC.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, applying).
- BTC.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

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- BTC.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- BTC.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- BTC.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- BTC.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Matter and Energy

- BTC.4.1 trace matter and energy transfers occurring during photosynthesis, cell respiration, and fermentation.
- BTC.4.2 explore material transport in and out of cells (e.g., diffusion and osmosis).
- BTC.4.3 investigate the nature of light in relation to energy transformation in photosynthesis.
- BTC.4.4 compare and describe the properties of sound waves and how they affect organisms (e.g., sound pollution, sonography, echolocation and animal vocalization).
- BTC.4.5 investigate how electric and magnetic forces affect life.

Chemical Foundations

- BTC.4.6 review of foundational chemical concepts including atomic structure, bonding, chemical reactions, water and pH as they relate to living systems.
- BTC.4.7 investigate the molecules of life and their function in the living systems.
- BTC.4.8 estimate molecular weight through the diffusion of biological stains.

Conservation and Human Impact on the Environment

- BTC.4.9 explain common problems related to conservation, use, supply and quality of water.
- BTC.4.10 investigate recycling in relation to human consumption of natural resources.
- BTC.4.11 describe landfills and sewage treatment facilities and how they work.
- BTC.4.12 investigate and analyze the impact that humans have on the quality of the biosphere (e.g., locally, regionally, and globally).
- BTC.4.13 use topographic maps and Geographic Information Systems (GIS) to investigate biological systems and patterns (e.g., land use).
- BTC.4.14 examine global change over time (e.g., climatic trends, fossil fuel depletion, global warming, ozone depletion).

Populations and Ecosystems

- BTC.4.15 investigate interspecific and intraspecific competition.
- BTC.4.16 apply sampling techniques to the study of ecosystems.
- BTC.4.17 investigate variations in ecosystem productivity.
- BTC.4.18 investigate population biology.
- BTC.4.19 investigate soil and soil organisms.
- BTC.4.20 explain the mechanics of composting.
- BTC.4.21 evaluate the effects of large scale use of fungicides and pesticides on the diversity of organisms.
- BTC.4.22 discuss and categorize chemical hazards and how they impact life. (e.g., flammable, reactive, poisons, corrosive).

Cell Function and Genetics

- BTC.4.23 review the structure and function of cell membranes.
 BTC.4.24 review DNA as it relates to mitosis, meiosis and protein synthesis.
 BTC.4.25 review basic genetics including incomplete dominance, gene interactions, co-dominance, multiple-alleles, crossing over, genetic recombinations, environmental influences, development, sex and age
 BTC.4.26 analyze karyotypes and pedigrees as diagnostic tools.
 BTC.4.27 research genetic engineering through current DNA technology and the social and ethical issues that it raises (e.g., bacterial production of human insulin, DNA, cloning, fingerprinting, etc.).
 BTC.4.28 analyze gene expression and embryonic development.

Plants

- BTC.4.29 compare and contrast hydrophytic, mesophytic and xerophytic plants.
 BTC.4.30 investigate the diversity of plants, their habitat, transport system, reproduction and life cycle.
 BTC.4.31 investigate methods of plant propagation (e.g., culturing techniques, hydroponics, cloning, grafting, vegetative propagation).
 BTC.4.32 research forest-management practices (e.g., clear cutting, selective cutting, pruning, fire ecology).
 BTC.4.33 research and evaluate the importance of cultivated and wild plants to human society, economics and the environment.

Animals

- BTC.4.34 investigate and analyze animal distribution.
 BTC.4.35 research variations in animal reproductive strategies.
 BTC.4.36 explain animal behavior.

Life Cycles of Organisms

- BTC.4.37 compare the characteristics, structures and life cycles of simple to complex organisms.

Application of Biotechnology Techniques

- BTC.4.38 apply techniques of biotechnology to phylogenetics, forensics, paleontology, and human genetics.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- BTC.5.1 summarize technological advances in the biological sciences.
 BTC.5.2 investigate and analyze the interdependence of science and technology.
 BTC.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
 BTC.5.4 describe the scientific concepts underlying technological innovations.
 BTC.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;

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- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- BTC.6.1 research current environmental issues pertaining to biology.
- BTC.6.2 describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge.
- BTC.6.3 explore occupational opportunities in science and technology including the academic preparation necessary.
- BTC.6.4 engage in decision making activities and actions to resolve science-technology-society issues.

Human Anatomy and Physiology (11/12) Content Standards and Objectives

This advanced course is designed for those students wanting a deeper understanding of the structure and function of the human body. The body will be viewed as a whole using anatomical terminology necessary to describe location. Focus will be at both micro and macro levels reviewing cellular functions, biochemical processes, tissue interactions, organ systems and the interaction of those systems as it relates to the human organism. Systems covered include integumentary, skeletal, muscular, respiratory, circulatory, digestive, excretory, reproductive immunological, nervous and endocrine. This course will be appropriate for college bound students as well as those choosing a health services career cluster. Students will engage in active inquiries, investigation, and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge,
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists, and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- HAP.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- HAP.1.2 recognize that science has practical and theoretical limitations.
- HAP.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- HAP.1.4 conclude that science is a blend of creativity, logic and mathematics.
- HAP.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.

- HAP.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- HAP.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- HAP.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- HAP.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- HAP.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- HAP.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- HAP.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- HAP.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, applying).
- HAP.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- HAP.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- HAP.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- HAP.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.

- HAP.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Frame of Reference for Anatomical Studies

- HAP.4.1 demonstrate knowledge of directional terminology necessary for anatomical location such as proximal, dorsal, medial, lateral, visceral, superficial and deep.

- HAP.4.2 explore current literature and research related to human anatomy and physiology.

Chemical Level of Organization

- HAP.4.3 review of foundational chemical concepts including atomic structure, bonding, chemical reactions, water and pH as they relate to living systems.

- HAP.4.4 trace the transfer of energy in chemical molecular processes in the human body (e.g., glycolysis, Krebs cycle, electron transport system).

Cellular /Tissue/System Levels of Organization

- HAP.4.5 identify the role of DNA in transcription and relate to types of RNA and protein synthesis.

- HAP.4.6 identify the structure, functions and interactions of eukaryotic cell organelles and their products.

- HAP.4.7 describe the organizational levels, interdependency and the interaction of cells, tissues, organs, organ systems.

- HAP.4.8 categorize, by structure and function, the various types of human tissue (e.g., muscle, epithelial, connective, nervous).

Systems Level of Organization

- HAP.4.9 relate the structure of the integumentary system to its function as a sensory organ, environmental barrier and temperature regulator.

- HAP.4.10 relate how bone tissue is important to the development of the human skeleton.

- HAP.4.11 investigate the structure and function of the skeletal system, including identification of bones, markings on bones and articulations.

- HAP.4.12 show the mechanism of muscle contraction on micro and macro levels.

- HAP.4.13 recognize the relationship between the skeletal, neural and muscular systems.

- HAP.4.14 research the musculature system including locations, origins, insertions, muscle groups and types of muscles.

- HAP.4.15 classify, describe and investigate the various types of neurons emphasizing structure and function.

- HAP.4.16 trace and describe a nervous impulse including a discussion of the sodium-potassium pump.

- HAP.4.17 locate, identify and discuss the structure and function of the parts of the central nervous system.

- HAP.4.18 illustrate the nerves and functions of the peripheral nervous system including the autonomic portions.

- HAP.4.19 apply the knowledge of the structure of the ear and eye to their function/dysfunction in relationship to environmental perception.

- HAP.4.20 discuss the specific role of enzymes and hormones to bodily functions.

- HAP.4.21 explore the endocrine system emphasizing glands, hormonal control and problems in hormone production.

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- HAP.4.22 investigate the male and female reproductive systems including identification of structures and their functions.
- HAP.4.23 relate the male and female reproductive systems to human growth and development.
- HAP.4.24 compare and contrast the purposes, processes and outcomes of cellular meiosis and mitosis.
- HAP.4.25 research the formation of gametes, fertilization and embryonic development.
- HAP.4.26 analyze the change in DNA activity and how it affects the control of protein synthesis and human inheritance.
- HAP.4.27 relate Mendel's laws of inheritance and DNA to genetic diseases such as sickle-cell anemia, chromosomal abnormalities, Tay-Sachs disease, Huntington's disease, etc.
- HAP.4.28 identify the cellular processes and the energy and nutritional requirements needed to maintain human metabolism.
- HAP.4.29 illustrate how transport mechanisms in cells, tissues and/or organs depend on osmosis and mixture gradients.
- HAP.4.30 examine the role of the digestive system in supplying nutrients (carbohydrates, proteins, lipids, vitamins, minerals, water).
- HAP.4.31 explain how structures of the respiratory system are significant to communication, gas exchange and cellular respiration.
- HAP.4.32 illustrate the structure of the circulatory and lymphatic systems and the function of blood to the role of transportation, cellular support and defense.
- HAP.4.33 investigate the composition of blood and compatibility of blood types.
- HAP.4.34 describe the relationship of the excretory system to other organs and systems.

Human Immune Systems and Health

- HAP.4.35 describe potential system failures in the human body due to genetic, nutritional, operational, disease, or environmental influences.
- HAP.4.36 investigate the immunological system emphasizing its role in defense of the human organism.
- HAP.4.37 investigate and research the causative factors, symptoms, prevention and treatment of diseases.
- HAP.4.38 identify disorders related to each major system.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- HAP.5.1 summarize technological advances in medicine and health.
- HAP.5.2 investigate and analyze the interdependence of science and technology.
- HAP.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- HAP.5.4 describe the scientific concepts underlying technological innovations.
- HAP.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;

- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- HAP.6.1 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- HAP.6.2 explore occupational opportunities in science and technology including the academic preparation necessary.
- HAP.6.3 engage in decision making activities and actions to resolve science-technology-society issues.

Advanced Chemistry (11/12) Content Standards and Objectives

An advanced level course designed for students who have completed Coordinated and Thematic Science Ten (CATS 10) and desire a broader, in-depth study of the content found in the science field of chemistry. *Advanced Chemistry* (Eleven/Twelve) is the advanced study of matter, its composition and its changes. This course is designed to build upon and extend the Chemistry concepts, skills and knowledge from the CATS 7-10 program. This course is designed to prepare a student for college chemistry, requiring a strong mathematical base. The relationship between chemistry concepts and mathematics will be emphasized. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolution of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- AC.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- AC.1.2 recognize that science has practical and theoretical limitations.
- AC.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- AC.1.4 conclude that science is a blend of creativity, logic and mathematics.
- AC.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- AC.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

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- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- AC.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- AC.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- AC.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- AC.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- AC.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- AC.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data, interact with simulations; conduct research; and to present and communicate conclusions.
- AC.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, applying).
- AC.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument.).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- AC.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- AC.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- AC.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- AC.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;

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- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Properties of Matter

- AC.4.1 review the classification of matter using the periodic table; the use the kinetic molecular theory to explain physical states of matter; physical and chemical properties; and physical and chemical changes.

Atomic Structure

- AC.4.2 review Bohr model of the atom and calculation of subatomic particles - protons, neutrons, and electrons.
- AC.4.3 research and evaluate the contributions of Dalton, Planck, Bohr, Einstein, and de Broglie, Heisenberg, and Schrodinger to the evolution of the atomic theory.
- AC.4.4 identify four types of electron clouds (s, p, d, f) and describe the quantum number (n, l, m, s) for electrons.
- AC.4.5 write electron configurations and associate electron configuration of elements with element location on periodic table.
- AC.4.6 write electron dot structures for representative elements.

Bonding

- AC.4.7 predict the formulas of ionic compounds and molecular compounds.
- AC.4.8 analyze the periodic table to predict trends in atomic size, ionic size, electronegativity, ionization energy and electron affinity.
- AC.4.9 using the periodic table, predict the type of bonding that occurs between atoms and differentiate among properties of ionic, covalent and metallic bonds.
- AC.4.10 construct models to explain the structure and geometry of organic and inorganic molecules and the lattice structures of crystals.
- AC.4.11 recognize simple organic functional groups and name simple organic compounds.

Stoichiometry

- AC.4.12 predict the products and write balanced equations for the general types of chemical reactions.
- AC.4.13 use dimensional analysis to perform unit conversions and to verify experimental calculations.
- AC.4.14 use the Avogadro constant to define the mole and to calculate molecular and molar mass as well as a molar volume.
- AC.4.15 perform calculations using the combined and ideal gas laws.
- AC.4.16 use molar mass to calculate the molarity of solutions, percentage composition, empirical formulas and formulas of hydrates.
- AC.4.17 experimentally determine the empirical formulas of hydrates.
- AC.4.18 perform stoichiometric calculations including mass-mass, mass-volume, volume-volume including problems to determine theoretical yield and to identify the limiting reactant.

Equilibrium

- AC.4.19 experimentally determine the factors that influence the rate of reaction.
- AC.4.20 apply LeChatelier's principle to explain the effect of changes in concentration, pressure, volume, and temperature on an equilibrium system.

Solution Chemistry

- AC.4.21 review colligative properties.
- AC.4.22 name and define acids and bases using Arrhenius, Bronsted-Lowry and Lewis definitions.
- AC.4.23 predict the products upon adding water to both acidic and basic anhydrides.
- AC.4.24 write and balance net ionic equations.
- AC.4.25 solve problems using the solubility product constants.
- AC.4.26 calculate the pH and/or pOH for various solutions and relate to the pH scale.

AC.4.27 conduct titrations and perform calculations for both acid-base and oxidation-reduction reactions.

Electrochemistry

AC.4.28 define oxidation and reduction in terms of electron transfer within reactions.

AC.4.29 construct electrolytic cells, write and balance the half-cell reactions and calculate cell voltage.

Reaction Dynamics

AC.4.30 calculate the enthalpy change in reactions using the heat of formation.

AC.4.31 evaluate the factors driving chemical reactions including enthalpy and entropy and their interrelationship.

Nuclear Chemistry

AC.4.32 write balanced nuclear equations and make predications using half-life values.

AC.4.33 list the biological effects of radiation and the units used to measure radiation.

AC.4.34 compare and contrast fusion and fission reactions.

AC.4.35 research the application of nuclear technology.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

AC.5.1 summarize technological advances in chemistry.

AC.5.2 investigate and analyze the interdependence of science and technology.

AC.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.

AC.5.4 describe the scientific concepts underlying technological innovations.

AC.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

AC.6.1 research current environmental issues pertaining to chemistry.

AC.6.2 describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge.

AC.6.3 explore occupational opportunities in science and technology including the academic preparation necessary.

AC.6.4 engage in decision making activities and actions to resolve science-technology-society issues.

Chemistry-Technical Conceptual (11/12) Content Standards and Objectives

An advanced level course designed for students who have completed Coordinated and Thematic Science Ten (CATS 10) and desire an alternative to a traditional college preparatory course emphasizes real life applications of chemical principles. Mathematical based problem solving is de-emphasized. Chemistry -Technical Conceptual is the study of matter, its composition and its changes. Emphasis is placed on the important role chemistry plays in a student's personal life, career opportunities, environment and society. Students will engage in active inquiries, investigations and hand-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- CTC.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- CTC.1.2 recognize that science has practical and theoretical limitations.
- CTC.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- CTC.1.4 conclude that science is a blend of creativity, logic and mathematics.
- CTC.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- CTC.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- CTC.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- CTC.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- CTC.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- CTC.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.

- CTC.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- CTC.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- CTC.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, and applying).
- CTC.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- CTC.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- CTC.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- CTC.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- CTC.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding, and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Properties of Matter

- CTC.4.1 review the classification of matter and the properties of metals and nonmetals.
- CTC.4.2 identify sources and uses of elements.
- CTC.4.3 use the kinetic molecular theory to explain physical states of matter.
- CTC.4.4 perform calculations using the gas laws.
- CTC.4.5 apply the principle of distillation to the separation of liquids (e.g., petroleum or water purification).

Atomic Structure

- CTC.4.6 review the parts of the atom.
 CTC.4.7 review the relationship of an element's group and period position with its properties.
 CTC.4.8 compare atomic and ionic electronic structures.

Bonding

- CTC.4.9 review formula writing and ionic and covalent bonding.
 CTC.4.10 recognize the impact of water's unusual physical properties.
 CTC.4.11 predict solute solubility based on molecular polarity.

Stoichiometry

- CTC.4.12 review balancing equations.
 CTC.4.13 use dimensional analysis to perform unit conversions and to verify experimental calculations.
 CTC.4.14 relate the mole concept to chemical formulas.
 CTC.4.15 use moles to measure chemical quantities.
 CTC.4.16 determine the percent composition by mass of the elements in a compound.
 CTC.4.17 make connections between resource conservation and the Law of Conservation of Matter.
 CTC.4.18 illustrate the concept of a limiting reagent.

Solution chemistry

- CTC.4.19 review solution properties (e.g., solubility, conductivity, density, pH and colligative).
 CTC.4.20 define solutions in terms of saturation.
 CTC.4.21 perform solutions concentration calculations (e.g., molarity, ppm).
 CTC.4.22 compare and contrast the properties of strong and weak acids and bases.
 CTC.4.23 perform an acid-base neutralization reaction.

Electrochemistry

- CTC.4.24 construct electrolytic cells to observe the reduction of ions into free metals and write the half reactions that occur.
 CTC.4.25 predict reactions of metals with aqueous solutions using the Metal Activity Series.

Reaction Dynamics

- CTC.4.26 review temperature and heat.
 CTC.4.27 measure the flow of energy into or out of chemical reactions.
 CTC.4.28 predict the effect of temperature and catalysts on reaction rates.
 CTC.4.29 apply LeChatelier's Principle in determining equilibrium.

Carbon and Petroleum

- CTC.4.30 draw and construct models for the first ten alkanes.
 CTC.4.31 relate the properties of organic compounds to their functional groups (e.g., alcohol and esters).
 CTC.4.32 demonstrate the formation of polymers from smaller molecules.
 CTC.4.33 compare and contrast the use of petroleum as either a source of energy or as a fundamental ingredient of synthetic materials.

Nuclear Chemistry

- CTC.4.34 review nuclear fusion and fission, isotopes and half-lives.
 CTC.4.35 compare the penetrating energies of nuclear radiation.
 CTC.4.36 balance simple nuclear equations.
 CTC.4.37 explain practical applications of nuclear technology (e.g., radioactive dating, radioisotopes in medicine).

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- CTC.5.1 summarize technological advances in chemistry.
- CTC.5.2 investigate and analyze the interdependence of science and technology.
- CTC.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- CTC.5.4 describe the scientific concepts underlying technological innovations.
- CTC.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- CTC.6.1 research current environmental issues pertaining to chemistry.
- CTC.6.2 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- CTC.6.3 explore occupational opportunities in science and technology including the academic preparation necessary.
- CTC.6.4 engage in decision making activities and actions to resolve science-technology-society issues.

Advanced Environmental Earth Science (11/12) Content Standards and Objectives

As responsible citizens on this planet, students must be able to recognize their role as caretakers of the earth in order to protect its fragile environment. This is possible only if students have a deep understanding of the earth and its processes. Advanced Environmental Earth Science (11/12) is designed for students who have completed Coordinated and Thematic Science Ten (CATS 10) and desire to build on the fundamentals of geology, oceanography, meteorology and astronomy developed in CATS 7-10 in a rigorous and integrated manner with the traditional disciplines of biology, chemistry and physics where appropriate. As stewards of the earth, an emphasis on environment should be included within the traditional earth science disciplines. Ecology, economics, politics and social considerations all combine to help students develop an understanding of how humans effect and are effected by their environment. Students will engage in active inquiries, investigations and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolvement of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- AES.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- AES.1.2 recognize that science has practical and theoretical limitations.
- AES.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- AES.1.4 conclude that science is a blend of creativity, logic and mathematics.
- AES.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- AES.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- AES.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- AES.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- AES.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- AES.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- AES.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- AES.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- AES.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, and applying).
- AES.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- AES.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- AES.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- AES.3.3 measure changes in systems using graph and equations relating these to rate, scale, patterns, trends and cycles.
- AES.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology and the earth and space sciences; and
- apply knowledge, understanding and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Dynamic Earth

- AES.4.1 review foundational earth science concepts including rocks and minerals, properties of waves, constructing and interpreting weather maps, surface features found on maps, climatic relationships to biomes, use of data gathering instruments, temperature-phase change relationships.
- AES.4.2 identify and describe the structure, origin, and evolution of the lithosphere, hydrosphere, atmosphere and biosphere.

Geology

- AES.4.3 identify components of the solid earth and the natural processes relating to its development.
- AES.4.4 list, identify, and sequence eras, epochs and periods in relation to earth history and geologic development.
- AES.4.5 utilize fossil evidence to estimate the relative and absolute ages of rock layers (time-stratigraphic and biostratigraphic).
- AES.4.6 estimate the absolute age of materials using existing radioisotopic data.
- AES.4.7 identify the type and composition of various minerals.
- AES.4.8 investigate and explain the processes of the rock cycle.
- AES.4.9 explain the relationship between pressure and temperature to the formation and reformation of rocks.
- AES.4.10 identify and describe agents and processes of degradation (e.g., weathering by gravity, wind, water, and ice).
- AES.4.11 identify and describe tectonic forces relating to internal energy production and convection currents.

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- AES.4.12 understand the cause and effect relationships of degradational and tectonic forces with respect to the dynamic earth and its surface (e.g., volcanoes, earthquakes).
AES.4.13 construct and/or interpret information on topographic maps.

Oceanography

- AES.4.14 identify and describe properties of our oceans (e.g., composition, physical features of the ocean floor, and life within the oceans).
AES.4.15 compare and contrast characteristics of the oceans, including their lateral and vertical motions.
AES.4.16 investigate the evolution of the ocean floor that results in the creation of new materials and features.
AES.4.17 investigate the stratification of the ocean (colligative properties and biological zonation).

Meteorology

- AES.4.18 investigate and explain, heat transfer in the atmosphere and its relationship to meteorological processes (e.g., pressure, winds, evaporation, condensation, and precipitation).
AES.4.19 predict the effects of ocean currents on climate.
AES.4.20 compare and contrast meteorological processes related to air masses, weather systems, and forecasting.
AES.4.21 examine global change over time (e.g., climatic trends, fossil fuel depletion, global warming, ozone depletion).

Astronomy

- AES.4.22 research theories concerning origins of the universe.
AES.4.23 apply Newton's Law of Universal Gravitation to the motion of celestial objects.
AES.4.24 investigate the solar system including origin theories, comparing and contrasting the planets, planetary motions, and other celestial bodies.
AES.4.25 investigate celestial bodies and their evolution.
AES.4.26 explain the relationships between location, navigation and time.
AES.4.27 compare ancient and modern methods and tools used to study astronomy.
AES.4.28 investigate the electromagnetic spectrum as related to observable phenomena in the universe.

Environment

- AES.4.29 describe the relationship between earth processes and natural disasters and draw conclusions concerning their human impact.
AES.4.30 explore the relationships between human consumption of natural resources and the stewardship responsibility for reclamations including disposal of hazardous and non-hazardous waste.
AES.4.31 investigate and describe in detail the physical and chemical properties of water.
AES.4.32 explain common problems related to the conservation, use, supply and the quality of water.
AES.4.33 explore the relationships between the extraction and use of natural resources and the impact on the environment.
AES.4.34 research alternative energy sources.
AES.4.35 understand the fragile nature of the Earth.
AES.4.36 research and explain how the political system influences environmental decisions.
AES.4.37 investigate which federal and state agencies have responsibility for environmental monitoring and actions.
AES.4.38 develop decision-making skills with respect to addressing environmental problems.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- AES.5.1 summarize technological advances in the earth sciences.
- AES.5.2 investigate and analyze the interdependence of science and technology.
- AES.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- AES.5.4 describe the scientific concepts underlying technological innovations.
- AES.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- AES.6.1 research and explain how the political system influences environmental decisions.
- AES.6.2 investigate the effects of natural phenomena on the environment (e.g., oceanographic, meteorologic).
- AES.6.3 research current environmental issues (e.g., depletion of fossil fuels, global warming, destruction of rainforest pollution).
- AES.6.4 describe the impact of cultural, technological and economic influences on the evolving nature of scientific thought and knowledge.
- AES.6.5 explore occupational opportunities in science and technology including the academic preparation necessary.
- AES.6.6 engage in decision making activities and actions to resolve science-technology-society issues.

Advanced Physics (11/12) Content Standards and Objectives

An advanced level course designed for students who have completed Coordinated and Thematic Science Ten (CATS 10) and desire a broader, in-depth study of the content found in the science field of physics. As a college preparatory course, *Advanced Physics* (Eleven/Twelve) is a laboratory driven, advanced study of nature's universal laws with emphasis on process skills. This course is designed to build upon and extend the Physics concepts, skills, and knowledge from the CATS 7-10 program. The course emphasizes a mathematical approach to the areas of kinematics, dynamics, thermodynamics, light and optics, electricity and magnetism and modern physics. Students will engage in active inquiries, investigations, and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolution of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- AP.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- AP.1.2 recognize that science has practical and theoretical limitations.
- AP.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- AP.1.4 conclude that science is a blend of creativity, logic and mathematics.
- AP.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- AP.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- AP.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- AP.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- AP.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- AP.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- AP.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- AP.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- AP.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, and applying).
- AP.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order and organization; evidence, models and explanation; constancy, change and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- AP.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- AP.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- AP.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- AP.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding, and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology, and the earth and space sciences; and
- apply knowledge, understanding, and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Mechanics

- AP.4.1 review Newton's Laws of Motion.
- AP.4.2 using both given information and laboratory collected data, calculate velocity and acceleration along linear and circular paths.
- AP.4.3 solve multi-step problems involving velocity, acceleration and net force.
- AP.4.4 apply both graphical, algebraic, and trigonometric solutions to vector, problems involving two or more vectors; calculate both vector components and resultants including projectile motion in both one and two dimensions.
- AP.4.5 apply the concepts of potential and kinetic energy to final velocity of an object-independent of path; evaluate the conservation of energy and momentum in simple harmonic motion.
- AP.4.6 investigate and calculate the work, energy, power, mechanical advantage, and efficiency using simple machines involving linear and rotational motion.

Fluids

- AP.4.7 define fluids and determine the magnitude of buoyant force exerted on floating and submerged objects; explain why some objects float or sink.
- AP.4.8 relate the pressure exerted by a fluid to its depth; calculate the pressure exerted by a fluid.
- AP.4.9 examine the motion of a fluid; apply Bernoulli's equation to solve fluid problems; recognize the effects of Bernoulli's principle on fluid motion.
- AP.4.10 define the general properties of an ideal gas; apply the Ideal Gas Law to predict the properties of an ideal gas under different conditions.

Thermodynamics

- AP.4.11 distinguish between temperature and heat; relate these to kinetic energy and internal energy of matter; apply the principle of conservation of energy to calculate changes in potential, kinetic and internal energy.
- AP.4.12 investigate and apply concepts of specific heat, heat of fusion and vaporization to calculate phase changes of materials, and perform calculations using the specific heat equation; interpret phase diagrams.

Waves, Sound and Optics

- AP.4.13 investigate and apply the reflective, refractive and diffractive properties of waves to study mechanical and electromagnetic waves.
- AP.4.14 relate the wavelength, velocity and frequency of waves with the equation $\text{velocity} = \text{frequency} \times \text{wavelength}$ and use it to perform calculations.
- AP.4.15 analyze the properties of sound waves and perform appropriate calculations; relate the physical properties of sound waves to the way sound is perceived.
- AP.4.16 define Doppler shift and identify applications.
- AP.4.17 apply ray optics diagrams to lenses and mirrors, use the lens/mirror equation and the magnification equation to solve optics problems.
- AP.4.18 investigate and analyze optical applications in technology.

Electricity and Magnetism

- AP.4.19 measure and draw electrical and magnetic fields; describe applications of electrical and magnetic fields.
- AP.4.20 recognize the basic properties of electrical charge, charging by conduction and induction, and differentiate between conductors and insulators; calculate electrical force using Coulomb's law.
- AP.4.21 recognize that circuits are closed loops; define units of electrical measure.
- AP.4.22 construct and analyze electrical circuits and calculate Ohm's law problems for series, parallel and complex circuits including voltage drops; calculate power and energy in electrical systems.

Astronomy and Modern Physics

- AP.4.23 describe the orbital relationships within the solar system; apply Kepler's Laws to calculate orbital periods.
- AP.4.24 apply Newton's law of Universal Gravitation to derive relationships to calculate acceleration of gravity on other planets and orbital velocities.
- AP.4.25 research and evaluate evidence of the Big Bang model of the universe.
- AP.4.26 describe Einstein's special theory of relativity and its basic development through assumptions and logical consequences.
- AP.4.27 describe nuclear reactions and discuss applications of nuclear energy.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- AP.5.1 investigate, analyze, synthesize, and evaluate those devices in the home that were developed from the understanding of science and technology.
- AP.5.2 investigate and analyze the interdependence of science and technology.
- AP.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- AP.5.4 describe the scientific concepts underlying technological innovations.

- AP.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- AP.6.1 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- AP.6.2 explore occupational opportunities in science and technology including the academic preparation necessary.
- AP.6.3 engage in decision making activities and actions to resolve science-technology-society issues.

Physics-Technical Conceptual (11/12) Content Standards and Objectives

Physics-Technical Conceptual (11/12) is a course designed for students who have completed Coordinated and Thematic Science Ten (CATS 10) and desire an in-depth study in physics to prepare them for technical careers. This course is an alternative to the traditional mathematical approach to physics. Curriculum organization and delivery for Physics-Technical Conceptual may be addressed by either of two approaches.

- A thematic approach would cover the physics principles as applied to four energy systems: mechanical, fluid, thermal, and electrical that make up both simple and complex technological devices and equipment. This approach would emphasize the analogies in mechanical, fluid, thermal, and electrical systems. Incorporated in the instruction is the mathematics needed to understand and apply the principles.
- A topic approach would cover the physics principles in a traditional sequence with an emphasis on conceptual understanding. While mathematics is de-emphasized, laboratory work will require traditional physics measurements to be made. Emphasis will be on the concepts which underlie the natural laws of the universe.

Students will engage in active inquiries, investigations, and hands-on activities for a minimum of 50% of the instructional time to develop conceptual understanding and research/laboratory skills. Safety instruction is integrated into all activities. West Virginia teachers are responsible for analyzing the benefits of technology for learning and for integrating technology appropriately in the students' learning environment. See the related grade-level Technology Standards and Objectives.

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

- demonstrate an understanding of the history of science and the evolution of scientific knowledge;
- demonstrate an understanding of science as a human endeavor encompassing the contributions of diverse cultures and scientists; and
- demonstrate an understanding of the nature of science.

History and the Nature of Science Objectives

Students will:

- PTC.1.1 formulate scientific explanations based on the student's observational and experimental evidence, accounting for variability in experimental results.
- PTC.1.2 recognize that science has practical and theoretical limitations.
- PTC.1.3 recognize that science is based on a set of observations in a testable framework that demonstrate basic laws that are consistent.
- PTC.1.4 conclude that science is a blend of creativity, logic and mathematics.
- PTC.1.5 trace the development of key historical concepts and principles describing their impact on modern thought and life by identifying the scientist's contributions.
- PTC.1.6 integrate the history of science with cultural history to demonstrate that scientists work within their historical surroundings and are affected by them.

Standard 2: Science as Inquiry (SC.S.2)

Students will:

- demonstrate the abilities necessary to do scientific inquiry;
- demonstrate understanding about scientific inquiry; and
- demonstrate the ability to think and act as scientists

by engaging in active inquiries, investigations and hands-on activities a minimum of 50% of the instructional time.

Science as Inquiry Objectives

Students will:

- PTC.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, objectivity, openness, skepticism, appreciation, diligence, integrity, ethical practice, fairness, creativity).
- PTC.2.2 demonstrate ethical practices for science (e.g., established research protocol, accurate record keeping, replication of results and peer review).
- PTC.2.3 apply scientific approaches to seek solutions for personal and societal issues.
- PTC.2.4 properly and safely manipulate equipment, materials, chemicals, organisms and models.
- PTC.2.5 conduct explorations in a variety of environments (e.g., laboratories, museums, libraries, parks and other outdoors locations).
- PTC.2.6 use appropriate technology solutions (e.g., computer, CBL, probe interfaces, software) to measure and collect data; interpret data; analyze and/or report data; interact with simulations; conduct research; and to present and communicate conclusions.
- PTC.2.7 demonstrate science processes within a problem solving setting (e.g., observing, measuring, calculating, communicating, comparing, ordering, categorizing, classifying, relating, hypothesizing, predicting, inferring, considering alternatives, and applying).
- PTC.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations; communicate and defend a scientific argument).

Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the natural and designed world (e.g., systems, order, and organization; evidence, models, and explanation; constancy, change, and measurement; equilibrium and evolution; form and function);
- demonstrate the ability to identify, construct, test, analyze, and evaluate systems, models, and changes; and
- demonstrate the ability to draw conclusions about and predict changes in natural and designed systems.

Unifying Themes Objectives

Students will:

- PTC.3.1 analyze systems to understand the natural and designed world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.
- PTC.3.2 apply evidence from models to make predictions about interactions and changes in systems.
- PTC.3.3 measure changes in systems using graphs and equations relating these to rate, scale, patterns, trends and cycles.
- PTC.3.4 understand that different characteristics, properties or relationships within a system might change as its dimensions are increased or decreased (e.g., scale up, scale down).

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

- demonstrate knowledge, understanding, and applications of scientific facts, concepts, principles, theories, and models as delineated in the objectives;
- demonstrate an understanding of the interrelationships among physics, chemistry, biology, and the earth and space sciences; and
- apply knowledge, understanding, and skills of science subject matter/concepts to daily life experiences.

Science Subject Matter/Concepts Objectives

Students will:

Mechanics

- PTC.4.1 qualitatively and quantitatively analyze mechanical systems (e.g., force, work, rate, resistance, energy, power, force transformations).
- PTC.4.2 use both given information and lab collected data to calculate velocity and acceleration along linear and circular paths.
- PTC.4.3 draw free body diagrams to illustrate the forces acting on objects and perform simple calculations involving velocity, acceleration and net force; research the applications of force and acceleration in modern design and technology.
- PTC.4.4 apply graphical and algebraic solutions to vector problems.
- PTC.4.5 identify the relationship between potential energy and kinetic energy in gravitational and elastic potential/kinetic energy systems; recognize the conservation of energy in simple harmonic motion.
- PTC.4.6 calculate work, energy, power and efficiency in mechanical systems.
- PTC.4.7 construct models and/or working systems that show applications of technology to solve problems involving mechanical systems.

Fluids

- PTC.4.8 qualitatively and quantitatively analyze fluid systems (e.g., pressure, work, rate, resistance, energy, power, force transformations).
- PTC.4.9 identify and apply the properties of solids, liquids and gases to explain their behavior at different pressures and temperatures.
- PTC.4.10 identify and apply Bernoulli's principle to floating objects; identify the buoyant force acting on floating and submerged objects.

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- PTC.4.11 calculate the pressure of a solid object on a surface and the pressure exerted by a fluid at a given depth; relate the measure of pressure in kPa and/or in N/m^2 .
- PTC.4.12 construct models and/or working systems that show applications of technology to solve problems involving fluid systems.

Thermodynamics

- PTC.4.13 qualitatively and quantitatively analyze thermal systems (e.g., temperature, rate, resistance, energy).
- PTC.4.14 perform conversions between Fahrenheit, Celsius, and Kelvin temperature scales.
- PTC.4.15 define specific heat capacity; use the specific heat equation to calculate heat gained or lost during phase changes and heat lost when objects cool.
- PTC.4.16 investigate and analyze the different rates of heat transfer by different materials.
- PTC.4.17 construct models and/or working systems that show applications of technology to solve problems involving heat flow and heat exchange.

Waves, Sound and Optics

- PTC.4.18 investigate and apply the reflective, refractive and diffractive properties of waves to study mechanical and electromagnetic waves.
- PTC.4.19 use the relationship between wavelength, velocity and frequency to calculate the speed of waves; recognize that the speed of light is a constant.
- PTC.4.20 construct models and/or working systems that show applications of technology to solve problems involving energy transfer by wave motion.
- PTC.4.21 research and describe new developments in optical technology.

Electricity and Magnetism

- PTC.4.22 qualitatively and quantitatively analyze electrical systems (e.g., voltage, work, rate, resistance, energy, power, force transformations).
- PTC.4.23 investigate the nature of electrical and magnetic fields; recognize the basic properties of electrical charge and differentiate between conductors and insulators.
- PTC.4.24 draw and construct electrical circuits; apply Ohm's law to calculate voltage drops in series and parallel circuits.
- PTC.4.25 construct models and/or working systems that show applications of technology to solve problems involving use of electricity.

Modern Physics

- PTC.4.26 recognize and distinguish between Einstein's General and Special Theories of Relativity and research evidences to support these theories.
- PTC.4.27 recognize the products of nuclear decay and write decay chain equations.

Standard 5: Scientific Design and Application (SC.S.5)

Students will:

- demonstrate an understanding of the interdependence between science and technology;
- demonstrate the ability to distinguish between natural and man-made objects;
- demonstrate abilities of technological design; and
- demonstrate the ability to utilize technology to gather data and communicate designs, results and conclusions.

Scientific Design and Application Objectives

Students will:

- PTC.5.1 investigate, analyze, synthesize, and evaluate those devices in the home that were developed from the understanding of science and technology.
- PTC.5.2 investigate and analyze the interdependence of science and technology.
- PTC.5.3 apply scientific skills and technological tools to design solutions that address personal and societal needs.
- PTC.5.4 describe the scientific concepts underlying technological innovations.
- PTC.5.5 use appropriate technology solutions to measure and gather data; interpret data; analyze data; and to present and communicate conclusions.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- demonstrate the ability to evaluate the impact of different points of view on health, population, resource and environmental practices;
- predict the long-term societal impact of specific health, population, resource and environmental practices; and
- demonstrate an understanding of public policy decisions as related to health, population, resource and environmental issues.

Science in Personal and Social Perspectives Objectives

Students will:

- PTC.6.1 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.
- PTC.6.2 explore occupational opportunities in science and technology including the academic preparation necessary.
- PTC.6.3 engage in decision making activities and actions to resolve science-technology-society issues.

FISCAL NOTE WORKSHEET
(Submit 4 Copies)

HD NO _____ DRAFT NO _____ BILL NO _____ RESOLUTION NO _____

SUBJECT: Policy 2520.3 Science Content Standards and Objectives for WV Schools FUND _____

SOURCE OF REVENUE: ☐ GENERAL FUND ☐ SPECIAL ☐ OTHER (SPECIFY) _____

COST OF ESTIMATE BASED ON: ☐ AN ORIGINAL ESTIMATE ☐ BUDGET BILL ☐ OTHER (SPECIFY) _____

INCOME ESTIMATE BASED ON: ☐ AN ORIGINAL ESTIMATE ☐ BUDGET BILL ☐ OTHER (SPECIFY) _____

SHOW OVER-ALL EFFECT IN ITEMS 1 AND 2 & GIVE EXPLANATION OF BREAKDOWN BY FISCAL YEAR INCLUDING LONG-RANGE EFFECT

EFFECT OF PROPOSAL	ANNUAL		CURRENT	FISCAL YEAR	
	INCREASE	DECREASE		NEXT	THEREAFTER
1. ESTIMATED TOTAL COST	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
PERSONAL SERVICES CURRENT EXPENSES REPAIRS/ALTERATIONS EQUIPMENT OTHER	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
2. ESTIMATED TOTAL REVENUES	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0

3. EXPLANATION OF ABOVE ESTIMATES (INCLUDING LONG-RANGE EFFECT):

There will be no increase in costs due to this policy.

DATE

AGENCY

AUTHORIZED REPRESENTATIVE

February 20, 2003

West Virginia Department of Education

Daniel Stewart

POLICY 2520.3: Science Content Standards and Objectives for West Virginia Schools

COMMENT LOG

November 14, 2002 – January 10, 2003

Date	Individual/Organization	Comments	ACTION TYPE	
			No Response - Not Accepted	Negative + Positive o Neutral
SCIENCE				
Introduction to Science				
December 12, 2002	Dan Casto dancasto@hotmail.com	Suggested Response to Proposed Standards We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, we believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Scientific objectivity will lead to good science and religious neutrality. Furthermore, this complex and highly controversial subject should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations. Our concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade. Teaching students that they are a part of a "natural world" that is not designed is philosophy and not science. It is the philosophy of Naturalism. Naturalism is a belief that life emerges via purely unguided natural processes and not by design.		

Naturalism is the fundamental tenet of atheism, agnosticism and secular humanism while design is the fundamental tenet of theistic religion.

Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. The standards establish objectives that will lead to an understanding about "Evolution Only." Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. In this respect the standards are one sided and dogmatic. Their obvious objective is to promote a Naturalistic world view.

Origins science is the science which seeks to answer the questions "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidable impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. To promote critical thinking, scientific objectivity and religious neutrality, we suggest the following changes to the standards:

1. Revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations.

2. Revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teachings with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. [In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not designed for

		a purpose.] 3. Add explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. [Many provisions of the standards would seem to encourage this concept indirectly. However, this encouragement needs to be explicitly focused on origins science, because textbooks presently teach only naturalistic theories of origins and discourage criticisms of evolutionary theory. Furthermore, teachers have been penalized when they have attempted to teach this subject honestly and objectively.] 4. Add objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."]		John Arend, B.S. (Geology), M.S. (Science Education), M. Div. Public Information Services Director ICR JArend@icr.org	It has been brought to my attention that you are soliciting public comments in efforts to perfect the Science Standards for the West Virginia Public Schools hopefully through a focus on 'good science'. Although ICR is not based in West Virginia, I believe the information contained in the accompanying fax regarding the new legislation, H.R. # 1 applicable to Science Standards enacted by the U.S. Congress and signed into law by President Bush in early January of this year requires consideration and compliance. These ten articles are a select portion of the documentation provided in another more comprehensive assemblage of articles entitled "Public School (Let's Roll) Science Standards Packet Summary" that can also be provided at no

		charge (by snail mail) upon request.		
		I believe the key theme to understand with regard to the intent of this new law is contained in the Congressional Report, which accompanied President Bush's education initiative and stated: "Where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand the full range of scientific views that exist, why such topics may generate controversy, and how scientific discoveries can profoundly affect society." I look forward to being of possible further service to you at the West Virginia Department of Education (WVDE).		
December 12, 2002	Karl Priest Math Teacher (Kanawha County) 769-0217 Kcpriest@aol.com	I am presenting four separate suggestions for revision of the Science Standards currently up for public comment. Certainly the WVDE will agree that changes need to be made. The four separate comment categories I am submitting are numbered (in parenthesis) below. It is reasonable that some parts (or all) of suggestions (2) through (4) could be implemented into revisions of the Standards. I appreciate the efforts you are investing in this process. Please tell me two things. 1. What will be done with the comments? 2. How many people have made comments? See additional comments starting on page 39 of this section of the comments.		
December 17, 2002	Brian & Rebekah Jarrell Rt. 3 Box 81 Milton WV 25541	I am a parent with 4 children in the West Virginia Public school system. I resent the fact that policy 2520.3 deliberately is steering my children to accept and believe Darwinian evolution as a fact when it is only a theory. There was a time in our Nation when Intelligent Design & Creation by God was taught along side of Darwin's theory of evolution, in that time children had a choice, today it is a dictatorship where one theory is taught that has long ago been in doubt and in Question. Its time for a change and WV has been at the bottom of the list in the nation for way to long .Let change begin here first and for a change let the rest of the nation follow us, that's what America is all about.		

December 17, 2002	Ed Garrett treefarm@sat-co.net	I am a creationist, and recently had a conversation with the geologist and anticreationist Dr. Joe Meert, Assistant Professor in the geology dept. at the University of Florida. If you are considering science standards in West Virginia, it should be interesting to see what anticreationists consider "evidence against evolution." Dr. Meert would not admit the existence of any kind of evidence that indicated problems with evolution, but when I asked him about the "concept of progress in evolutionary biology" he said "there is no such thing as "progress in evolution". " He was quite emphatic about this. I asked him why, then, he expected the public to believe that simple, primitive forms of life progressed to man. He never addressed this question in any way, either to refute it or confirm it, although he sent me several emails afterward and I continued to ask for some kind of answer. He only tried to confuse the issue by raising irrelevant points. I can only conclude that scientists who are dedicated to the promotion of this "theory" are also dedicated to ignoring all evidence against it and trying to make sure the public never hears of any such evidence. Creating fair science standards will be difficult at best with the kind of confusion about "evidence against evolution" that will be thrown at you. If I can help let me know. I have other information that might be of interest. Whereas, children should be permitted to explore and therefore not fed all information as the only truth. And whereas the majority of parents believe in a higher power, and giving one side of the Evolution theory runs counter to our beliefs. Therefore, children in these stressful times need room to arrive at their own beliefs.		
December 17, 2002	Genny Davis gennyd@meer.net			
December 18, 2002	Carol Mitchell Smith, MACE, PhD. 5107 Jason Drive Cross Lanes, WV 25313 (304) 776-4147 mithchellsmith@charter.net	Policy 2520.3 is incomplete and needs to include teaching other theories besides evolution. Theories such as Intelligent Design must also be included. This way our students will learn to think critically and to compare and contrast among competing theories. Although teaching competing theories is challenging, and makes the picture "muddier" in some ways, it also teaches our children to see things in a more nuanced way, to consider opposing viewpoints and to learn to weigh the differences between theories. Please include other theories		

December 18, 2002	Robert Hunt 451-2207, Research Center, New Martinsville, WV 26155 rhunt@ovis.net	when teaching about the beginnings and development of our world; it will broaden our students' minds and teach them to think more rigorously about the world in which they live.		
December 19, 2002	John J. Rinehart 405 Division Street Shady Spring, WV 25918-8448 304-763-3567 jjrinehart@charterbn.com	I, Robert N Hunt, am a respected research scientist working for Bayer Corp. God gave me the brain to do my work. God created me and you and this world and I will testify so in Charleston if you would like. Policy 2520.3 appears to be one sided in the presentation of the origins of life. Please allow other views and theories to be explored by our children in school. Evolution is not fact but a theory. Why then is it the only theory being presented in the classroom? This is wrong! I can understand your not teaching creationism as the only way, but it should also be presented. There should not be such bias presented in the school rooms.		
December 19, 2002	Mason Meadows masonmeadows@yahoo.com	I am writing to comment on Policy 2520.3 -- WV State Science Standards which are currently open for comments. It appears regarding origins of life that children are only given the theory of evolution. I do not believe this is good for our children. I believe children should be encouraged to think for themselves and have other theories presented in the classroom. Please revise the Standards to reflect my concerns.		
December 20, 2002	Reid Clark 218 Spruce Lane Poca, WV 25159 reidclark@perrow.org	As a parent, I am writing to comment on Policy 2520.3. I believe children should be able to understand a full range of scientific views that exist regarding the origins of life in the classroom, including such theories as Intelligent Design. I also believe that any view as widely held as Creationism should be presented for study without bias. Freedom in our education system surely means that all viewpoints are studied or at least presented. I believe Policy 2520.3 should be amended to bring this about.		
December 20, 2002	Vida Curry Vidacurry634@cs.com	It seems that Policy 2520.3 promotes evolution as the only true science regarding origins of life. Evolution is only a theory. The scientific community disagrees regarding this theory. Any theory having any inherent value should be able to withstand critical examination. Children should have other views to be able to think critically. It seems educationally sound to revise the policy to reflect other views regarding origins of life.		
December 31, 2002	Willard Wynne 473 Nancy Jack Road Gerrardtown, WV 25420 wilard@ix.netcom.com	As a citizen of West Virginia I am concerned with the possibility that students in this state will be given a scientific background based only on the idea of evolution. I take great exception to this decision.		

		Who is qualified to make that decision that God had no hand in creation. I would love to know the name of the person who has made this definitive decision. Following is a preprinted presentation that a agree with and would hope you would take it into consideration when deciding what children should be taught. We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, we believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Scientific objectivity will lead to good science and religious neutrality. Furthermore, this complex and highly controversial subject should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations. Our concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade. Teaching students that they are a part of a "natural world" that is not designed is philosophy and not science. It is the philosophy of Naturalism. Naturalism is a belief that life emerges via purely unguided natural processes and not by design. Naturalism is the fundamental tenet of atheism, agnosticism and secular humanism while design is the fundamental tenet of theistic religion. Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body	

of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. The standards establish objectives that will lead to an understanding about "Evolution Only." Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. In this respect the standards are one sided and dogmatic. Their obvious objective is to promote a Naturalistic world view.

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3. Add explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why

		origins science may generate controversy. [Many provisions of the standards would seem to encourage this concept indirectly. However, this encouragement needs to be explicitly focused on origins science, because textbooks presently teach only naturalistic theories of origins and discourage criticisms of evolutionary theory. Furthermore, teachers have been penalized when they have attempted to teach this subject honestly and objectively.] 4. Add objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."] Statement of Purpose and Intent Regarding Origins of Life		
January 3, 2003	Kevin McCoy kmc coy@afo.net	"The West Virginia standards regarding origins of life are intended to ensure that students are taught and equipped to critically examine origins theories and to identify and distinguish between scientific fact, theory, and error. There is more scientific disagreement about Darwinian evolution than about other scientific theories. Therefore, students should know about evolution and why scientists today continue to investigate, critically analyze, and in some instances, reject aspects of evolutionary theory that nevertheless continue to be taught as undisputed fact in classrooms. Teachers should also have the academic freedom to teach about, and subject to the same rigorous examination, other origins theories such as the Design		

theory."

My reasoning for the necessity of adding this language is I believe this language will ensure students will be taught and equipped to critically examine origins theories and to identify and distinguish between scientific fact, theory, and error, in keeping with academic excellence and furtherance of a robust academic inquiry.

Failure or refusal by the Department to address these concerns would signal an attempt to block such academic discussion and would signal the Departments intent to select only from the body of knowledge of a particular segment which it proscribes for the sole reason that it is deemed to conflict with a particular scientific theory....Darwinian evolution.

Furthermore, it is our belief not to allow this language to be amended into Policy 2520.3 will send the message that teachers and students must steer clear and hold back from robust academic discussion of origins, lest sanctions be leveled. The end result would inevitability be schoolchildren being condemned from elementary to high school ages to stale and often outdated textbook presentations of the once reigning Darwinian orthodoxy.

Secondly, and in closing, I would appreciate if you would address the following questions as follows:

1.) Would you please give me your legal opinion on the constitutionality of other theories, including Intelligent Design being permitted in Policy Number 2520.3 - Science Standards?

2.) Are you of the opinion Policy 2520.3, as it is written now, allows for the discussion of

		other theories, including Intelligent Design in the school classroom? If so, would you please direct me to the section in Policy 2520.3 to support this? I also would like to know if you would support this concept?		
January 4, 2003	Linda Hoskins Kanawha County Charleston, WV roanaid@yahoo.com	Please revise the Science Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. This should be a part of the whole "science" that is taught.		
January 5, 2003	Sharon Newsome Corrinnacorrinna@aol.com	What is a theory? It is an opinion, an educated guess, but a guess nonetheless. Why then is evolution taught exclusively to our youth? If you must teach evolution in some form, teach it's alternative also, the biblical view of how our world was created. Let our youth decide for themselves which "theory" they wish to believe. Are we saying our youth are so ignorant, that they can handle only one explanation? Knowledge is learning to think for oneself. Provide the information and let our youth do some "critical thinking" on their own. I am sick of the anti-religious movement. They seem to ignore the very thing this country was founded on, God. Our forefathers didn't offer freedom from religion, but freedom OF religion. Look at how our morality has declined since they have taken prayer and the Ten Commandments out of the school! I. Our nation is in a sad state of affairs when they uphold immorality in all forms. Life is not sacred anymore. Every day we murder those without a voice, forgetting that the ones who are doing the murdering do not believe in the very oath that they take, the Hippocratic Oath. When we can teach evolution freely, but cannot mention God's creation, it is truly horrid. When God is to be taken off of our money and out of our Pledge of Allegiance, what a mockery. Let parent's voices be heard. Let this be some small gain towards getting order and decency back. Teach creation in schools, even if you must teach evolution along with it. At least our children will have a choice! I am a parent with two beautiful children in Pocahontas Elementary. I do not wish them to know only of the Big Bang THEORY!!!!!!!!!!!!!! Remember, we live in the United States of America! How God has blessed this country! We're! ed to uphold him, not only in our personal lives, but in our schools as well. It wasn't so long ago, that the bible was taught as a subject in our schools. Thank you for your time. Listen to the people, parents, but most of all, God.		

January 6 2003	Sue Grace s_grace@charter.net	Please add to the Standards explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. A thorough education in any field or subject demands all the information, pro and con, pertaining to said subject be examined. West Virginia's children deserve education as opposed to indoctrination.		
January 6, 2003	Jerry Davis wvsee@charter.net	1. We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Please change the Standards so children are not indoctrinated with evolutionism and add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. 2. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, I believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Please change the standards so evolutionism does not dominate the instruction on origin and diversity of life. 3. Scientific objectivity will lead to good science and religious neutrality. Origins is a complex and highly controversial subject and should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations. 4. My concern is that the proposed West Virginia standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. This is wrong. Please change the standards to eliminate that problem. 5. The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any		

particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade. This is wrong. Please change the standards to eliminate that problem.

6. Teaching students that they are a part of a "natural world" that is not designed is philosophy and not science. It is the philosophy of Naturalism. Naturalism is a belief that life emerges via purely unguided natural processes and not by design. Naturalism is the fundamental tenet of atheism, agnosticism and secular humanism while design is the fundamental tenet of theistic religion. This is wrong. Please change the standards to eliminate that problem.

7. Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. This is wrong. Please change the standards to eliminate that problem.

8. The standards establish objectives that will lead to an understanding about "Evolution Only." Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. In this respect the standards are one sided and dogmatic. Their obvious objective is to promote a Naturalistic world view. This is wrong. Please change the standards to eliminate that problem.

9. Origins science is the science which seeks to answer the questions "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidable impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and

		critically analyze the evidence which supports both the design and naturalistic hypotheses.	
		10. I suggest the standards be changed to promote critical thinking, scientific objectivity and religious neutrality regarding origins. 11. Please revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations. Also, please add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. 12. Please revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teachings with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. [In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not designed for a purpose.] 13. Please add to the Standards explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. 14. Please add to the Standards objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the	

		assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations." Also, please add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.		
January 6, 2003	Noel Wise 119 Christa Circle South Charleston, WV 25309 NFWise@msn.com	I am worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Please change the Standards so children are not indoctrinated with evolutionism and add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. Scientific objectivity will lead to good science and religious neutrality. Origins is a complex and highly controversial subject and should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations. Please revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teaching with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. (In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not designed for a purpose).		
January 6, 2003	Mike Carte MTCarte@aol.com	As the West Virginia Science Standards are currently being evaluated I would like to comment on instruction regarding origins. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, I believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Please change the standards so evolutionism does not dominate the instruction on origin and diversity of life.		
January 6, 2003	M. Monk MMonk@advancedspecialtycontractors.com	Science has not established via the scientific method or any accepted evidentiary basis that life is		

		not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. This is wrong. Please change the standards to eliminate that problem. It is hard to imagine that an intelligent, articulate, open-minded person could believe that we evolved from apes. Where is the evidence? If it has been going on for millions of years, why aren't there millions of "cross-species" fossils? Just a thought for the open-minded to ponder. Please don't let the school system continue to try to make monkeys of our children!		
January 6, 2003	Alice Click 233 Chestnut Rd. Mount Alto, WV 25264 Aliclick45@hotmail.com	My concern is that the proposed West Virginia Science Standards do not reflect objectivity in teaching objectives for origin science. Instead they seek to promote an "Evolution Only" or naturalistic worldview. I suggest the standards be changed to promote critical thinking and scientific objectivity. We should encourage students to investigate and critically analyze the evidence that supports both the design and naturalistic hypotheses.		
January 6, 2003	Andrea Radtke 5371 Big Tyler Road, Apt 714 Cross Lanes, WV 25313-1048 776-5950 Andrea.r@citynet.net	Scientific objectivity will lead to good science and religious neutrality. Origins is a complex and highly controversial subject and should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations.		
January 6, 2003	Harold Clark Haroldclark7@aol.com	My concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. This is wrong. Please change the standards to eliminate that problem.		
January 6, 2003	Mark K. Jowett Assistant Professor and IT Department Coordinator University of Charleston, WV Director of Distance Education Owner - Quality Instruction mjowett@charter.net	We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Please modify the Standards so children are not indoctrinated with evolutionism, and add objectives that would encourage students to investigate and critically analyze the evidence which supports both intelligent design and naturalistic hypotheses. Most importantly, as it is not proven, it is still the "theory of evolution"--other theories should be allowed and considered (e.g., intelligent design) with		

January 7, 2003	Elizabeth Gallaher WV DNR Wildlife Resources Project WILD 1900 Kanawha Blvd., East Bldg. 3, Rm. 842 Charleston, WV 25305 t. 304-558-2771 f. 304-558-3147 egallaher@dnr.state.wv.us	respect to tolerance, open-mindedness, and cultural diversity. We met at the WVSTA Conference, but you probably don't remember. I'm starting to organize a team of science and English teachers to help develop a correlation of Project WILD to the state content learning standards. I already have Joe Evans and Jim Meads on board, but I need at least four more people to help. I'm shooting for either a February or March meeting. The plan is to meet at a state park on a Friday evening, start the correlation, eat and sleep and then finish things up on Saturday. I (Project WILD) will pick up the tab on lodging, meals, and mileage. I just need people. Do you have any suggestions? If so, I'm trying to get everything together by the end of the month.		
January 7, 2003	Ashley Switzer Switzer.home@citynet.net	Origins science is the science which seeks to answer the questions, "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidably impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses and please add to the Standards explicit provisions that will encourage teachers to discuss science objectively without philosophical, naturalistic or religious bias or assumption.		
January 7, 2003	Gordon Wells Glwell:48@yahoo.com	Origins science is the science which seeks to answer the questions "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidable impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.		
January 7, 2003	John Calvert Managing Director Intelligent Design networking	You should have received by now a copy of our letter which comments on the Policy 2520.3. However, in case it got lost in the mail, I am attaching a pdf copy of the letter and a pdf copy of		

	913-268-0852.. jcalvert@worldnet.att.net		the completed comment form that is mentioned in the letter.	
January 7, 2003	Barbara OConnor mrs.noah@hotmail.com		After hearing Attorney John Calvert on Jan. 4 (WJYP 100.9) I felt lead to send a quick note in support of changing the WV Science Standards to include allowing students to analyze evidence which supports both Design and Naturalistic hypotheses. This issue will probably won't be settled soon, but Clarence Darrow said at the Scopes Monkey Trial "It is the height of bigotry to only allow one view of origins to be taught.	
January 8, 2003	William H. Harris PhD. Daniel Lauer/Missouri Professor of Metabolism and Vascular Research UMKC School of Medicine Co-Director, Lipid and Diabetes Research Center Mid America Heart Institute at Saint Luke's Hospital 4320 Wornall Road, Suite 128 Kansas City, MO 64111 Office 816/932-8235 Cell 913/302-9433 Fax 816/932-8278 wharris@saint-lukes.org		As a co-author of the comments from IDnet regarding the place of evolution in the science standards under consideration in West Virginia, I would simply encourage you to modify the standards in such a way as to not place in young children's minds that they are simply "objects" that "occur" in nature... this is clearly not an established fact but a philosophical position. Science standards should enable kids to think about deep issues of life that are impacted by science but without religious or philosophic bias. Let the evidence be heard and let the chips fall where they will. Best of luck navigating this mine field!	
January 6, 2003	K. Paul Nesselroade, Jr., Ph.D. Associate Professor of Psychology Ashbury College 1 Macklem Dr. Wilmore, KY 40390 (859) 858-3511 ext.2224 (phone) (859) 858-3921 (fax)		The purpose of this letter is simply to encourage the science standards committee to give favorable consideration to the suggestions made by the IDnet group. Unlike what many of the detractors are saying about IDnet's perspective on the origins issue, they are not trying to introduce religion in the science classroom. They are just trying to give awareness to school-age children of the developing controversy over origins. I encourage your committee to choose to expose your children not to religious dogma nor philosophical dogma (naturalism) but rather the broad scope of evidence that exists both supporting and contradicting the current Darwinian understanding. In this way you will encourage discussion and the development of critical thinking skills - a worthy pursuit, indeed.	
January 8, 2003	Doug Hansen DLHansen@butlermfg.com		I am writing to urge your support for permitting and not censoring the teaching of objective science education. In this regard, I have reviewed the 1-6-03 comments of IDNet and I urge you to give them serious and favorable consideration. It is hard to believe that in a free society that it would be controversial for teachers to be given the academic freedom to expose students to scientific evidence for or against any proposition of science -- whether it be labeled scientific theory or scientific fact. History	

January 8, 2003		teaches that nearly all scientific "facts" are challenged and often supplanted by subsequent scholarship. The very nature of science is to hold all conclusions as tentative. Why, on so important and personal of a subject as our origins, should this rule of openness be any different?	
Bruce Bosley Citizen of West Virginia, Supporter of a Coalition of Pro Family West Virginians and WV Christian Legislative Awareness bbosley@chapttech.com		I understand that the West Virginia Department of Education (WVDE) is seeking public comment regarding the West Virginia Public School Science Standards, Policy 2520.3. I submit this email in agreement with the citizens group, West Virginians for Science Education Excellence (WVSEE). I am not a member of WVSEE; however, I do believe that students should be given the opportunity to think for themselves regarding the origin life and the heavens as we know it today. To be more specific, "evolution only" science based education is "one"-sided and in my view indoctrinates the public school students into believing that "evolution" is the "only game in town". I believe that Creation (i.e. God created the heavens and the earth, etc.) based science education should also be offered along side evolution theory. Let the students weigh out the information so that they can decide for themselves...one way or the other. My hope and prayer is that the WVDE has an open mind regarding the potential changes that could be made to the Standards, which I believe will enhance the education of the public school students in WV. I agree with the following suggested changes to the Standards: 1. Revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations. 2. Revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teachings with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. [In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man	

		made objects, is that the former are not designed for a purpose.]		
		3. Add explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. [Many provisions of the standards would seem to encourage this concept indirectly. However, this encouragement needs to be explicitly focused on origins science, because textbooks presently teach only naturalistic theories of origins and discourage criticisms of evolutionary theory. Furthermore, teachers have been penalized when they have attempted to teach this subject honestly and objectively.] 4. Add objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."] If I can be of any help in providing more information or answering any questions you may have, please reply to this email, and I will be glad to contact you at your office phone number.		
January 8, 2003	Mark Scheel markscheel@hotmail.com		I am a Kansas free-lance writer following the education/ evolution debates across the country. I have reviewed and generally agree with the comments and suggestions of IDnet that are covered in its January 6, 2003 letter regarding West Virginia Science Policy. I encourage favorable consideration of those suggestions. Best of luck in the struggle to effect objective science standards and teach the whole big picture.	

January 8, 2003	Doug Rudy Director, Science Excellence for All Ohioans Doug.Rudy@frontstep.com	As someone who participated in the discussions and debates over the treatment of Biological origins in the Ohio science standards, I hope you don't mind my passing along a recommendation for your work in West Virginia. In the years I've followed this issue generally, I've seen damaging errors on BOTH sides of the discussion. The misconception in academic circles is, I think, that it is only religious people who lack objectivity on the issue, and have problems with evolution because they have a religious axe to grind. The fact of the matter is that any scientific account of the origin of life, and especially human life, will have profound philosophical implications. For example, Richard Dawkins wrote in the preface to his evolution advocacy book <i>The Blind Watchmaker</i>, "Charles Darwin made it possible for the first time in history to be an intellectually fulfilled atheist". For this reason, it is quite difficult for anyone, including trained scientists, to be truly objective about the issue of Biological origins. Don't make the mistake of implementing state-sponsored naturalistic philosophy in the name of science. This is the equal and opposite error to that committed by some creationists who want to bring the biblical creation account into the science classroom. Instead, I advocate what we called the "Teach the Controversy" approach, requiring that students learn ALL the evidence, both for and against the theory of evolution, and provide academic freedom for those who wish to discuss scientific alternatives like intelligent design. The fact is that while some aspects of evolutionary theory are well-substantiated (natural selection operating on existing genomic variation), the larger claims that the first self-reproducing cell arose by chance, and that all the bio-complexity we see today has been produced by random genetic damage (mutation) are extremely controversial and faced by a wealth of counter-evidence. Students should learn these arguments. They'll understand evolutionary theory all the better for it. They'll also learn how science progresses via debate and objectivity.		
January 8, 2003	Jodi Hoff bjhoff@access.k12.wv.us	I understand that the West Virginia Public School Science Standards are being considered for revision, and that responses from interested parties must be received by this Friday, January 10th.		

January 8, 2003	Joseph D. Renick Senior Research Scientist NORTHROP GRUMMAN INFORMATION TECHNOLOGY P.O. Box 9377 Albuquerque, NM 87119-9377 Phone: 505-842-8911 ext 255 Fax: 505-242-4121	Therefore, I am pleased to submit a packet of pertinent information assembled as a result of the many questions received from school administrators, teachers, and parents regarding this issue and the recent federal law, H.R. 1. Although this packet will be sent by mail in time to meet the deadline, I do have a question and also would like to offer a comment: Q 1: Are the persons responsible for subject Standards in your State familiar with the 'No Child Shall Be Left Behind' education bill and do they intend to comply with the accompanying section dealing with the recommended "balanced treatment" of teaching controversial theories such as biological evolution and the origin of life? C 1: Please add to the Standards objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."] Also, please add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. Thank you for your consideration. If we at ICR can be of further assistance of any kind, please call on us.	

	joseph.renick@northropgrumman.com	some of the best scientific and legal advice in the country in this controversial issue. The scientific, religious, legal and educational issues regarding the teaching of biological origins are complex. I have a good understanding of those issues in that I have dedicated myself to their study during the past seven years. I am completely convinced that the comments and suggestions in the IDnet letter are sound and in a sense, are the "future". The charade of the last 50 years in the area of evolutionary science is coming to an end. It is unfortunate that materialistic bias, rather than unbiased science, rules in the scientific establishment. If you challenge the Standards in any or all (I shutter) of the areas that IDnet has identified in its letter, you will surely incur the wrath of the scientific community and the media. That in itself should be an indication that something is terribly wrong. I would be glad to assist you in any way that I can. I have a position paper that addresses the issues of concern and would be glad to provide it to you. Have courage.		
January 8, 2003	Jerry & Julie Bohn jbohn@socencornet	I am writing to encourage you to develop science curriculum or standards that allow students to critically analyze data and evidence for and against evolution. Please do not allow your students to be indoctrinated by false evidence concerning the issue of evolution/origins. Your students deserve to know more.		
January 8, 2003	Patricia L. Pulliam PattyPuli@aol.com	I have comments regarding the new West Virginia Science Standards. Please revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations. Please add to the Standards objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. The unstated naturalistic assumption is that the natural world is		

		not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations." The proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. The standards establish objectives that will lead to an understanding about evolution only. Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. Please change the standards to eliminate that problem. Thank you for your consideration.		
January 8, 2003	Kenny Pack PackPackmountain@aol.com	To Whom It May Concern, It is my understanding that policy 2520.3 advocates the teaching of evolution only in the West Virginia school systems. This is totally against my desires to assure that the student body in West Virginia will be taught the Christian values that this nation was founded upon historically. It is my prayer that you will see that this is not the will of the people of West Virginia as a whole. The Science Dept. of Eastern Greenbrier would like to add our support to the proposed revised grouping of Content Standard and Objectives submitted by Kanawha County. I suggest the standards be changed to promote critical thinking, scientific objectivity and religious neutrality regarding origins. I was alarmed to hear recently that there is a possibility that some sort of legislation could be passed that would make the THEORY of evolution the only origin of man option to teach in our public schools. Though not shocked, I was alarmed. There has been a disturbing trend in our public schools of late. What is often thought of as a religious term is now being manifested in our school systems. It's what we call "indoctrination". We have		
January 8, 2003	Sandra VanLuik Eastern Greenbrier Junior High			
January 8, 2003	Beth Cox, mother of 4			
January 9, 2003	Jason D. Moore Taxpayer, Voter, Concerned Citizen.			

		become guilty of force-feeding our students one way, and only one, in so many areas. Many students falter because we have only one teaching method: memorize, regurgitate, then forget. I am a product of this system myself. We want to make sure that students don't think for themselves; we want to make sure that they think like so many civil rights activists and lobbying groups want them to think. I have an idea. Let's try education. Let's try equipping our youth with the ability to reason. Let's make it possible for them to make intelligent choices. Let's help them to make important life decisions. We all know that the world throws many curves at us at many unexpected places. Let's make sure our children know how to assess the FACTS and make their INFORMED decision based on those, not on someone else's OPINION or fancy thought. Please don't force feed them something that isn't even proven true. If you're going to teach theories, give them all a chance and let the students MAKE UP THEIR OWN MINDS!!!! (Again, based on fact, not theory.) Math, grammar, music...they all have definites. Biological science has definites as well. Evolution is not an absolute. No matter what any lobbyist tries to tell you, me, or our students.		
January 9, 2003	Ken and Sheila Lilly 101 Skyview Drive Beckley WV 25801-2198 lillypad@wv-cis.net	We would like to communicate that we do NOT support Policy 2520.3. We understand that it is trying to eliminate any hint of religious education by allowing only evolution to be taught. Evolution is not an acceptable theory for origin of man, as it has many challenges trying to prop up its arguments that we have evolved from an amoeba or a happenstance of exploding gases. The proposed science standards teach children that the "natural world" is the basis for origins, leading them to believe that man and beast along with the world are merely objects. That impression, if taken to its logical conclusion, has profound consequences. If we are merely the result of natural processes, then eugenics is okay, experimentation on human beings without consent is okay, and on it goes. It is wrong to teach only one side of origins...true "academic freedom" gives the students ALL theories and the tools for them to decide. Give them the evidence for all views of origins in an objective way. This does not mean that one has to teach "religion" in the school...the fact that even the smallest		
January 9, 2003	J Smith, RPh jsmithcwfa@cs.com			

		organism is irreducibly complex is one way of showing that some sort of design was involved in creation, rather than a mindless and spontaneous event that launched life on earth. Both ideas can be taught side by side and then the child given the ways to explore further if they wish. Give the students a chance to think critically on the most important question in the universe. I am a registered pharmacist and when I went to school science was more about exploring a variety of hypotheses and setting out to prove or disprove them. It was not about promoting an agenda that the hierarchy of scientists who hold a naturalistic worldview need to promote in order to keep their status and grant money coming in. Education should be about giving students the whole truth, not agendas and pet theories.		
January 9, 2003	Kenneth E. Lilly VP for Business Appalachian Bible College P O Box ABC Bradley WV 25818-1353 KLilly@abc.edu Dr. and Mrs. Donald Alban 1800 Maxwell Hill Road Beckley, WV 25801	I wanted to express my opposition to Policy 2520.3. Thank you!		
January 9, 2003		We would like to say that we do NOT support Policy 2520.3. We understand that it is trying to eliminate any hint of religious education by allowing only evolution to be taught. It is a "religion" of itself and if it is allowed to be taught, then why not can true Christianity be allowed a platform? Evolution is not an acceptable theory for origin of man, and yet it continues to be put before our children, thus devaluing the beautiful plan of creation that the God of creation has written in His Word for mankind.		
January 9, 2003	Paula Toney PO Box ABC Bradley, WV 25818 ptoney@abc.edu	I would like to go on record as OPPOSING Policy 2520.3. I believe its proposed intent would be a terrible injustice to the educational system of our State.		
January 9, 2003	Dr. & Mrs. James and Kathy Fritz P.O. Box ABC Bradley, WV 25818 jfritz@abc.edu	We would like to let you know that we OPPOSE Policy 2520.3. Evolution is an unverifiable scientific THEORY.		
January 9, 2003	Walter Burch Business Manager walburch@abc.edu	I wanted to send this communication out to you saying that I strongly oppose Policy 2520.3. How could anyone support such a policy? We will pray that the policy does not pass. This is a battle worth fighting. Satan already has too much control over our children.		

			Genesis 2:7 is plenty of support against such a liberal policy.		
January 9, 2003	Cindi Turner Beckley, WV Financialaid@abc.edu		I am opposed to Policy 2520.3. I do not think that the teaching of evolution as the only origin of man is appropriate. I think we should be open to share other theories and give young minds a chance to explore and decide for themselves what they want to believe. The theory of Evolution is simply a theory, man has not been able to prove to my satisfaction that I have evolved from a slug. I think that you will find it is not as widely accepted as many believe. Again I would like to say that I am opposed to Policy 2520.3.		
January 9, 2003	Gayle Haynes Appalachian Bible College library@abc.edu		My name is Gayle Haynes and I am an employee of Appalachian Bible College and I am writing to you to let you know that I am opposed to the policy 2520.3. I do not believe in evolution. Thank you for your time. May God bless.		
January 9, 2003	Jonathan Rinker Voter in the Beckley Area development@abc.edu		I am a voter in the Beckley area and I strongly oppose policy 2520.3.		
January 9, 2003	Dan Carfrey Vice President for Student Services, Appalachian Bible College dcarfrey@abc.edu		I would like to voice my opposition to Policy 2520.3. As I understand it, this policy seeks to remove teaching of any religious viewpoints pertaining to creation and scientific research in our state. This kind of effort removes any objectivity in the teaching of scientific evidence, which does not support the theory of evolution. If evolution is taught, it should be taught as only a theory, and other viewpoints like the creation account of the book of Genesis should also be talked about. Our forefathers never intended the separation of any religious content in our educational system. They were rather against the establishment of one church over another by way of governmental decree. Those advocating this kind of policy are actually seeking to use government to oppose religion - which is contrary to what true objective education is all about.		
January 9, 2003	Shirley Carfrey and Dan Carfrey 205 Appalachian Hgts. Rd. Bradley, WV 25818 Phone: (304) 877 6590 FAX: (304) 877-5082 E-mail: dancarfrey@aol.com		We would like to say that we DO NOT support the proposal Policy 2520.3! If our children are to be subjected to the theory of evolution, and it is not an acceptable theory for some -- then how can you eliminate religious education because it is not acceptable to some? Thank you for taking note of this opinion.		
January 9, 2003	Dennis and Cathy Persinger 225 Forest Road Daniels, WV 25832 academics@abc.edu		We would like to indicate to you that we do not support Policy 2520.3. We understand this bill would eliminate all references to religion in public school and only evolution would be taught in Science classes. Evolution is the opinion of some		

			and should not be taught as the only source of the origin of man.		
January 9, 2003	Timothy Dillon tdillon@hotmail.com		We oppose Policy 252.3. We don't think evolution should be taught in schools.		
January 9, 2003	P. Kevin Suiter, D.M.A. ksuiter@abc.edu		I am writing to express my opposition to the WV Board of Education's proposal, Policy 2520.3. In my opinion, there is nothing that has done more to undermine Christian values than the THEORY of evolution as taught religiously in the public school classroom. Thanks for hearing my objections and registering my opposition to this proposal.		
January 9, 2003	Jared Robertson Jrobertson13@hotmail.com		Someone at work today gave me a copy of an email that was detailing Policy 2520.3 with the WV Dept of Education concerning the teaching of the origin of man in our school systems. Could you verify to me that this is true and not a hoax? The email basically says that the Policy mentioned above will limit schools to only teach evolution as the origin of man, and will not permit other origins to be taught. It asks for responses to go to a Ms. West at bwest@access.k12.wv.us by Friday, Jan. 10. As a Christian, and as a son of a man who has taught in our school system for over 30 years, I'm shocked and appalled at this suggestion. I want to reply in full to Ms. West, along with many other people I know who feel the way I do, but I did not want to go down this line if this was simply a hoax of some sort. Thank you for your time,		
January 9, 2003	Brad Cook Avondale, MO 64117 Genrev22@cs.com		As a former evolutionist I am pleased to welcome West Virginia into the firestorm that is the origins controversy. I've been watching the proceedings since Kansas in 1999. Ohio was interesting, New Mexico is getting involved and now West Virginia steps up! You will hear that advocating "Intelligent Design" will lead to teaching religion in school. Not true. Advocating design in intricate, complicated living creatures is no more religious than walking into a room and finding a jigsaw puzzle on the table and recognizing that someone completed it before you arrived. Many scientists are finding the complexity of life's processes leads to the inevitable conclusion that life was designed. Darwin told us there was an original cell composed of simple compounds, such as proteins and amino		

		acids and no more complex than Jell-O. Now we are finding DNA (required for the simplest reproduction) is more complicated than a jigsaw puzzle and contains more information than the Encyclopedia Britannica. How does "information" develop without an outside source? Wouldn't that be a great question for science class? No, according to the National Academy of Sciences, the American Association for the Advancement of Science and other mainline groups. They claim teaching ID would be "religious" and not allowed under our Constitution. This is not correct. Teaching various theories of origin in our schools can be done if the intent is clearly science education. If the course is not predominately religious the teaching of a possible "Designer" is not religious in itself. According to the Supreme Court (Edwards v. Aquillard), teachers have (the) flexibility to present theories, besides evolution, about the origin of life. I hope you are aware Intelligent Design is not a fringe viewpoint. More and more research scientists are seeing the evidence, since it is honest and compelling and becoming proponents at the expense of the established science community. Others are taking a stand. Gallup Poll surveys over the last 16 years show that only 10% of Americans believe pure chance and natural (random) process explain life. Good luck in trying to do determine what is best for your students. The scientific method, investigation and study seem to take a back-seat to rhetoric and obfuscation. Remember, in class there is no such thing as a dumb question. Only when questions are not asked will ignorance prevail. The Cobb County, GA school board recently voted to allow teachers the latitude to discuss both intelligent design and the naturalistic assumption that supports evolutionary theory. "Discussion should be moderated to promote a sense of scientific inquiry and understanding of scientific methods and to distinguish between scientific and philosophical or religious issues." Evolution is supported by a philosophical	

assumption that only natural causes exist. One can not really "understand" this issue without discussing the other cause: design.

Here is a press release regarding their choice.

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Cobb County Gets It Right

By Larry Taylor

As a parent with three children in Cobb County, Georgia middle and high schools, I have been following with interest the evolution controversy that has divided our community for months. Now that the school board has issued its implementation guidelines for teachers, advocates on both sides of the issue are spinning the final outcome to proclaim victory. For parents and teachers alike to fully understand how the new policy guidelines will impact science instruction, a careful review of the facts may be helpful.

First, the new policy guidelines restrict the classroom instruction to the approved curriculum only. While on the surface this seems to be a defeat for the opponents of Darwinism, it is really a victory for fairness to those of all viewpoints. Upon careful review of my children's science textbooks, I have found no assertions that evolution on the grand scale (macro-evolution) has been proven to be true. In fact, the textbooks go out of their way to present macroevolution in vague terms such as "some scientist think" and "we'll never know for sure". Contrary to this uncertainty however, some Cobb science teachers insisted otherwise in public debates before the school board, and even went so far as to attack those holding opposing views as "uneducated", "right-wing", and "extremists", as well as an assortment of other outdated stereotypes. While these teachers are certainly free to hold these politically incorrect views, the new policy insures that their personal beliefs and biases are not interjected into the classroom instruction.

Second, the new policy guidelines mandate that teachers allow classroom discussion concerning the controversies surrounding evolution, as long as the discussions remain scientific in nature. The policy goes on to state that it "may be appropriate to acknowledge that science itself has limits" and doesn't have all of the answers, and that discussions about scientific theories and religious beliefs need

		not be necessarily exclusive of each other. In other words, if a student would like to discuss in class the growing mountain of scientific evidence against macroevolution such as the troublesome fossil record and the lack of transitional fossils, then this policy guarantees the right to do so. The policy also opens the door to discussions about other scientific viewpoints and concepts such as "irreducible complexity" by Lehigh biochemist Dr. Michael Behe and "design inference" by Baylor mathematician Dr. William Dembski. Third, the policy states that under no circumstances should teachers use instruction in an effort to coerce students to adopt a particular religious belief or set of beliefs. While this appropriately insures against a Christian teacher coercing a Jewish, Muslim, or agnostic student with religious indoctrination, it also correctly prohibits the teacher from indoctrinating a religious student with the naturalistic ideology that life arose spontaneously from nonliving matter with no assistance from a divine or intelligent agent. Furthermore, the policy instructs teachers to show respect for the personal religious beliefs of all students and to maintain a posture of neutrality towards religion, and forbids them from interjecting their personal faith-based beliefs, or lack thereof, into the classroom instruction. The policy closes with a pledge of support for teachers who teach this controversial and divisive subject with professionalism and objectivity. Cobb County is blessed with some of the best and most dedicated teachers in America, and those that handle controversial subjects such as these with sensitivity, honesty and objectivity deserve our full support and appreciation. The Cobb school board also deserves credit for the courage and foresight to address this issue, and perhaps unwittingly, for creating a blueprint for other school districts on how science instruction need not be a divisive influence in a community. Larry Taylor is a founding member of Parents For Truth In Cobb, an advocacy group supporting objective science instruction. For information or comments, send emails to: botay1@juno.com; or write to: Larry Taylor, Parents For Truth In Cobb, 1050 East Piedmont Rd., Suite E-103; Marietta, Ga., 30062.	

January 9, 2003	admissions@abc.edu	I am in strong opposition to policy 2520.3. To try to eliminate all reference to religion in public schools is unfortunate. In no way does a simple reference to or even practice of a specific religion provide any type of determination of endorsement of said religion by that school. Religion is a part of who we are as human beings, and Americans. To not allow teachers, students, school systems, etc... the opportunity to reference religions, religious exercises, or to even expose students to a variety of teachings and practices with what they may allow is to reject what and who we are as Americans and is against all principals and purposes of education. The problem arises when certain religions or religious practices are not allowed to be referenced or practiced, and some are. The intent of trying to appease one by subjecting the many to unnecessary restrictions dismisses the rationale of striving for the "common good" which is what should be considered. Individualism becomes extreme when it dismisses the idea of ever suffering personal offense. Neither should decisions of this magnitude be made solely under pressure of minority thought, which is usually the case...a small minority fighting for its own rights as individuals at the expense of the rights of the majority (greater good). The individual is to be respected and can be, but the principle of "toleration" as it is too often defined, disregards the issue of respect and demands that the individuals actions be accepted and allowed and embraced to the exclusion of the rights of the many.		
January 9, 2003	Benjamin Ferguson Ferguson839@cs.com	I am writing in regard to Policy 2520.3. I feel our children should be given more than one option when it comes to explaining origins of life. I understand the theory of evolution has its validities as far as the science world has shown them, but I believe their may be other possible explanations. Our children should be allowed to think for themselves on some issues and this should be one of them. Evolution is only a theory, but it is being taught as if it was a fact therefore it is only one side of the explanation. Therefore other theories should be included in Policy 2520.3.		
January 9, 2003	Michelle Goode goode_michelle@hotmail.com	Policy 2520.3 appears to promote evolution as the only true science regarding origins of life. Evolution is only a theory. Children should have other views to be able to think critically. Please revise this policy to reflect this.		

January 9, 2003	Charles Porterfield, DO Denise Porterfield, MA, RD dcwp@cwv.net	As healthcare professionals and parents, we support the inclusion of Intelligent Design in the science curriculum. Otherwise, exposure only to the theory of Evolution would result in a narrow education of our children. Thanks		
January 9, 2003	Erica Dillon, Parent Teacher in the West Virginia School System yesdillon@hotmail.com	I am a parent and a teacher in the West Virginia school system. I do not like the fact that Policy 2520.3 is trying to teach children that evolution is a fact. I DO NOT want to have to teach this in my classroom nor have my child taught this in her classes. Please amend the policy to state that teachers have the academic freedom to discuss other theories in the classroom. Children should have the right to have other views presented and then think and make the decision for themselves. Please revise the policy to reflect my standards		
January 9, 2003	Daniel K. Hoskins 5913 Church Drive Charleston, WV 25306 dkhoskins@chaarter.net	When I first heard that the WV science standards were being revised, my mind went back to my 10th grade Biology class. Within the first week of school, my teacher stated that she wouldn't cover Evolution because it was too controversial. Students need to understand why it is a controversial subject and should be taught about the scientific evidence for and against evolutionary theory so that they may learn critical thinking skills and be able to make an educated and informed decision on the subject		
January 9, 2003	George Canterberry glc_25827@yahoo	I'm sending this e-mail to let you know that I am very opposed to the policy 2520.3 that will teach you only evolution in science. I think that would be very wrong.		
January 9, 2003	Angie Smith Spanky115@hotmail.com	I OPPOSE 2520.3 GOD CREATED US!		
January 9, 2003	Aaron skrewdriverfan@aol.com	The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade. This is wrong. Please change the standards to eliminate that problem.		
January 9, 2003	W. Craig Almquist 4803 Virginia Avenue Charleston, WV 25304	I am a concerned parent residing in Kanawha County with three children currently in the elementary grades. I am a Senior Engineer at Columbia Gas with a degree in Petroleum Engineering having graduated with honors with a 3.6 GPA. Geological Sciences is something I understand quite well. But as an objective student of		

science, I haven't simply accepted the evolutionary dogma I was taught. I have done considerable other reading regarding matters of origins, regarding criticisms of evolutionary theory, and regarding evidences for intelligent design.

I have found the criticisms of evolution to be well founded. Some evolutionists have abandoned Darwinian 'gradual' evolution and espouse rapid and large changes from one species to another. This is referred to as punctuated equilibrium. They have had to resort to theories such as this that are much harder to believe simply because the evidence for Darwinian evolution is so poor. If Darwinian evolution were correct, there ought to be millions of intermediate forms in the fossil record. But as best as I can tell, there are no valid intermediate forms, though a few examples are confidently spoken of. But there should be millions of in-between forms! Numerous forgeries of supposed 'links' have been uncovered over the years, but most textbooks still present these forgeries as accepted scientific links, even though these 'links' are now clearly documented as forgeries.

Thus you can understand my concern when I read the new WV science standards and see that naturalism and Darwinian evolutionary theory are still set forth as a scientific fact that our students are to be taught -- without any opportunity for the teacher to present any of the several huge problems inherent with this theory. For example, evolutionary theory completely violates the first and second laws of thermodynamics! These are known observable scientific laws. And yet we are to believe that somehow in past years these laws could easily be abrogated so that evolution could occur. Every observable mutation we see today is harmful to life and reproduction, yet we are to believe that mutations in the past were beneficial?!

Our students deserve better! They should be taught to think and not to accept things blindly. They should be given the opportunity to hear opinions that differ from the accepted norm. (I would be glad to assist our teachers by providing an outside opinion - to the extent that my work would allow, anyway.) As best as I can tell, the accepted norm is based more on religious conviction than on a true weighing of all the evidence. I am utterly amazed at how most

		evolutionists staunchly defend their faith with no willingness to evaluate the evidence. It is thus my recommendation that the WV Science Standards be revised so that the naturalistic assumptions of evolutionary theory be clearly exposed. The one-sided naturalistic teaching that natural objects and systems are not designed should be eliminated. Instead, an objective should be established stating that students should be able to critically analyze the evidences for naturalistic evolution and for intelligent design and be able to present what they perceive to be the best evidences for both theories. It is also recommended to revise the Standards so that children are not introduced to origins science until they attain an age and maturity to be able to understand the philosophic implications of the competing theories, presumably around 10th grade or so.		
January 9, 2003	Robert Patterson 626 Pioneer Lane Charleston, WV 25312 curtcb68@juno.com	Suggested comments (CHOOSE ONE): 1. We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Please change the Standards so children are not indoctrinated with evolutionism and add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. 2. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, I believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Please change the standards so evolutionism does not dominate the instruction on origin and diversity of life. 3. Scientific objectivity will lead to good science and religious neutrality. Origins is a complex and highly controversial subject and should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations.		

4. My concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. This is wrong. Please change the standards to eliminate that problem.
5. The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade. This is wrong. Please change the standards to eliminate that problem.
6. Teaching students that they are a part of a "natural world" that is not designed is philosophy and not science. It is the philosophy of Naturalism. Naturalism is a belief that life emerges via purely unguided natural processes and not by design. Naturalism is the fundamental tenet of atheism, agnosticism and secular humanism while design is the fundamental tenet of theistic religion. This is wrong. Please change the standards to eliminate that problem.
7. Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. This is wrong. Please change the standards to eliminate that problem.
8. The standards establish objectives that will lead to an understanding about "Evolution Only." Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. In this respect the standards are one sided and dogmatic. Their obvious objective is to promote a Naturalistic world view. This is wrong. Please change the standards to eliminate that problem.

answer the questions "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidable impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.

10. I suggest the standards be changed to promote critical thinking, scientific objectivity and religious neutrality regarding origins.

11. Please revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations. Also, please add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.

12. Please revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teachings with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. [In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not designed for a purpose.]

13. Please add to the Standards explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy.

14. Please add to the Standards objectives that will

		require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."] Also, please add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.		
January 9, 2003	Melissa Hylton nahylton@yahoo.com	Myself and my mother-in-law, Judy Hylton (no email), would like to make it known that we oppose policy 2520.3 Evolution is not how we came to exist and shouldn't be taught in our schools. Darwin even admitted that we were created by God before he died.		
January 10, 2003	James Brian Pitts Ph.D., physics (U. Texas at Austin) Gravitation Graduate student History and Philosophy of Science University of Notre Dame	As a physicist pursuing a second Ph.D., the second being in the philosophy and history of science, I have had a chance to look over some of the proposed West Virginia educational standards. I have also had a chance to look over the suggestions and comments posted at http://www.IntelligentDesignNetwork.org/wvletter.pdf . I find that these comments generally would improve education in West Virginia or anywhere else, so I encourage you to consider them seriously.		
January 10, 2003	Mary Webb Merry_web@hotmail.com	I am writing regarding Policy 2520.3. I feel it is not right to teach students only one theory for origins of life. I think that in teaching our children, one of the most important things they should learn is to question different theories. To have an open mind regarding life origins as well as other facets of life, children should be taught all possible theories and then allowed, with parental guidance, to make their own choice as to what they should believe is true.		
January 10, 2003	Ed and Donna Chesley PO Box ABC Bradley, WV 25818 Donna Chesley Secretary to the V.P. for Business Phone - (304) 877-6428 Email - business@abc.edu	We would like to oppose Policy 2520.3. We understand this policy is trying to eliminate all religious education by only allowing evolution to be taught. We do not believe in evolution and would want the Biblical viewpoint presented as well. Thank you for allowing our voice to be counted.		

January 10, 2003	Email - business@abc.edu Home - (304) 877-5618 Home email - donnac1@inetone.net Melody Wallen MWallen@lewis-goetz.com	I am writing you regarding policy 2520.3. As a parent of two daughters attending school in Raleigh County, I firmly believe that Intelligent Design should be included in the sciences along with the theory of evolution. Only teaching the theory of evolution, would not only limit the childrens' education, but cause more confusion for them, as well. Please consider parents' opinions on this policy. Now isn't this what science is all about? I ask that the West Virginia Science Standards adopt this or a similar approach.		
January 10, 2003	David Adler St. Albans, WV dadler@hotmail.com			
January 10, 2003	Kevin Bahr kevinbahr@juno.com	I am writing regarding policy 2520.3. Our science classes are only teaching evolution. This is only a theory, but it's being taught as fact. If you have to make a decision regarding school policy, you don't only hear from the janitor do you? Or not just the financial department. Or not just the teachers. Or not just the students. You hear all the reasonable opinions and make a decision based on all the information. Our children deserve at least that much. Separation of church and state was established to protect the church from the government controlling it; not to keep God out of the school. I challenge you to travel to a Muslim nation, or a Hindu nation and tell them they can't pray to their god in public. Or even mention him as a theory. This nation was founded "under God", and the laws based on the bible. To remove God from the school system would be an outrage. Thank you for your time and consideration in this matter.		
January 19, 2003	Nicholas P. Belmont nbelmont@access.k12.wv.us Deborah Brown dsbrown@access.k12.wv.us	The current comment response forms for the Standards and Objectives do not provide an opportunity to comment on the major problem with the Standards and Objectives for Science. The major problem here is that they are too unrealistic for effective instruction in grades 7-10. In grades 7-10 science instruction needs to become more focused. The Standards for these grades need to set forth a lab based coordinated and thematic science program that is consolidated and teachable. A group of science teachers in Kanawha County have developed a working draft of Standards and Objectives for 7-10 Science that would improve the effectiveness of science instruction dramatically. These standards have the science processes and science content organized in a pattern that will		

		empower teachers to teach more and students to learn more. For a number of years we have struggled to implement the CATS program. We understand its strengths and weaknesses. Unlike the current revision out on comment which built on the weaknesses and is hard to understand and impossible to implement effectively, this working draft has kept the strengths and built a strong program on these strengths. This draft has organized the science standards into a format we can understand and will be able to implement. We respectfully request your support for the adoption of a set of Standards and Objectives for 7-10 Science similar to those set forth in the working draft. Furthermore, I feel that if the State's Proposed Content Objectives stay the same, I will be forced to switch jobs to a different teaching area. The states proposed content area are so scattered that I find it hard to keep continuity within the classroom especially since there is no one textbook that covers all those objectives effectively. A textbook not aligned with the objectives is especially hard for beginning teachers as well as seasoned teachers. The proposed Kanawha County Objectives are much better but still need some work. Please work with the Science teachers of this state and help us improve science education even more. I look forward to hearing the state's opinion of the Kanawha County proposal.	
January 10, 2003	Don McCallister 206 Vanvoorthis St. Beckley, WV 25801 dfmccallister@yahoo.com	I am writing to you today to offer my comments regarding Policy 2520.3, West Virginia State Science Standards. The children of West Virginia deserve better than this one sided approach. Our children should be offered the opportunity to hear other sides if available, not only one side (and that side being a theory only that many, many scientists today believe is full of error with no physical or scientific proof. On the other hand teachers and students of West Virginia should be allowed to teach and the students hear that another approach to this question of where did the earth come from and how did we get here is offered in a book called the Bible which written over 450 years ago in our English translation, unlike Darwin's theory has never to my knowledge	

scientifically or otherwise been proved to be scientifically or otherwise wrong. On the other hand I have heard the testimony of many scientist who have set out to disprove the Bible and have found it to be true and become believers in the book. Not only has it never been disproved but it remains the most read book ever written.

Now if the next thing you would say is that you are by law required separate rate the Bible from education because of a "theory" separation of Church and state, I would offer that this is also a theory and upon proper examination of the facts is a flawed "theory". Upon examination of men who wrote our Constitution anyone wanting the facts would find that all but two of these men where either pastors or elders in their respective churches or former churches and would in no way design a law that would keep the Bible out of the hands of teachers or students in America.

The other point I feel needs to be considered is an economic point for the State of West Virginia, The West Virginia Department of Education and your division. I believe if this policy #2520.3 is allowed to stand and no other theory or truth is taught in our public schools , there will be a mass exit over take place over the next two to three years from West Virginia public schools to private Christian schools because parents want their child to be taught all theories or truths about how and why the earth exists. If my theory is played out and West Virginia Schools as they have over the last several years loose more enrollment due to the policies could the Governor and the other budget bodies of this great state say less enrollment means less need for salaries in State Agencies. Governor Bob Wise is already correctly looking in this direction so I ask why would you and your department give them more to work with by allowing a policy that will drive more students, teachers and families out of our state system, and in doing so creating a situation which will surely create less students creating less need for people in the state agency.

I would offer a better use of department funds and personnel in looking into the theory that West Virginia has not lost as much enrollment as is stated but that most of that enrollment drop has switched to private schools and could such a restrictive policy as

		to the West Virginia Public School funding.		
January 10, 2003	FREDDIE LILLY fllilly@lewis-goetz.com Debbie McVey DMcvey@lewis-goetz.com	Thank you for the opportunity to express my concerns and my comments. GOD BLESS AMERICA, GOD BLESS WEST VIRGINIA, and GOD BLESS YOU. Please Teach Intelligent Design along with Evolution.		
January 10, 2003	Robert & Elva Jean Lilly, 123 Walter St., Beckley, W.Va. 25801 Holleyjeanlilly@aol.com Joanne C. McCallister jcmiteach@yahoo.com	We are writing to let you know that we DO NOT support Policy 2520.3. We don't believe that evolution should be taught to our students.		
January 10, 2003		As a West Virginia teacher (St. Francis de Sales School, 4th grade), I feel all students in the state of West Virginia deserve to be taught all known views of how the earth came into being so they can process this information and make decisions for themselves. They certainly get enough of one side in school and they should be presented all sides. I certainly do not want only creation taught, but all evidence should be presented and explained.		
January 10, 2003	Janelewisclay@aol.com	Policy 2520.3 appears to promote evolution as the only true science regarding origins of life. Evolution is only a theory. There is much disagreement within the scientific community regarding this theory. If this theory has any merit then it should be able to withstand critical examination. Children should have other views to be able to think critically. please revise the policy to reflect this.		
January 10, 2003	Ariel A. Roth, Ph.D., in Zoology, University of Michigan; Editor of ORIGINS for 23 years; Consultant and/or witness to the States of California, Oregon, and Arkansas regarding the teaching of origins.	I have looked at the comments and suggestions made by the IDnet about the West Virginia Science Policy submitted on January 6, 2003. I favor these suggestions and any other ones that will introduce a spirit of inquiry and academic freedom in the science classroom. Science needs to be introduced as an open search for truth, not as a restricted and closed system of thought. In fairness and concern for all, alternatives to evolution need to be considered.		
January 10, 2003	Anita aplacidi@charter.net	I don't think they should teach evolution in schools.		

January 11, 2003	Joe Wynne Jwynne@charter.net	We would like to communicate that we do NOT support Policy 2520.3.		
January 11, 2003	Amanda Moore Manda_day@yahoo.com	I write to voice my opinion and hopefully to influence those who represent us (as a nation) legally. I have recently heard about the law that's being voted on which could leave our children with no choice. Our nation cries constantly...when in favor of a more liberal choice...that we should have CHOICE. But, if we take away the option for our children to hear the story of Creation and even other theories (as some would say) then we make Evolution fact and not theory. As a Christian, I would like to see only Creation taught. However, in all fairness, I would expect that those who don't believe in the Bible would want options....other "theories". But, I ask that you not make our children's choice for them. If you do, I will assume that Evolution is no longer theory, but fact. Having studied it myself, I know the flaws of the theory of evolution. It is far from fact. As a voter and concerned parent! t....I hope that you'll hear the voice of us who stand against the abandonment of intelligent choice.		
January 11, 2003	Barbara Smith 409 Second Street Evans, WV 25241 BASmith@dot.state.wv.us	The educational process in our schools should encourage many different concepts. Critical thinking, along with objective and thorough investigation of data and theories in all areas of study is necessary to ensure the success of the educational program. The focus on critical thinking is a reflection of the times in education. Schools should teach children how to think through ideas. The two competing ideas on the origins of life should be discussed thoroughly. There is no scientific proof for either view. Both are un-testable ideas and require a measure of blind faith to even become a theory. It is important that issues be treated seriously and with respect, and yet with the integrity of critical thought and serious examination. I believe that ALL textbooks should state the truth, be held accountable for mistakes and any material that has been proven wrong should be taken out of the new books. Please add to the Standards explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic,		

January 11, 2003	mekisner@aol.com	naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. Please change the standards to eliminate that problem. Origins science should seek to answer the questions: What is the origin of life? What is the origin of the diversity of life? Where do we come from? By seeking to discuss these questions with children, West Virginia has taken unavoidable impact on religious and non-religious sec rather than take sides on an issue, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. Thanks for listening.		
January 11, 2003	Steve Ruby Special Assistant for Policy Office of the Secretary of Education and the Arts 304.558.2440 SRuby@wv.gov.org	My name is Steve Ruby; I work for Secretary Goodwin. I'm not sure if the Secretary's asked you yet, but at the Governor's request, we were wondering if you'd mind sharing with us any comments you received on policy 2520.3 during the comment period. We're trying to gauge the likelihood of any sort of public controversy over the natural selection provisions of the policy, so if you have any idea that the intelligent design folks are going to raise a fuss, I'd appreciate a heads-up. Thanks!		
January 11, 2003	John Parks JParks@wvutec.edu	I have been given your name as a contact person in the Board office as a person to whom I could send a thought. I am a Science Professor at WV Tech and fully support the teaching of science and biology with the perspective that life has changed through time and will continue to change through time, that indeed, survival of the species is randomly based on the selection of genes that aid the survival of the species in an ever changing world. The history of this earth fully supports this view, and to even consider that "somebody" designed the system is absolutely ridiculous, and, certainly outside of our attempt to educate people. If I can be of assistance just let me know. PLEASE do not replace information about evolution in our children's science textbooks with the so-called "Intelligent Design" theories advocated by nuts like the Raelians.		
January 11, 2003	Dawn E. Warfield 1535 Lee Street, East Charleston, WV 25311 Warfield_dawn@hotmail.com			

December 12, 2002

Karl Priest

I am presenting four separate suggestions for revision of the Science Standards currently up for public comment. Certainly the WUDE will agree that changes need to be made. The four separate comment categories I am submitting are numbered (in parenthesis) below. It is reasonable that some parts (or all) of suggestions (2) through (4) could be implemented into revisions of the Standards.

- (1) Since evolution exists nowhere, never has and never will and since evolution is not only the phantom of the universe, it is the inverse of reality—I propose that **evolution be eliminated** entirely from the curriculum.
- (2) Knowing it is likely that suggestion (1) will not readily be accepted I suggest that an **Intelligent Design component be inserted** into the curriculum. I have taken specific parts of the Standards and made revisions (in bold). Since some standards are repeated at various levels I only selected one example. Obviously the suggested changes should be instituted wherever it occurs in other levels.

Page 1

Standard 1: History and the Nature of Science
The study of science as a human endeavor provides for the acquisition of ideas leading toward the current knowledge base that represents science content. The nature of science encompasses the basic values and beliefs that make up the scientific world view, how scientists go about their work and the general culture of scientific enterprise. Studying historical and current discoveries, including **Intelligent Design**, of scientists and scientific milestones provides students with information about how discoveries have influenced current scientific thought and advancements. Students should understand that the continuous development of scientific knowledge shapes history. The study of the history and nature of science clarifies scientific inquiry and the role of science in the development of world cultures.

Standard 3: Unifying Themes
Broad unifying themes complement the perspectives presented in the other content standards. These themes are fundamental to understanding and unifying the various science

		disciplines. Major unifying themes are systems, models (including Intelligent Design) and changes. Standard 5: Scientific Technology and Application Page 3 Standard 3: Unifying Themes (SC.S.3) Students will: * demonstrate an understanding of interdependent themes and design present in the natural and technological world (e.g., systems, order, organization, and design; evidence, models, and explanation; constancy, change and measurement; equilibrium and evolution; form and function). * demonstrate the ability to draw conclusions about and predict changes in natural and technological systems. Standard 4: Science Subject Matter/Concepts (SC.S.4) Students will: * demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models (including Intelligent Design) as delineated in the objectives, SC.4.4.25 become familiar with the geologic column. Page 56 (7th Grade) Standard 1: History and the Nature of Science SC.S.1) Students will: • demonstrate an understanding of the history of science and the development of scientific knowledge; • Earth's History • SC.7.4.29 compare and contrast periods of geologic column using rocks and rock layers. SC.9.4.39 interpret topographic maps, weather maps and charts, and astronomical models such as solar systems, galaxies, constellations, stellar types and stellar development.

		History and the Nature of Science Objectives Students will: SC.10.1.1 formulate scientific explanations based on observations and experimental evidence, accounting for variability in experimental results. SC.10.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations (including Intelligent Design); communicate and defend a scientific argument). Unifying Themes Objectives Students will: SC.10.3.1 analyze systems to understand design in the natural and technological world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events. Evolution, Design, and Interdependence of Organisms SC.10.4.8 compare the embryonic development of invertebrate and vertebrate animals (e.g., ontogeny and phylogeny, diversity, taxonomy) with alternative explanations. SC.10.4.9 construct and manipulate models which show variations (with limitations) in living things. SC.10.4.10 recognize that fossil records provide a scientific explanation for variation in the species and common ancestors and that the "Cambrian Explosion" raises serious questions about this concept. SC.10.4.11 relate the role of natural selection (with its limitations) to the development, diversity and or extinction of a species. Theories About Origin and Evolution in the Earth Systems and Universe SC.10.4.36 investigate theories for and

		against fossils as evidence for evolution and indicators of paleo-environments. SC.10.4.37 compare and contrast morphological features of fossils to present-day organisms. SC.10.4.38 use fossil evidence, for and against, estimating the relative and absolute ages of rock layers. Performance Descriptors (SC.PD.10.4) Distinguished The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in science subject matter/concepts. Students demonstrate knowledge, applications and interconnections of the objectives in Standard 4 in the following categories: The Cell and Molecular Basis for Heredity Evolution, Design, and Interdependence of Organisms Matter, Energy, and Organization in Living Systems Structure and Properties of Matter Chemical Reaction Energy Motions and Forces Energy in the Earth System Geochemical Cycles Origin and Evolution, or Design, in the Earth Systems and Universe Students analyze interconnections among the above categories. Standard 6: Science in Personal and Social Perspectives (SC.S.6) Students will: * demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues; * demonstrate the ability to evaluate the impact of different points of view on the theory of evolution, health, population, resource and environmental practices; Evolution and Intelligent Design AB.4.21 discuss evidence (for and against) evolution and natural selection, including

		examples such as peppered moth, fossil records, biogeography, molecular biology and comparative anatomy. AB.4.22 investigate and discuss that behavioral response is a set of actions determined in part by heredity and in part from experience. AB.4.23 research pioneers and current authors of evolutionary and Intelligent Design ideas. AC.4.3 research and evaluate the contributions of Dalton, Planck, Bohr, Einstein, and de Broglie, Heisenberg, and Schrodinger to the development of the atomic theory. AES.4.2 identify and describe the structure, origin, and development of the lithosphere, hydrosphere, atmosphere and biosphere. AES.4.16 investigate the development of the ocean floor that results in the creation of new materials and features. (3) A third proposal which would, according to polls, satisfy a sizable majority of the public is to clearly state that evolution can be criticized by public school science teachers. A simple paragraph, at the beginning of the Standards, would meet this need. I present two suggestions for giving teacher guidance in what they can do. A. <u>The Buckna/Laidlaw "Origins of Life" Policy</u> <i>As no theory in science is immune from critical examination and evaluation, and recognizing that evolutionary theory is the only approved theory of origins that can be taught in West Virginia: whenever evolutionary theory is taught, students and teachers are encouraged to discuss the scientific information that supports and questions evolution and its underlying assumptions, in order to promote the development of critical thinking skills. This discussion would include only the scientific evidence for and against evolutionary theory, as it seeks to explain the origin of the universe and the diversity of life on our planet</i> B. <u>The Priest Proposal (A Paraphrase of Darwin's Own Words)</u> <i>There is a majesty of life and students</i>

should be able to view all sides of the question of origins with impartiality. This will remove the prejudice by which the subject is overwhelmed. A large field of inquiry will be opened on the causes of origins and variation. West Virginia students and teachers should weigh the scientific evidence on all sides of the origins issue.

4) Lastly, I submit something that will satisfy every fair-minded citizen of West Virginia and that is to **eliminate the indoctrination of public school students** into the basic premise of atheism. The United States Constitution mandates that states be neutral toward religion. The West Virginia Science Standards are NOT neutral toward religion. For example, Content Standard 3 (Unifying Themes) begins to indoctrinate children at the kindergarten level and continues to do so at every level into high school. This standard implies that natural things (i. e. the child) are not designed. This is a philosophical premise that has major religious implications. This same standard states that students will demonstrate an understanding of evolution. Standard 5 reinforces the belief that natural things are not designed. A whole lot of West Virginians have a real problem with this dogmatic approach to origins.

(4) The Standards should be revised to eliminate the naturalistic teaching that natural objects and systems are not designed. Most of my suggested changes in (3) would remain with the exception of specific references to Intelligent Design. A provision should be added that will encourage teachers to (a) discuss origins science objectively and without philosophical, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. Also, objectives should be added that will require students to learn about the naturalistic assumption (that the world is not designed) which is used in current origins science and clearly stated in the Standards.

January 3, 2003	James C. Rymer Box 329 Saint Marys, WV 26170	Please amend Policy 25203.3 to SPECIFICALLY state that teachers have academic freedom under the First Amendment in the classroom to discuss other theories with respect to the origin of life in addition to Darwinian evolution. Please consider the following: MANY FRAUDS, such as Piltdown man, HAVE APPEARED IN H.S. BIOLOGY TEXTBOOKS during the past 50 years or so. These alleged Aproofs@ or Amissing links@ in our supposed ancestry have caused much embarrassment in the scientific community. As a former biology teacher and then believer in organic evolution, I COULD NEVER FIND THE AMISSING LINK@ Even one issue of ASCIENCE NEWS@ CAST DOUBT ON THE THEORY OF DARWINIAN EVOLUTION. Furthermore, I was shocked to learn that DARWINIAN EVOLUTION SERVED AS UNDERPINNING FOR MANY OF THE MOST BRUTAL PHILOSOPHIES OF OUR AGE! Finally, I searched, through the writings of Russian biochemist A.I. Oparin and others, for documented proof at the molecular level. The results of my research is best expressed by the author R.I. Wysong: AEVOLUTION IS NOT A FORMULATION OF THE TRUE SCIENTIFIC METHOD. THEY (THESE SCIENTISTS) REALIZE EVOLUTION MEANS THE FORMATION OF UNKNOWN ORGANISMS FROM UNKNOWN CHEMICALS PRODUCED IN AN ATMOSPHERE OR OCEAN OF UNKNOWN COMPOSITION UNDER UNKNOWN CONDITIONS, WHICH ORGANISMS HAVE THEN CLIMBED UN UNKNOWN EVOLUTIONARY LADDER BY AN UNKNOWN PROCESSES LEAVING UNKNOWN EVIDENCE.@ If for no other reasons than preservation of sanity and, hopefully, to avoid magnified holocaust repetitions of past centuries, students and teachers should have freedom to explore other theories with respect to the origins of life.		
January 3, 2003	Denzil W. Sloan P.O. Box 90 Reader, WV 26167	The State Board of Education needs to include consideration that God created life in the new science standards policy (2520.3). The whole notion that life evolved from simpler forms of life is preposterous, but this is what I was taught in school as well as everyone else who attended public schools. Back in the 19th century the idea of evolution might have been more believable, because people then didn't know as much as we do today about the natural world. In fact, the more one learns about the natural world around us, the less		

January 3, 2003	Fred and Gloria McCallister Southside, WV	believable evolution should become. Our own bodies testify to this fact. In order to see, our eyes need to have a lens and that lens needs to focus in just the right way. It needs any eyeball which must be filled with fluid. It needs a retina to sense light and nerves to send the message to the brain. All these features and more must work in order for us to see, but the evolutionists insist that all of these characters had to evolve until one day nature finally got it right and some animal was finally able to see. The beauty and complexity of the natural world around us presents a great problem for our modern-day skeptics. Such a world must have been made by a good God because of evil God would have made an ugly and uninteresting world. Being a good God he would naturally be deserving of worship and maybe even obedience. And that is something that our purveyors of modern-day flat-earth theory just can't tolerate. They need another way and evolution provides them that way. I am not asking that the teaching of evolution be eliminated from the schools. Any idea, however false, that is widely held as evolution needs to be understood-not so that it can be believed, but so that it can be refuted. However, I insist that the new science policy 2520.3 require that the creation of the world by God be included in science classes on an equal basis with evolution.		
		I didn't realize what an important job you have now. May I congratulate you upon this promotion. Gloria and I are concerned with the WV Science Standards as they relate to the origins of life. As you know, Gloria has taught in the Mason County School System for 22 years and now retired from there. She has experienced some of the very things that cause us to be concerned about what the children are being taught. I, as a pastor for over 30 years, have also encountered the same things as I talk with the people of the church communities. Parents are concerned that the evolutionary concept is taught as fact from first grade through the 12th grade in our WV schools. We are not scientists, neither are we opposed to scientific teachings in our WV schools. However, we are opposed to teaching a concept that is not backed up by science, but by philosophy and the answers are already known before the scientific work is done. There are many scientists in the US that do not buy the evolutionary, naturalistic, world view. Their experiments, done on the very same		

		evidence that evolutionary scientists examine, find altogether different conclusions. Therefore, Gloria and I feel that all of these disciplines of science should be taught in our public schools here in WV. With strict scientific objectivity with religious neutrality and without the naturalism philosophy. Let us suggest these changes in the standards: 1. Don't teach Origins Science to children before they are able to understand the consequences of these teachings. 2. Revise the standards to eliminate the naturalistic teachings that natural objects and systems are not designed. Replace these <u>one-sided</u> teachings with objectives that encourage children to investigate and analyze the evidence that supports both the design and naturalistic hypotheses. 3. Add explicit provisions that will encourage teachers to: a. Discuss origins science objectively and without philosophic, naturalistic, or religious bias. b. Help students think critically about and understand the full range of scientific view that exist regarding origins of life. We find that present textbooks present only naturalistic theories of origins and discourage criticism of the evolution theory. 4. Add objectives what will require students to learn about the naturalistic assumptions that are used in current origins science and the effects of the assumptions, particularly in light of the historic character of origins science.		
January 3, 2003	Harold and Dream Turley 428 Waverly Drive Cross Lanes, WV 25313	To whom this may concern: we do not believe in evolution and think it should not be taught in our schools.		
January 3, 2003	Karen Bonnett 664 Glenview Road Crab Orchard, WV 25827	As a teacher and parent, it concerns me that Policy 2520.3 of the West Virginia Science Standards under the West Virginia Department of Education appears to promote evolution as the only origin of life science to be taught. This would cause children to accept this <u>theory</u> as <u>fact</u> . Since theories are simply views to be considered for study, I ask that Policy 2520.3 be amended to allow for other theories to be discussed in the classroom as well; such as Intelligent Design.		
January 7, 2003	Robert Seymour Science Supervisor Kanawha Co. Schools	The new Standards and Objectives for Science, which are out on comment, tend to highlight fundamental weaknesses in the science standards and objectives. A number of science teachers have approached me with the fact that it is now time to separate the good from the bad within CATS. CATS has established numerous factors which have		

strengthened science instruction. However (for some reason which is unimportant at this time) in the process of establishing Coordinated and Thematic Science, CATS has entangled sound science instruction. A strong science program is very important to us. The academic strength of our schools and the futures of our students are directly dependent upon effective science classes. However as currently presented CATS only confounds and confuses those responsible for the administration and instruction of science. The new Content Standards and Objectives for Science are overwhelmingly verbose. Your Foreword to the proposed refinement of Policy 2520 uses the descriptive statement, a format that can easily be used and understood.@ However the@refined@ science content standards and objectives accentuate the erroneous aspects of CATS and are anything for a format that can easily be used and understood. The Science, Content Standards and Objectives were proclaimed to be a refinement for the of the former IGOs. In actuality they are the product of multi-layered revisions and have become a rather extreme extrapolation of the original IGOs. They appear to be an attempt to fit square pegs into round holes.=> For sure they are something other than easily used and understood@. The original IGOs were built around Goals which tended to be wordy, but it did not convey the essence of science. The rewrite destroyed that structure in favor of Standards which are convoluted and filled with verbose misrepresentations of science education. During the refinement@ processes, the positive aspects of CTS become buried and or misrepresented in a lengthy mass of statements. As a result the format and too many of the phrases are so contrived that they are now barely intelligible, marginally useful, phrases which do not meet the criterion for novice writing established by the Content Standards for Language Arts. The factors which caused this are probably many and varied and are of little concern to the future. What is of concern is how best to establish effective meaningful Science, Content Standards and Objectives. The first step toward an effective refinement is to set proper goals. The establishment of state standards should have as its primary goal: the clear and concise communication of a curriculum that may be easily used and understood. To do so, it must be a simple, straight forward tool for teachers and

administrators. It must be written by them, to them and for them. It need not be an elaborate lengthy document but rather a concise set of Standards and Objectives. These must define science education so that teachers will teach it and administrators will value the establishment and maintenance of the proper instructional environment (labs, equipment, classroom ratios, etc.). Last, but of equal value, is the necessity for clarity so the assessments may be meaningful and effective. In the proposed Policy 2520 the mathematics section is about forty five pages long, the Reading and Language Arts section is only thirty two pages. However the Science section is over ninety pages! Why should it take more pages to set forth the standards for science than it does for all of mathematics, reading and language arts? Obviously if the writing is effective and the science is to the point it should not. We believe that by working together CATS may be revised and serve as an effective base for improving science instruction and administration. Over the holidays a number of us met to figure how we could help generate a viable Content Standards and Objectives for Science. As we perceive the current limitations of time and staff which you now face cooperation is the only realistic options. Given the concern of the state department for effective Content Standards and our commitment to a strong science program it can be done. We decided that the only way we could provide you with a real meaningful response had to be a total rewrite. This was the only way we could clearly and definitively communicate the needed changes. Concurrently providing the WV SDE with a document with broad teacher endorsement is probably the only economically viable way the WV SDE can possibly adopt the suggested changes in an informed and timely manner. The timeline is near impossible, but the need is great and the results so very important to all of us. Therefore we are working holidays, weekends and evenings. A significantly stronger draft of the Content Standards and Objectives for Science completed in a few more days. Your understanding of the situation and support for our commitment to an effective Coordinated and Thematic Science in a format that can easily be used and understood will be deeply appreciated. I realize that this is but one of many issues with which you must work. However this issue is of prime importance to us. We would appreciate an

January 9, 2003	Betty H. Jarvis 4812 Venable Ave. Charleston, WV 25304	opportunity to work with your staff to ensure a product appropriate to sound science instruction and to the broader goals of the state department. I may be contacted at 348-6161- or 348-1350.		
January 9, 2003	Teresa Terry Box 157 Molly Lane Beckley WV 25801	I wish to comment on the standards, regarding evolution, demanded by the West Virginia Department of Education. These standards are another attempt to indoctrinate students with a false theory. Evolution is a theory which has never been proven, and never will! It is unconscionable for tax-supported public schools to indoctrinate our children in the evolutionary theory. I am asking that these standards be withdrawn, and that all theories of origin be taught. Remember, we are to educate, not indoctrinate.		
January 9, 2003	Delmar Webb P.O. Box 128 Glen Daniel, WV	Policy 2520.3 appears to be one sided in the presentation of the origins of life. Please allow other views and theories to be explored by our children in school. Evaluation is not fact but a theory. Why then is it the only theory being presented in the classroom? This is wrong!		
January 9, 2003	Rick Terry Box 157 Molly Lane Beckley WV 25801	Policy 2520.3 appears to me to be in favor of Evolution. This is not the Democratic way of our country. If you have to teach evolution then teach Creation and Evolution and let our children decide for them selves the way that they want to believe lie you and I had the opportunity to do.		
January 9, 2003	Kevin McCoy, State Director AFA of WV P.O. Box 11752 Charleston, WV 25339	Policy 2520.3 appears to promote evolution as the only true science regarding origins of life. Evolution is only a theory. There is much disagreement within the scientific community regarding this theory. If this theory has any merit then it should be able to withstand critical examination. Children should have other views to be able to think critically. Please revise the policy to reflect his.		
January 9, 2003		Purpose and Intent Regarding Origins of Life The West Virginia standards regarding origins of life are intended to ensure that students are taught and equipped to critically examine origins theories and to identify and distinguish between scientific fact, theory, and error. There is more scientific disagreement about Darwinian evolution than about other scientific theories. Therefore, students should know about evolution and why scientists today continue to investigate, critically analyze, and in some instances, reject aspects of evolutionary		

		theory that nevertheless continue to be taught as undisputed fact in classrooms. Teachers should also have the academic freedom to teach about, and subject to the same rigorous examination, other origins theories such as the Design theory@. By adding this language students will be taught and equipped to critically examine origins theories and to identify and distinguish between scientific fact, theory, and error, in keeping with academic excellence and furtherance of a robust academic inquiry. Today I received a copy of a letter of Intelligent Design network, inc. (IDnet) to Brenda West regarding the science policy. That letter identifies additional issues of a critical nature that the Department and the Board should seriously consider. We agree with the comments and suggestions in that letter. Students should not be told that life is not designed and evolutionary theory should not be addressed until they reach the age and maturity necessary to understand and comprehend the subject matter and the arguments and evidence for and against the various theories of our origin. It is our suggestion that you give favorable consideration to both the IDnet recommendations and the above language which also addresses many of the concerns in the IDnet letter. If you have any questions regarding this matter, please don't hesitate to contact me.		
January 9, 2003	Ashley Switzer	Origins science is the science which seeks to answer the questions, What is the origin of life? What is the origin of the diversity of life? Where do we come from?@. By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidably impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which support both the design and naturalistic hypotheses and please add to the Standards explicit provisions that will encourage teachers to discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption.		
January 9, 2003	John G. Arend Institute for Creation Research 10946 Woodside Avenue N.	I understand that the West Virginia Public School Science Standards are being considered for revision, and that responses from interested parties		

	Santee CA 92071	must be received by this Friday, January 10th. Therefore, I am pleased to submit a packet of pertinent information assembled as a result of the many questions received from school administrators, teachers, and parents regarding this issues and the recent federal law, H.R. 1. Although this packet will be sent by mail in time to meet the deadline, I do have a question and also would like to offer a comment: Q 1: Are the persons responsible for subject Standards in your State familiar with the >No Child Shall Be Left Behind education bill and do they intend to comply with the accompanying section dealing with the recommended a balanced treatment@ of teaching controversial theories such as biological evolution and the origin of life? C 1: Please add to the Standards objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations.@] Also, please add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. Thank you for your consideration. If we at ICR can be of further assistance of any kind, please call on us.			
January 10, 2003	Joan McCabe, W.C. Johnson, Brent O'Dell, Francine Windon, Sandra VanLuik, Christine Hylton, Charles Bennett	The Science Department of Eastern Greenbrier supports the Revised Scope and Sequence for CATS Seve3n through Ten that has been proposed by Kanawha County. We support the Content Standards and Objectives that are grouped to emphasize living systems and matter in seventh grade, Earth systems in eighth grade and physical systems in ninth grade.			
January 10, 2003	Carolyn S. Davis, P.O. Box 46, Mallory, WV 25634 Joan Lafferty, Box 305, Davin, WV 25617 Margaret Miller, 808 Main St., Man, WV 25635 Sarah J. Davis, 6038 E Pea Ridge Rd, Huntington, WV 25705	We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious			

Patricia Davis, 6038 E Pea Ridge Rd, Huntington,
WV 25705

beliefs. As such, we believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Scientific objectivity will lead to good science and religious neutrality. Furthermore, this complex and highly controversial subject should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations. Our concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science, instead they seek to promote an Evolution Only@ or naturalistic world view. The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or occur@ via a purposeless and unguided evolutionary@ process. The same lesson is prescribed for each following grade level through the 12th grade. Teaching students that they are a part of a natural world@ that is not designed is philosophy and not science. It is the philosophy of Naturalism. Naturalism is a belief that life emerges via purely unguided natural processes and not by design. Naturalism is the fundamental tenet of atheism, agnosticism and secular humanism while design is the fundamental tenet of theistic religion. Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. The standards establish objectives that will lead to an understanding about Evolution Only@. Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. In this respect the standards are one sided and dogmatic. Their obvious objective is to promote a Naturalistic world view. Origins science is the science which seeks to answer the questions What is the origin of life@ What is the origin of the diversity of life? Where do we come from?@ By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidable impact religious and nonreligious beliefs. Rather than take sides on an issue so

important to religion, the standards should address the subject with strict scientific objectivity. To promote critical thinking, scientific objectivity and religious neutrality, we suggest the following changes to the standards. 1. Revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations. 2. Revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teachings with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. (In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not objects, is that the former are not designed for a purpose.) Add explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. (Many provisions of the standards would seem to encourage this concept indirectly. However, this encouragement needs to be explicitly focused on origins science, because textbooks presently teach only naturalistic theories of origins and discourage criticisms of evolutionary theory. Furthermore, teachers have been penalized when they have attempted to teach this subject honestly and objectively.) 4. Add objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. (The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to predict the

January 10, 2003	Mayford G. Witt 2511 J Smith Road Charleston, WV 25314	impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations.@) I taught for six years in Public Schools with a certification in Biology and Chemistry and also have a Master Degree in Secondary Education. I would like to offer some comments on the Standards and Objectives for Science Curriculum for the State of West Virginia. When starting with a new group of students, I always introduced the four steps of Scientific Investigation as the initial lesson. Throughout the year this principle could be applied to every lesson except one. When discussing the origins of life (or any aspect of macro evolution) it was always obvious the four steps of investigation could not be applied to this Aidea@. As a former teacher and a current parent of five children in public schools, I object to conjectures and suppositions being taught as fact. Students are taught that life could@ have come from aliens@ in space or a big bang@ in space or possibly@ some chemicals that got together in a swamp and a miraculously@ Formed cells, which are indeed not a simple@ as we are told but actually extremely complex. In a course where every chapter review encourages students to Think Critically, fiction such as the origins of life@ should not be taught as fact and probably not at all. If for some reason these ideas are taught, it should only be taught as ideas and not as the basis for all living organisms. When reviewing Policy 2520.3 and establishing Standards And Objectives for Science, I would encourage the Board to leave fiction with the literature curriculum and adopt a policy that excludes teaching fancy ideas for the origin of life as fact. Thank you for the great job you are doing and for taking time to consider this issue. As a West Virginia teacher (St. Francis de Sales School, 4th grade), I feel all students in the state of West Virginia deserve to be taught all known views of how the earth came into being so they can process this information and make decisions for themselves. I am a science professor at WV Tech and fully support the teaching of science and biology with the perspective that life has changed through time and will continue to change through time, that indeed, survival of the species is randomly based on the selection of genes that aid the survival of the		
January 10, 2003	Joanne McCallister jcmiteach@yahoo.com			
January 15, 2003	John Parks jparks@wvutec.edu			

			species in an ever changing world. The history of this earth fully supports this view, and to even consider that "somebody" designed the system is absolutely ridiculous, and, certainly outside of our attempt to educate people. If I can be of assistance just let me know.		
January 13, 2003	Carmen Silliman Ht_silliman@hardynet.com		Someone sent me the article on ID and teaching of Evolution in WV schools and your address. I may be a strong Democrat but I am not a believer in evolution. There is such a thing as a "soul" involved with humans and animals do not have souls. I fought this in the San Antonio TX schools in 1973. I guess you were to get comments.		
January 13, 2003	Sarah Pallas, Ph.D. Associate Professor Georgia State University Atlanta, GA 30302		ID is preparing an assault on science curriculum in WV, last night there were no scientists at the school board meeting, not a good sign. If you have colleagues in WV, please notify them that they need to act fast to avoid losing evolution from their K-12 curriculum and getting intelligent design instead.		
January 14, 2003	Mekisner@aol.com		My concern is that the proposed WV standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" as a naturalistic world view. This is dogmatic. Please change the standards to eliminate that problem. Origins science should seek to answer the questions: What is the origin of life? What is the origin of the diversity of life? Where do we come from? By seeking to discuss these questions with children, WV has taken unavoidable impact on religious and nonreligious see rather than take sides on an issue, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.		
January 8, 2003	Gladisjean@aol.com		I suggest the standards be changed to promote critical thinking, scientific objectivity and religious neutrality regards origins.		
January 10, 2003	Arielroth@cs.com		I have looked at the comments and suggestions made by the Idnet about the WV science policy submitted on January 6, 2003. I favor these suggestions and any other ones that will introduce a spirit of inquiry and academic freedom in the science classroom. Science needs to be introduced as an open search for truth, not as a restricted and closed system of thought. In fairness and concern for all, alternatives to evolution need to be considered.		

January 8, 2003

PattyPulli@aol.com

Please revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations.

Please add to the Standards objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self-evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."

The proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. The standards establish objectives that will lead to an understanding about evolution only. Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. Please change the standards to eliminate that problem.

Thank you for your consideration.

RECEIVED

JAN 03 2003

James C. Rymer
Box 329
Saint Marys, WV 26170

December 18, 2002



Ms Brenda West
Office of Student Services and Assessment
Building 6, Room 722
Charleston, WV 25305-0330

Greetings Ms West:

Please amend Policy 25203.3 to SPECIFICALLY state that teachers have academic freedom under the First Amendment in the classroom to discuss other theories with respect to the origins of life in addition to Darwinian evolution. Please consider the following:

MANY FRAUDS, such as Piltdown man, HAVE APPEARED IN H. S. BIOLOGY TEXTBOOKS during the past 50 years or so. These alleged "proofs" or "missing links" in our supposed ancestry have caused much embarrassment in the scientific community.

As a former biology teacher and then believer in organic evolution, I COULD NEVER FIND THE "MISSING LINK" Even one issue of "SCIENCE NEWS" CAST DOUBT ON THE THEORY OF DARWINIAN EVOLUTION. Furthermore, I was shocked to learn that DARWINIAN EVOLUTION SERVED AS UNDERPINNING FOR MANY OF THE MOST BRUTAL PHILOSOPHIES OF OUR AGE!

Finally, I searched, through the writings of Russian biochemist A. I. Oparin and others, for documented proof at the molecular level. The results of my research is best expressed by the author R. I. Wysong:

"EVOLUTION IS NOT A FORMULATION OF THE TRUE SCIENTIFIC METHOD. THEY (THESE SCIENTISTS) REALIZE EVOLUTION MEANS THE FORMATION OF UNKNOWN ORGANISMS FROM UNKNOWN CHEMICALS PRODUCED IN AN ATMOSPHERE OR OCEAN OF UNKNOWN COMPOSITION UNDER UNKNOWN CONDITIONS, WHICH ORGANISMS HAVE THEN CLIMBED AN UNKNOWN EVOLUTIONARY LADDER BY AN UNKNOWN PROCESSES LEAVING UNKNOWN EVIDENCE."

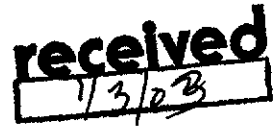
If for no other reasons than preservation of sanity and, hopefully, to avoid magnified holocaust repetitions of past centuries, students and teachers should have freedom to explore other theories with respect to the origins of life.

Sincerely,

James C. Rymer

Denzil W. Sloan
P.O.Box 90
Reader, WV 26167
386-4431

December 30, 2002



Brenda West
Office of Student Services and Assessment
Building 6, Room 722,
1900 Kanawha Boulevard, East
Charleston, West Virginia 25305-0330 *RC:* WV State Science Standards-policy 2520.3

Dear Ms West:

The state Board of Education needs to include consideration that God created life in the new science standards policy(2520.3).

The whole notion that life evolved from simpler forms of life is preposterous, but this is what I was taught in school as well as everyone else who attended public schools. Back in the 19th century the idea of evolution might have been more believable, because people then didn't know as much as we do today about the natural world.

In fact, the more one learns about the natural world around us, the less believable evolution should become. Our own bodies testify to this fact. In order to see, our eyes need to have a lens and that lens needs to focus in just the right way. It needs an eyeball which must be filled with fluid. It needs a retina to sense light and nerves to send the message to the brain. All these features and more must work in order for us to see, but the evolutionists insist that all of these characters had to evolve until one day nature finally got it right and some animal was finally able to see.

The beauty and complexity of the natural world around us presents a great problem for our modern-day skeptics. Such a world must have been made by a good God because an evil God would have made an ugly and uninteresting world. Being a good God he would naturally be deserving of worship and maybe even obedience. And that is something that our purveyors of modern-day flat-earth theory just can't tolerate. They need another way and evolution provides them that way.

I am not asking that the teaching of evolution be eliminated from the schools. Any idea, however false, that is as widely held as evolution needs to be understood-not so that it can be believed, but so that it can be refuted. However, I insist that the new science policy 2520.3 require that the creation of the world by God be included in science classes on an equal basis with evolution.

Sincerely,

Denzil W. Sloan

RECEIVED

JAN 03 2003

Southside, WV
December 31, 2002

Ms. Brenda West
Bldg. 6, Room 722
1900 Kanawha Boulevard, East
Charleston, WV 25305-0330

Dear Brenda:

I didn't realize what an important job you have now. May I congratulate you upon this promotion.

Gloria and I are concerned with the WV Science Standards as they relate to the origins of life. As you know, Gloria has taught in the Mason County School System for 22 years and now retired from there. She has experienced some of the very things that cause us to be concerned about what the children are being taught.

I, as a pastor for over 30 years, have also encountered the same things as I talk with the people of the church communities. Parents are concerned that the evolutionary concept is taught as fact from first grade through the 12th grade in our WV schools.

We are not scientists, neither are we opposed to scientific teachings in our WV schools. However, we are opposed to teaching a concept that is not backed up by science, but by philosophy and the answers are already known before the scientific work is done.

There are many scientists in the US that do not buy the evolutionary, naturalistic, world view. Their experiments, done on the very same evidence that evolutionary scientists examine, find altogether different conclusions.

Therefore, Gloria and I feel that all of these disciplines of science should be taught in our public schools here in WV. with strict scientific objectivity with religious neutrality and without the naturalism philosophy.

Let us suggest these changes in the standards:

1. Don't teach Origins Science to children before they are able to understand the consequences of these teachings.
2. Revise the standards to eliminate the naturalistic teachings that natural objects and systems are not designed. Replace these one-sided teachings with objectives that encourage children to investigate and analyze the evidence that supports both the design and naturalistic hypotheses.

RECEIVED

JAN 03 2003

Harold & Dreama Turley
428 Waverly Drive
Cross Lanes, WV, 25313

To whom this may concern:

We do not believe in evolution
and think it should not be
taught in our schools.

Sincerely,

Dreama Turley
Harold Turley

January 3, 2003

received
1/8/03

Ms. Brenda West
Office of Student Services and Assessment
Bldg. 6, Room 722
1900 Kanawha Blvd., East
Charleston, West Virginia 25305-0330

Re: Policy 2520.3

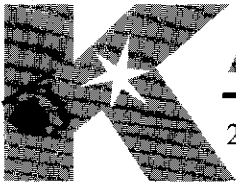
To Whom It May Concern:

As a teacher and parent, it concerns me that Policy 2520.3 of the West Virginia Science Standards under the West Virginia Department of Education appears to promote evolution as the only origin of life science to be taught. This would cause children to accept this theory as fact. Since theories are simply views to be considered for study, I ask that Policy 2520.3 be amended to allow for other theories to be discussed in the classroom as well; such as, Intelligent Design.

Respectfully,



Karen Bonnett
664 Glenview Road
Crab Orchard, WV 25827



KANAWHA COUNTY SCHOOLS

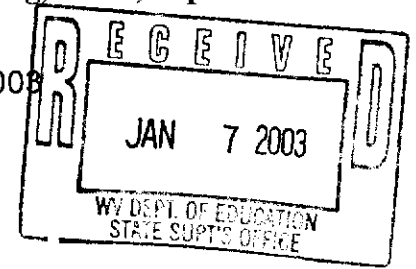
200 Elizabeth Street, Charleston, West Virginia 25311-2119 • (304) 348-7732 • Fax (304) 348-7735

Ronald Duerring, Ed.D., Superintendent

*Brenda West
cc: Deborah Brown*

Dr. David Stewart, Superintendent
West Virginia Department of Education

January 6, 2003



Dr. Stewart,

The new Standards and Objectives for Science, which are out on comment, tend to highlight fundamental weaknesses in the science standards and objectives. A number of science teachers have approached me with the fact that it is now time to separate the good from the bad within CATS. CATS has established numerous factors which have strengthened science instruction. However (for some reason which is unimportant at this time) in the process of establishing Coordinated and Thematic Science, CATS has entangled sound science instruction.

A strong science program is very important to us. The academic strength of our schools and the futures of our students are directly dependent upon effective science classes. However as currently presented CATS only confounds and confuses those responsible for the administration and instruction of science.

The new Content Standards and Objectives for Science are overwhelmingly verbose. Your Foreword to the proposed refinement of Policy 2520 uses the descriptive statement, "a format that can easily be used and understood." However the "refined" science content standards and objectives accentuate the erroneous aspects of CATS and are anything but a format that can easily be used and understood.

The Science, Content Standards and Objectives were proclaimed to be a refinement of the former IGOs. In actuality they are the product of multi-layered revisions and have become a rather extreme extrapolation of the original IGOs. They appear to be an attempt to "fit square pegs into round holes." For sure they are something other than "easily used and understood". The original IGOs were built around Goals which tended to be wordy, but it did convey the essence of science. The rewrite destroyed that structure in favor of Standards which are convoluted and filled with verbose misrepresentations of science education. During the "refinement" processes, the positive aspects of CATS became buried and or misrepresented in a lengthy mass of statements. As a result the format and too many of the phrases are so contrived that they are now barely intelligible, marginally useful, phrases which do not meet the criterion for novice writing established by the Content Standards for Language Arts

The factors which caused this are probably many and varied and are of little concern to the future. What is of concern is how best to establish effective meaningful Science, Content Standards and Objectives.

The first step toward an effective refinement is to set proper goals. The establishment of state standards should have as its primary goal: the clear and concise communication of a curriculum that may be easily used and understood. To do so, it must be a simple, straight forward tool for teachers and administrators. It must be written by them, to them and for them. It need not be an elaborate lengthy document but rather a concise set of Standards and Objectives. These must define science education so that teachers will teach it and administrators will value the establishment and maintenance of the proper instructional environment (labs, equipment, classroom ratios, etc.). Last, but of equal value, is the necessity for clarity so the assessments may be meaningful and effective.

In the proposed Policy 2520 the mathematics section is about forty five pages long, the Reading and Language Arts section is only thirty two pages. However the Science section is over ninety pages! Why should it take more pages to set forth the standards for science than it does for all of mathematics, reading and language arts? Obviously if the writing is effective and the science is to the point it should not.

We believe that by working together CATS may be revised and serve as an effective base for improving science instruction and administration. Over the holidays a number of us met to figure how we could help generate a viable Content Standards and Objectives for Science. As we perceive the current limitations of time and staff which you now face cooperation is the only realistic option. Given the concern of the state department for effective Content Standards and our commitment to a strong science program it can be done.

We decided that the only way we could provide you with a real meaningful response had to be a total rewrite. This was the only way we could clearly and definitively communicate the needed changes. Concurrently providing the WV SDE with a document with broad teacher endorsement is probably the only economically viable way the WV SDE can possibly adopt the suggested changes in an informed and timely manner.

The timeline is near impossible, but the need is great and the results so very important to all of us. Therefor we are working holidays, weekends and evenings. A significantly stronger draft of the Content Standards and Objectives for Science completed in a few more days. Your understanding of the situation and support for our commitment to an effective Coordinated and Thematic Science in a format that can easily be used and understood will be deeply appreciated. I realize that this is but one of many issues with which you must work. However this issue is of prime importance to us. We would appreciate an opportunity to work with your staff to ensure a product appropriate to sound science instruction and to the broader goals of the state department. I may be contacted at 348-6161 or 348-1350.

Respectfully,



Robert Seymour
Science Supervisor
Kanawha County Schools

received
1/9/03

4812 Venable Ave.,
Charleston, WV 25304
January 7, 2003

Dear Mrs. West,

I wish to comment on the standards, regarding evolution, demanded by the West Virginia Department of Education. These standards are another attempt to indoctrinate students with a false theory. Evolution is a theory which has never been proven, and never will!

It is unconscionable for tax-supported public schools to indoctrinate our children in the evolutionary theory. I am asking that these standards be withdrawn, and that all theories of origin be taught.

Remember, we are to educate, not indoctrinate.

Sincerely,
Betty H. Jarvis

✓
Policy 2520.3 appears to be one sided
in the presentation of the origins of life.
Please allow other views and theories to
be explored by our children in school.
Evolution is not fact but a theory.
Why then is it the only theory being
presented in the classroom?

This is wrong!

RECEIVED

JAN 09 2003

Leresa Perry
Box 157
Molly Lane
Beckley W Va 25801

Policy 2520.3 appears to me to ✓
be in favor of Evolution. This is
not the Democratic way of our
Country. If you have to teach
Evolution then Teach Creation & Evolution
and let our Children Decide for
them selves the way that they
want to believe. like you and I
had the opportunity to do.

RECEIVED

JAN 09 2003

Delmer Webb
P.O. Box 128

Glen Daniel WVA 2584

Policy 2520.3 appears to promote evolution
as the only true science regarding origins of life.
Evolution is only a theory. There is much
disagreement within the scientific community
regarding this theory. If this theory has any
merit then it should be able to withstand
critical examination. Children should have
other views to be able to think critically.
Please revise the policy to reflect this.

Rick Terry

Box 157

Holly Lane Beckley W Va

25801

RECEIVED

JAN 09 2003

American Family Association of West Virginia

P. O. Box 11752
Charleston, WV 25339



Phone/Fax: (304)965-6700
Email: afawv@afo.net

January 8, 2003

RECEIVED

JAN 09 2003

Mr. Howard M. Persinger, Jr., President
West Virginia State Board of Education
State Capitol Complex
1900 Kanawha Boulevard, East
Charleston, West Virginia 25305

Re: Comments and Suggestions for the West Virginia SCIENCE – POLICY 2520.3
Science Content Standards and Objectives for West Virginia Schools (the "Policy")

Dear Mr. Persinger:

I am writing to express my serious concerns about Policy 2520.3 - Science Standards, which is currently open for comment. It appears from a cursory examination of Policy 2520.3, students will be instructed only in evolutionary dogma as it pertains to origins. The policy does not mention any need for students to consider criticisms of the theory although many scientists have expressed major concern about its scientific adequacy. Furthermore, no express provision is made to discuss or permit the discussion of competing theories such as intelligent design.

Our concerns relate more to what the Policy omits to say rather than what it does say. It omits to see that origins science is conducted objectively rather than in a biased way that promotes only a naturalistic belief system.

To this end and short of revamping the standards, I propose the following amended language be added to the policy as follows:

Statement of Purpose and Intent Regarding Origins of Life

"The West Virginia standards regarding origins of life are intended to ensure that students are taught and equipped to critically examine origins theories and to identify and distinguish between scientific fact, theory, and error. There is more scientific disagreement about Darwinian evolution than about other scientific theories. Therefore, students should know about evolution and why scientists today continue to investigate, critically analyze, and in some instances, reject aspects of evolutionary theory that nevertheless continue to be taught as undisputed fact in classrooms. Teachers should also have the academic freedom to teach about, and

subject to the same rigorous examination, other origins theories such as the Design theory."

By adding this language students will be taught and equipped to critically examine origins theories and to identify and distinguish between scientific fact, theory, and error, in keeping with academic excellence and furtherance of a robust academic inquiry.

Today I received a copy of a letter of Intelligent Design network, inc. (IDnet) to Brenda West regarding the science policy. That letter identifies additional issues of a critical nature that the Department and the Board should seriously consider. We agree with the comments and suggestions in that letter. Students should not be told that life is not designed and evolutionary theory should not be addressed until they reach the age and maturity necessary to understand and comprehend the subject matter and the arguments and evidence for and against the various theories of our origin.

It is our suggestion that you give favorable consideration to both the IDnet recommendations and the above language which also addresses many of the concerns in the IDnet letter. If you have any questions regarding this matter, please don't hesitate to contact me.

Sincerely,



Kevin McCoy, State Director
AFA of West Virginia
P. O. Box 11752
Charleston, WV 25339
304-965-6700

cc: WV State School Board Members:

Sandra M. Chapman, Vice-President
Delores W. Cook, Member
Sheila M. Hamilton, Member

Ronald B. Spencer, Secretary
Barbara N. Fish, Member
Paul J. Morris, Member

received
1/9/03

Tuesday, January 7, 2003

Ms. Brenda West
Building 6, Room 722
1900 Kanawha Blvd., East
Charleston, WV 25305

Dear Ms. West,

Origins science is the science which seeks to answer the questions, "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidably impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses and please add to the Standards explicit provisions that will encourage teachers to discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption.

Sincerely,



Ashley Switzer

RECEIVED

JAN 10 2003

We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, we believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Scientific objectivity will lead to good science and religious neutrality. Furthermore, this complex and highly controversial subject should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations.

Our concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade.

Teaching students that they are a part of a "natural world" that is not designed is philosophy and not science. It is the philosophy of Naturalism. Naturalism is a belief that life emerges via purely unguided natural processes and not by design. Naturalism is the fundamental tenet of atheism, agnosticism and secular humanism while design is the fundamental tenet of theistic religion.

Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. The standards establish objectives that will lead to an understanding about "Evolution Only." Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. In this respect the standards are one sided and dogmatic. Their obvious objective is to promote a Naturalistic world view.

Origins science is the science which seeks to answer the questions "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidable impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. To promote critical thinking, scientific objectivity and religious neutrality, we suggest the following changes to the standards:

1. Revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations.
2. Revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teachings with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. [In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not designed for a purpose.]
3. Add explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. [Many provisions of the standards would seem to encourage this concept indirectly. However, this encouragement needs to be explicitly focused on origins science, because textbooks presently teach only naturalistic theories of origins and

discourage criticisms of evolutionary theory. Furthermore, teachers have been penalized when they have attempted to teach this subject honestly and objectively.]

4. Add objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."]

**MAYFORD G. WITT
2511 J SMITH ROAD
CHARLESTON, WV 25314
304-744-9597**

✓
RECEIVED

RECEIVED

JAN 10 2003

January 10, 2003

**Brenda West
Office of Student Services and Assessment
West Virginia Department of Education
1900 Kanawha Boulevard East
Building 6, Room 722
Charleston, WV 25305-0330**

**RE: Policy 2520.3 Science Content Standards and
Objectives**

Dear Ms. West:

I taught for six years in Public Schools with a certification in Biology and Chemistry and also have a Master Degree in Secondary Education. I would like to offer some comments on the Standards and Objectives for Science Curriculum for the State of WV. When starting with a new group of students, I always introduced the four steps of Scientific Investigation as the initial lesson. Throughout the year this principle could be applied to every lesson except one.

When discussing the origins of life (or any aspect of macro evolution) it was always obvious the four steps of investigation could not be applied to this "idea". As a former teacher and a current parent of five children in public schools, I object to conjectures and suppositions being taught as fact. Students are taught that life "could" have come from "aliens" in space or a "big bang" in space or "possibly" some chemicals that got together in a swamp and "miraculously" formed cells, which are indeed not "simple" as we are told but actually extremely complex.

Page 2

In a course where every chapter review encourages students to Think Critically, fiction such as the "origins of life" should not be taught as fact and probably not at all. If for some reason these ideas are taught, it should only be taught as ideas and not as the basis for all living organisms.

When reviewing Policy 2520.3 and establishing Standards And Objectives for Science, I would encourage the Board to leave fiction with the literature curriculum and adopt a policy that excludes teaching fancy ideas for the origin of life as fact.

Thank you for the great job you are doing and for taking time to consider this issue.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Mayford G. Witt". The signature is written in a cursive style with a large initial "M".

Mayford G. Witt

RECEIVED

JAN 10 2003

Eastern Greenbrier Jr. High
Rt. 1 Box 150
Ronceverte, WV

January 8, 2003

Brenda West
Office Student Services and Assessment
West Virginia Department of Education
1900 Kanawha Blvd. East
Charleston, WV 25304

Dear Mrs. West:

The Science Department of Eastern Greenbrier supports the Revised Scope and Sequence for CATS Seven through Ten that has been proposed by Kanawha County. We support the Content Standards and Objectives that are grouped to emphasize living systems and matter in seventh grade, Earth systems in eighth grade and physical systems in ninth grade.

Sincerely,

Joan McCabe
Mc
Brent O'Dell
Thaneine Windom
Sandra P. Vandyke
Charles R. Dyer
Christine C. Heltzer

Subj: Creationism and WV science standards
Date: 1/10/2003 6:50:21 PM Eastern Standard Time
From: evans@ncseweb.org
To: kdfezer@concord.edu, pclem@uchaswv.edu, bbbrag@aol.com, haught@wvgazette.com,
haught@wvinter.net, stewart@usgs.gov, ekrfsur@iastate.edu, blidgerd@shepherd.wvnet.edu,
Stevenconifer@aol.com, husted@marshall.edu, bady@marshall.edu, NZUlrich@worldnet.att.net,
jhall2@wvu.edu, mcdowell@geosrv.wvnet.edu, blake@geosru.wvnet.edu, ptb00534@mail.wvnet.net

Sent from the Internet (Details)

Dear West Virginia NCSE member,

As you are doubtless aware, attempts to introduce "intelligent design" creationism into science classrooms around the country are increasing at an alarming rate. Unfortunately, it has now come to your state as well.

NCSE has recently learned of the public comment period that ends today on the new statewide standards being adopted. The ID advocates are mounting an intense lobbying effort to bring faith-based pseudoscience into the standards. We have also learned they are planning on the possible introduction of legislation to force their way into the classroom.

I'm taking this time to ask you to contact members of the West Virginia Board of Education and urge them to resist these efforts. Contact information can be found below. Please feel free to pass this letter and information on to any interested parties.

If you have any questions or would like more information please don't hesitate to contact me.

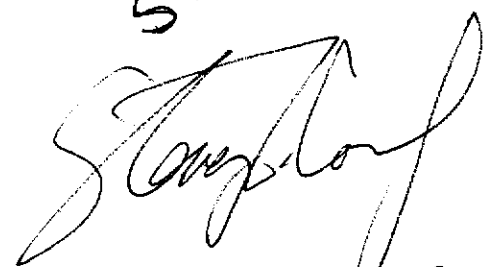
Howard M. Persinger, Jr., President
 Sandra M. Chapman, Vice-President
 Ronald B. Spencer, Secretary
 Delores W. Cook, Member
 Barbara N. Fish, Member
 Sheila M. Hamilton, Member
 Paul J. Morris, Member
 Dr. Michael Mullen, Ex Officio
 Chancellor, The West Virginia Higher Education Policy Commission
 Dr. David Stewart, Ex Officio
 State Superintendent of Schools

West Virginia Department of Education
 1900 Kanawha Boulevard East
 Charleston, WV 25305

Skip Evans
 Network Project Director
 National Center for Science Education
 420 40th St, Suite 2
 Oakland, CA 94609
 510-601-7203 Ext. 308
 510-601-7204 (fax)
 800-290-6006
evans@ncseweb.org
<http://www.ncseweb.org>

NCSE now has a one way broadcast news list. Please note that this is NOT a discussion list. You cannot post messages for members

I SUPPORT THE
 NCSE AND
 STRONGLY OPPOSE
 THE ID ADVOCATES'
 EFFORTS TO FORCE
 RELIGION ON
 OUR HAPLESS
 STUDENTS!!!


 Steven T. Conifer
 Marshall Univ.

275 Elk River Road South
Clendenin, WV 25045
January 14, 2003

Dr. David Stewart, Superintendent
West Virginia Department Of Education
Capital Complex
Charleston, WV 25302

Dear Dr. Stewart

Subject: Revising CATS 7-10

We are members of the faculty at Herbert Hoover High School. We are writing to express our support for the model for revising Coordinated and Thematic Science as presented to the Department of Education by Bob Seymour on Monday, January 13, 2003.

Sincerely

Kenneth W. Lyons

Don Walker

Helen Linn

Berry A. Phillips

John Phillips

Dana Hughes, Asst. Principal

Phillip Colver, Asst. Principal

**West Virginia Association of
Secondary School Principals**

122 N. Price St.
Kingwood, W V 26537
304-329-0637

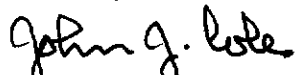
Brenda West
Office of Student Services and Assessment
WV Department of Education
1900 Kanawha Boulevard, East
Building 6, Room 722
Charleston, WV 25305-0330

Dear Ms. West,

This letter is written in support of the draft Revised Scope and Sequence for CATS Seven through Ten as proposed by Bob Seymour and the Science Teachers of Kanawha County. For a number of years the secondary schools of the state have struggled to implement the CATS program. This draft of the standards consolidates the objectives into two standards: the science processes and the science content. This models what teachers know would improve the effectiveness of science instruction dramatically. This is the pattern science teachers know works with students.

The major problem with the Standards and Objectives for Science as they are now proposed is that they are too scattered for effective instruction in grades 7-10. The Standards for these grades need to set forth a lab based coordinated and thematic science program that is consolidated and teachable.

Sincerely,


John J. Cole, Executive Director
WVASSP

Jan. 17 - 11:00
Brenda West

**MAYFORD G. WITT
2511 J SMITH ROAD
CHARLESTON, WV 25314
304-744-9597**

January 10, 2003

**Brenda West
Office of Student Services and Assessment
West Virginia Department of Education
1900 Kanawha Boulevard East
Building 6, Room 722
Charleston, WV 25305-0330**

**RE: Policy 2520.3 Science Content Standards and
Objectives**

Dear Ms. West:

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Page 2

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When reviewing Policy 2520.3 and establishing Standards And Objectives for Science, I would encourage the Board to leave fiction with the literature curriculum and adopt a policy that excludes teaching fancy ideas for the origin of life as fact.

Thank you for the great job you are doing and for taking time to consider this issue.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Mayford G. Witt".

Mayford G. Witt

RECEIVED

JAN 10 2003

Eastern Greenbrier Jr. High
Rt. 1 Box 150
Ronceverte, WV

January 8, 2003

Brenda West
Office Student Services and Assessment
West Virginia Department of Education
1900 Kanawha Blvd. East
Charleston, WV 25304

Dear Mrs. West:

The Science Department of Eastern Greenbrier supports the Revised Scope and Sequence for CATS Seven through Ten that has been proposed by Kanawha County. We support the Content Standards and Objectives that are grouped to emphasize living systems and matter in seventh grade, Earth systems in eighth grade and physical systems in ninth grade.

Sincerely,

Joan McCabe

W. John

Brent O'Dell

Thaneene Windom

Sandra P. Vandyke

Charles R. Davis

Christine C. Hutton

Subj: Creationism and WV science standards
Date: 1/10/2003 6:50:21 PM Eastern Standard Time
From: evans@ncseweb.org
To: kdfezer@concord.edu, pclem@uchaswv.edu, bbbrag@aol.com, haught@wvgazette.com, haught@wvinter.net, stewalt@usgs.gov, ekrafsur@iastate.edu, blidgerd@shepherd.wvnet.edu, Stevenconifer@aol.com, husted@marshall.edu, bady@marshall.edu, NZUlrich@worldnet.att.net, jhall2@wvu.edu, mcdowell@geosrv.wvnet.edu, blake@geosru.wvnet.edu, ptb00534@mail.wvnet.net

Sent from the Internet (Details)

Dear West Virginia NCSE member,

As you are doubtless aware, attempts to introduce "intelligent design" creationism into science classrooms around the country are increasing at an alarming rate. Unfortunately, it has now come to your state as well.

NCSE has recently learned of the public comment period that ends today on the new statewide standards being adopted. The ID advocates are mounting an intense lobbying effort to bring faith-based pseudoscience into the standards. We have also learned they are planning on the possible introduction of legislation to force their way into the classroom.

I'm taking this time to ask you to contact members of the West Virginia Board of Education and urge them to resist these efforts. Contact information can be found below. Please feel free to pass this letter and information on to any interested parties.

If you have any questions or would like more information please don't hesitate to contact me.

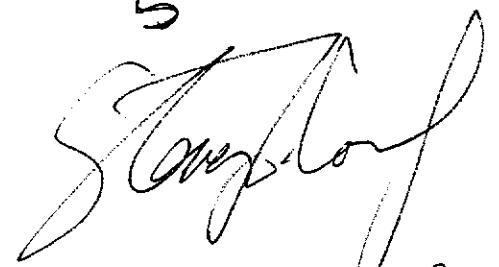
Howard M. Persinger, Jr., President
 Sandra M. Chapman, Vice-President
 Ronald B. Spencer, Secretary
 Delores W. Cook, Member
 Barbara N. Fish, Member
 Sheila M. Hamilton, Member
 Paul J. Morris, Member
 Dr. Michael Mullen, Ex Officio
 Chancellor, The West Virginia Higher Education Policy Commission
 Dr. David Stewart, Ex Officio
 State Superintendent of Schools

West Virginia Department of Education
 1900 Kanawha Boulevard East
 Charleston, WV 25305

Skip Evans
 Network Project Director
 National Center for Science Education
 420 40th St, Suite 2
 Oakland, CA 94609
 510-601-7203 Ext. 308
 510-601-7204 (fax)
 800-290-6006
 evans@ncseweb.org
 http://www.ncseweb.org

NCSE now has a one way broadcast news list. Please note that this is NOT a discussion list. You cannot post messages for members

I SUPPORT THE
 NCSE AND
 STRONGLY OPPOSE
 THE ID ADVOCATES'
 EFFORTS TO FORCE
 RELIGION ON
 OUR HAPLESS
 STUDENTS!!!


 Steven J. Conifer
 Marshall Univ.

275 Elk River Road South
Clendenin, WV 25045
January 14, 2003

Dr. David Stewart, Superintendent
West Virginia Department Of Education
Capital Complex
Charleston, WV 25302

Dear Dr. Stewart

Subject: Revising CATS 7-10

We are members of the faculty at Herbert Hoover High School. We are writing to express our support for the model for revising Coordinated and Thematic Science as presented to the Department of Education by Bob Seymour on Monday, January 13, 2003.

Sincerely

Kenneth W. Lyons

Don Walker

Welen Lin

Berry A. Phillips

Joyce Phillips

Dana Hughes, Asst. Principal

Phillip Colver, Asst. Principal

**West Virginia Association of
Secondary School Principals**

122 N. Price St.
Kingwood, W V 26537
304-329-0637

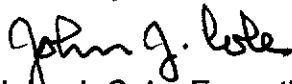
Brenda West
Office of Student Services and Assessment
WV Department of Education
1900 Kanawha Boulevard, East
Building 6, Room 722
Charleston, WV 25305-0330

Dear Ms. West,

This letter is written in support of the draft Revised Scope and Sequence for CATS Seven through Ten as proposed by Bob Seymour and the Science Teachers of Kanawha County. For a number of years the secondary schools of the state have struggled to implement the CATS program. This draft of the standards consolidates the objectives into two standards: the science processes and the science content. This models what teachers know would improve the effectiveness of science instruction dramatically. This is the pattern science teachers know works with students.

The major problem with the Standards and Objectives for Science as they are now proposed is that they are too scattered for effective instruction in grades 7-10. The Standards for these grades need to set forth a lab based coordinated and thematic science program that is consolidated and teachable.

Sincerely,



John J. Cole, Executive Director
WVASSP

Jan. 17 - 11:00
Brenda West

**MAYFORD G. WITT
2511 J SMITH ROAD
CHARLESTON, WV 25314
304-744-9597**

January 10, 2003

**Brenda West
Office of Student Services and Assessment
West Virginia Department of Education
1900 Kanawha Boulevard East
Building 6, Room 722
Charleston, WV 25305-0330**

**RE: Policy 2520.3 Science Content Standards and
Objectives**

Dear Ms. West:

I taught for six years in Public Schools with a certification in Biology and Chemistry and also have a Master Degree in Secondary Education. I would like to offer some comments on the Standards and Objectives for Science Curriculum for the State of WV. When starting with a new group of students, I always introduced the four steps of Scientific Investigation as the initial lesson. Throughout the year this principle could be applied to every lesson except one.

When discussing the origins of life (or any aspect of macro evolution) it was always obvious the four steps of investigation could not be applied to this "idea". As a former teacher and a current parent of five children in public schools, I object to conjectures and suppositions being taught as fact. Students are taught that life "could" have come from "aliens" in space or a "big bang" in space or "possibly" some chemicals that got together in a swamp and "miraculously" formed cells, which are indeed not "simple" as we are told but actually extremely complex.

Page 2

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Thank you for the great job you are doing and for taking time to consider this issue.

Sincerely yours,

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Mayford G. Witt

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JAN 03 2007

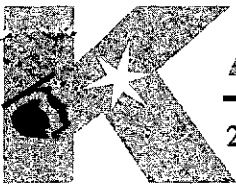
Harold & Dreama Turley
428 Waverly Drive
Cross Lanes, WV, 25313

To whom this may concern:

We do not believe in evolution
and think it should not be
taught in our schools.

Sincerely,

Dreama Turley
Harold Turley



KANAWHA COUNTY SCHOOLS

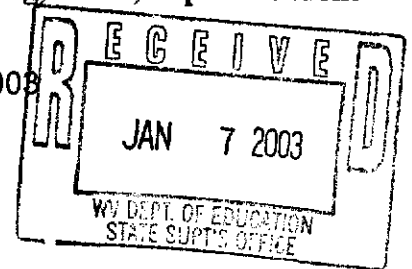
200 Elizabeth Street, Charleston, West Virginia 25311-2119 • (304) 348-7732 • Fax (304) 348-7735

Ronald Duerring, Ed.D., Superintendent

January 6, 2003

Dr. David Stewart, Superintendent
West Virginia Department of Education

Dr. Stewart,



The new Standards and Objectives for Science, which are out on comment, tend to highlight fundamental weaknesses in the science standards and objectives. A number of science teachers have approached me with the fact that it is now time to separate the good from the bad within CATS. CATS has established numerous factors which have strengthened science instruction. However (for some reason which is unimportant at this time) in the process of establishing Coordinated and Thematic Science, CATS has entangled sound science instruction.

A strong science program is very important to us. The academic strength of our schools and the futures of our students are directly dependent upon effective science classes. However as currently presented CATS only confounds and confuses those responsible for the administration and instruction of science.

The new Content Standards and Objectives for Science are overwhelmingly verbose. Your Foreword to the proposed refinement of Policy 2520 uses the descriptive statement, "a format that can easily be used and understood." However the "refined" science content standards and objectives accentuate the erroneous aspects of CATS and are anything but a format that can easily be used and understood.

The Science, Content Standards and Objectives were proclaimed to be a refinement of the former IGOs. In actuality they are the product of multi-layered revisions and have become a rather extreme extrapolation of the original IGOs. They appear to be an attempt to "fit square pegs into round holes." For sure they are something other than "easily used and understood". The original IGOs were built around Goals which tended to be wordy, but it did convey the essence of science. The rewrite destroyed that structure in favor of Standards which are convoluted and filled with verbose misrepresentations of science education. During the "refinement" processes, the positive aspects of CATS became buried and or misrepresented in a lengthy mass of statements. As a result the format and too many of the phrases are so contrived that they are now barely intelligible, marginally useful, phrases which do not meet the criterion for novice writing established by the Content Standards for Language Arts

The factors which caused this are probably many and varied and are of little concern to the future. What is of concern is how best to establish effective meaningful Science, Content Standards and Objectives.

The first step toward an effective refinement is to set proper goals. The establishment of state standards should have as its primary goal: the clear and concise communication of a curriculum that may be easily used and understood. To do so, it must be a simple, straight forward tool for teachers and administrators. It must be written by them, to them and for them. It need not be an elaborate lengthy document but rather a concise set of Standards and Objectives. These must define science education so that teachers will teach it and administrators will value the establishment and maintenance of the proper instructional environment (labs, equipment, classroom ratios, etc.). Last, but of equal value, is the necessity for clarity so the assessments may be meaningful and effective.

In the proposed Policy 2520 the mathematics section is about forty five pages long, the Reading and Language Arts section is only thirty two pages. However the Science section is over ninety pages! Why should it take more pages to set forth the standards for science than it does for all of mathematics, reading and language arts? Obviously if the writing is effective and the science is to the point it should not.

We believe that by working together CATS may be revised and serve as an effective base for improving science instruction and administration. Over the holidays a number of us met to figure how we could help generate a viable Content Standards and Objectives for Science. As we perceive the current limitations of time and staff which you now face cooperation is the only realistic option. Given the concern of the state department for effective Content Standards and our commitment to a strong science program it can be done.

We decided that the only way we could provide you with a real meaningful response had to be a total rewrite. This was the only way we could clearly and definitively communicate the needed changes. Concurrently providing the WV SDE with a document with broad teacher endorsement is probably the only economically viable way the WV SDE can possibly adopt the suggested changes in an informed and timely manner.

The timeline is near impossible, but the need is great and the results so very important to all of us. Therefor we are working holidays, weekends and evenings. A significantly stronger draft of the Content Standards and Objectives for Science completed in a few more days. Your understanding of the situation and support for our commitment to an effective Coordinated and Thematic Science in a format that can easily be used and understood will be deeply appreciated. I realize that this is but one of many issues with which you must work. However this issue is of prime importance to us. We would appreciate an opportunity to work with your staff to ensure a product appropriate to sound science instruction and to the broader goals of the state department. I may be contacted at 348-6161 or 348-1350.

Respectfully,

A handwritten signature in cursive script, appearing to read "Robert Seymour", written in dark ink.

Robert Seymour
Science Supervisor
Kanawha County Schools

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JAN 10 2003

We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, we believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Scientific objectivity will lead to good science and religious neutrality. Furthermore, this complex and highly controversial subject should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations.

Our concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade.

Teaching students that they are a part of a "natural world" that is not designed is philosophy and not science. It is the philosophy of Naturalism. Naturalism is a belief that life emerges via purely unguided natural processes and not by design. Naturalism is the fundamental tenet of atheism, agnosticism and secular humanism while design is the fundamental tenet of theistic religion.

Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. The standards establish objectives that will lead to an understanding about "Evolution Only." Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. In this respect the standards are one sided and dogmatic. Their obvious objective is to promote a Naturalistic world view.

Origins science is the science which seeks to answer the questions "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidably impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. To promote critical thinking, scientific objectivity and religious neutrality, we suggest the following changes to the standards:

1. Revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations.
2. Revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teachings with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. [In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not designed for a purpose.]
3. Add explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. [Many provisions of the standards would seem to encourage this concept indirectly. However, this encouragement needs to be explicitly focused on origins science, because textbooks presently teach only naturalistic theories of origins and

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discourage criticisms of evolutionary theory. Furthermore, teachers have been penalized when they have attempted to teach this subject honestly and objectively.]

4. Add objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."]

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INSTITUTE for CREATION RESEARCH

10946 Woodside Ave., N. Santee, CA 92071 □ P.O. Box 2667, El Cajon, CA 92021 □ (619) 448-0900 □ Fax (619) 448-0469

Email: bwest@access.k12.wv.us

Ms. Brenda West

Building 6, Room 722

1900 Kanawha Blvd., East

Charleston, WV 25305

January 6, 2003

RECEIVED

JAN 09 2003

HENRY M. MORRIS, Ph.D.
President Emeritus

JOHN D. MORRIS, Ph.D.
President

DUANE T. GISH, Ph.D.
Senior Vice-President

DONALD H. ROHRER
Chief Financial Officer

Dear Ms. West,

I understand that the West Virginia Public School Science Standards are being considered for revision, and that responses from interested parties must be received by this Friday, January 10th. Therefore, I am pleased to submit a packet of pertinent information assembled as a result of the many questions received from school administrators, teachers, and parents regarding this issue and the recent federal law, H.R. 1.

Although this packet will be sent by mail in time to meet the deadline, I do have a question and also would like to offer a comment:

Q 1: Are the persons responsible for subject Standards in your State familiar with the 'No Child Shall Be Left Behind' education bill and do they intend to comply with the accompanying section dealing with the recommended "balanced treatment" of teaching controversial theories such as biological evolution and the origin of life?

C 1: Please add to the Standards objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."] Also, please add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.

Thank you for your consideration. If we at ICR can be of further assistance of any kind, please call on us.

Sincerely,

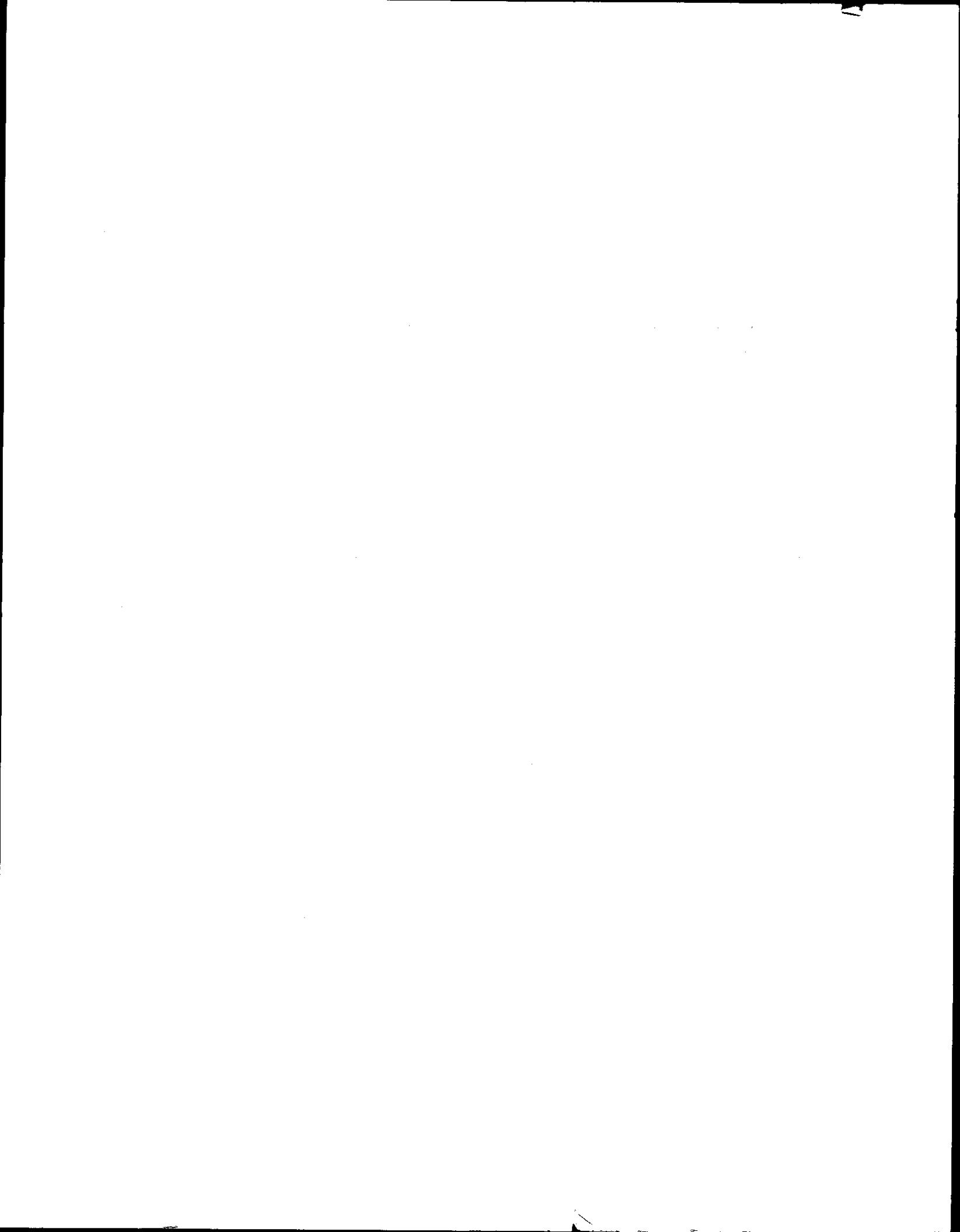
John G. Arend, B.S. (Geology), M.S. (Science Education), M. Div.
Public Information Services Director

ICR

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Public School (Let's Roll) Science Standards Packet

12/13/02

A/ Preparation:

Should the Public Schools Teach Creation? (BTG # 28)

Introducing Creationism into the Public Schools (Impact # 20)

Creation Science and the Local School District (Impact # 67)

Establishing Scientific Guidelines for Origins - Instruction in Public Education (Impact # 93)

Summary of Scientific Evidence for Creation (Impacts # 95-96)

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Teachers Can Teach Creation Science in the Classroom (Impact # 196)

An Educational Step in the Right Direction (Impact # 270)

A Call to Arms for Conservative Christian Science Educators (Impact # 306)

U.S. Senate Passes Amendment and Supports Critical Thinking regarding Evolutionary Theory (6/13/01)

Creationism and First Amendment Rights (7-18-02)

*Teaching Creation Science in Public Schools, Dr. Duane T. Gish (1995, 70 pp.) www.icr.org.

*Scientific Creationism, Dr. Henry M. Morris (2nd. ed., 1985, 294 pp.) www.icr.org

Evolution – Legislation – 1st Amendment Links Re: Current Law on restriction of individual rights to practice one's faith in a classroom setting

What Could Happen Next? – Prepared by Christian Legal Association (CLA)

Legal Opinion Memorandum – May Creationism be legally taught in a public school setting? (CLA)

Department of Education Guidelines for Religious Expression – Prepared by American Center for Law & Justice (ACLJ)

Legally Teaching Creation Science in Public Schools – Prepared by Liberty Counsel (LC)

Public Schools: Christians have rights! (Answers in Genesis)

B/ The Struggle - Creation vs. Evolution:

Evolution, Creation, and the Public Schools (Impact # 1)

Evolution in Public Schools and Creation in Students' Homes: What Creationists Can Do (Impact # 69)

Evolution in Public Schools and Creation in Students' Homes: What Creationists Can Do (Impact # 70)

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Biology Textbooks Worldview Development and the Creation/Evolution Controversy (Impact # 278)

Should Evolution be Immune From Critical Analysis in the Science Classroom? (Impact # 282)

Evolution is Religion-Not Science (Impact # 332)

Teaching Creation and Evolution in Public Schools (CEN Tech. Journal 13 (2):118-123, 1999)

*Evolution the Fossils Still Say No! Dr. Duane T. Gish (1995, 391)

C/ The Result - No Child Shall Be Left Behind education bill: (H.R. 1)

Honest Science "Left Behind" in US Education Bill (1/7/02)

Federal Challenges to the Teaching of Evolution (1-22-02)

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Negotiators Retain Heart of Education Department Proposals (3/27/02)

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Equal Time for Creation in Cobb County? (8-26-02)

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Evolution Backers, Critics Claim Victory in Science Standards (12/11/02)

D/ Science and the Bible:

Does Science Conflict With the Bible? (BTG # 107b)

Faith Under Fire Taking Creation Back to School: What can Teachers Do? (Impact # 196)

Teaching the Bible in Public Schools? (Impact # 279)

*Science and the Bible, Dr. Henry Morris (1986 ed. 184 pp.) www.icr.org

*Note: An asterisk indicates a Book (not included in packet, but available from www.icr.org)

Institute for Creation Research

"Thou art worthy, O Lord, to receive glory and honour and power: for thou hast **created all things**, and for thy pleasure they are and were **created**." **Rev 4:11**

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BTG No. 28b

Should the Public Schools Teach Creation?

by John D. Morris, Ph.D.

Institute for Creation Research, PO Box 2667, El Cajon, CA 92021
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"Vital Articles on Science/Creation" April 1991
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"Break up your fallow ground, and sow not among thorns" (Jeremiah 4:31).

Many today claim that only evolution should be taught in the public, tax-supported schools of our land. Let us look at their reasoning and formulate a response.

The basic assumption of modern evolutionary theory is that no Supernatural Being has ever been involved in this universe. The basic definition of science even has been changed to imply Naturalism. If there is no Creator, there is no creation, and teaching creation is folly. Furthermore, the claim that creation is religious implies that teaching it would violate the "establishment clause" in the Constitution. Beyond that, the claim that creation ideas have been disproved by science implies it would be a waste of valuable classroom time to teach it.

On the other hand, many modern educators believe that the inclusion of creation in the public school curriculum is both proper and advantageous, for the following reasons:

The assumption of no supernatural input into the universe is unscientific. At best, it is unfounded, impossible of proof, and religious to the extreme.

The claim that belief in creation is religious, is, of course, true, but no more religious than belief in evolution. Both are based on similar, but opposite religious assumptions. The two concepts are on equal religious footing, and to mandate the teaching of only one (i.e., evolution), while censoring the other, "establishes" a state religion, and certainly prohibits the "free exercise" of the religious practice held by creationists. To make matters worse, "free speech" is frequently abridged in such onesided forums.

Keep in mind that this is not a small minority whose rights have been denied. A recent national poll revealed that eighty-five percent of the American people want creation taught in the public schools, either exclusively or along with evolution. The rights of the majority have clearly been usurped.

The claim that only evolution is scientific is patently false. In fact, many scientists now hold that creation is much more scientific than evolution. Evolution flies in the face of established scientific law, including the second law of thermodynamics, the law of cause and effect, and the law of biogenesis, as well as not being harmonious with observed data. Fossil gaps are real, there are limits on genetic variability, favorable mutations are essentially non-existent, etc. The flaws in the concept of evolution are seldom admitted, let alone taught in public education. This situation has the flavor of brainwashing students in only one school of thought, and an unscientific one, at that. On the other hand, the true facts of science fit quite well into a creation model.

By incorporating both views of the unobserved past into the curriculum, teachers can employ a proven teaching method. Students allowed to study the pros and cons of conflicting models are much more likely to grasp the material, develop love for science, and learn critical decision making skills. Brainwashing does none of this.

In summary, we have found evolution and exclusive evolutionary teaching to be unscientific, unconstitutional, religious, frequently dishonest, unpopular, and undesirable. The time has come for better teaching on origins.

As a missionary organization, ICR is funded by God's people. The majority of its income is provided by individual donors who desire to proclaim God's truth about origins. Gifts can be designated for research, the graduate school, seminars, or any special part of the ICR ministry. All others will be used where most needed. We pledge to use them wisely and with integrity.

If you would like to receive our free monthly newsletter "Acts & Facts," or our free quarterly devotional Bible-study booklet "Days of Praise," just request them by filling out this [form](#). If you would prefer to receive our online/email versions of the Days of Praise devotional and Acts & Facts newsletter, you can use this [form](#).

We believe God has raised up ICR to spearhead Biblical Christianity's defense against the godless dogma of evolutionary humanism. Only by showing the scientific bankruptcy of evolution, while exalting Christ and the Bible, will Christians be successful in "the pulling down of strongholds; casting down imaginations, and every high thing that exalteth itself against the knowledge of God, and bringing into captivity every thought to the obedience of Christ" (II Corinthians 10:4,5).

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IMPACT No. 20

INTRODUCING CREATIONISM INTO THE PUBLIC SCHOOLS

by Henry M. Morris, Ph.D.

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More people today than ever are objecting to the exclusive teaching of evolution in the public schools. Strong pressures are developing aimed at opening the schools to the teaching of special creation as a viable alternative to evolution.

Resistance to teaching creationism is still very strong, however. Opposition usually centers around two related arguments. First, evolution is widely claimed to be the only acceptable *scientific* theory of origins. Second, creation is assumed to be strictly a religious concept, which on that account has no place in a public school curriculum.

Both of these arguments are wrong and invalid. Creation can be shown to be a more effective scientific model of origins than evolution, and evolution can be shown to require a higher degree of credulous faith than creation. It is the purpose of this paper, however, to encourage a careful and objective study of *both* concepts of origins, on a scientific level only, in the public schools.

Creationists Need to Become Informed

If this effort is to succeed, creationists must first of all be able to support their claim that creation is as scientific as evolution and that evolution is as religious as creation. Political or legislative efforts to require creationist teaching will be futile otherwise. Even if a favorable statute or court decision is obtained, it will probably be declared unconstitutional, especially if the legislation or injunction refers to the *Bible* account of creation. Furthermore, a teacher forced to teach creationism with no knowledge of how to do it and with a built-in prejudice against it is not very likely to give the students a fair exposure to it, probably doing more damage than if it were ignored altogether.

The only effective way to get creationism taught properly is to have it taught by teachers who are both willing to do it and adequately prepared to do it. Since most teachers now are neither willing nor able, they must first be both persuaded and instructed themselves.

This means that someone must do the persuading and someone do the instructing. This burden must ultimately fall on the concerned creationists of each particular community. However, although a community-wide census would almost certainly show a large majority favoring the teaching of both creation and evolution, only a remnant will be found willing to work to accomplish that end.

In any case, the concerned creationist minority, whether large or small, will need first of all to become informed on the issue and its various implications. Each individual needs to be aware of the significance of evolutionary teaching and of the scientific evidence favoring creation. He does not have to be a scientist to understand the latter, but he does need to take the time for a careful reading of some of the modern treatments of the subject by creationist scientists.

For example, he should read the two I.C.R. books, *The Troubled Waters of Evolution*¹ and *Scientific Creationism*,² or other books of comparable scope and treatment. The former shows the historical background and modern influence of evolutionary thought, and the latter shows the scientific superiority of creationism in every phase of the problem of origins.

He should then do his best to help others become informed. There are many ways to do this—Sunday School classes, letters-to-the-editor, gifts of books to libraries and key individuals, promoting creation seminars, etc. Perhaps the best way is by personal, friendly discussions with school officials and other people of influence.

In the following sections appear additional specific suggestions for creationists (or open-minded evolutionists) who are in various positions of key responsibility.

School Administrators

Members of state and local school boards, school superintendents, curriculum specialists and school principals are, of course, in the most important positions of all with regard to this problem. Some of these officials are creationists themselves and many others are sufficiently dedicated to true education and service to the community as to be willing to provide the young people in their schools an opportunity to hear both sides of this all-important question.

There are many ways in which this can be done. First, each teacher should be provided with a good reference handbook on scientific creationism and asked to study it. The Public School Edition of *Scientific Creationism*, prepared by the Institute for Creation Research, is designed specifically for this purpose, providing conveniently-organized and well-documented scientific evidence for special creation on all aspects of the subject of origins.

The teacher should then be encouraged (not required) to use this information in his or her classes. As long as no *religious* instruction is given (for example, an exposition of the creation chapters in Genesis), there is no legal problem involved. For example, when treating such a subject as human origins, the teacher can balance the usual evolutionary discussion of Ramapithecus, Australopithecus, Neanderthal, etc., by citing the creationists' evidence that such fossils are invariably either of apes or of men, with no true and unquestioned intermediates between men and apes. Such a discussion need not deal with such theological topics as the divine purpose for man, but only with the factual evidence concerning the unique physical and mental characteristics of men.

If possible, arrangements should also be made to conduct Workshops on Scientific Creationism for the teachers of the district. These can even be offered on a graduate credit basis, so that the teachers can apply the time spent on the Workshop toward a graduate degree. There are now many creationist scientists and teachers who are qualified to instruct in such Workshops, the purpose of which is to provide basic scientific orientation in the creation model of origins and in the deficiencies of the evolution model.

For those teachers who, for personal reasons, are unwilling to teach creation along with evolution, substitutes can be provided who could come in, say, for a special three-week unit on scientific creationism. It might be feasible to have one or more specialists available for rotating assignments of this kind.

Creationist literature can also be provided for school and classroom libraries. This is especially needed as source material for student papers and special projects. If only evolutionary books are available, as is true now in most libraries, it is obviously impossible for any student to carry out a meaningful research study on any topic related to origins. There is a great deal of sound scientific creationist literature now available. See, for example, the Appendix in *Scientific Creationism* for an extensive bibliographical listing.

School administrators may have two serious reservations about taking any of the above steps, one political in nature and one financial. As long as the teaching of creationism is done strictly in a scientific context, however, without reference to the Bible or other religious literature, such teaching is perfectly constitutional, legal and proper. In fact, the exclusive teaching of evolution is *not* constitutional, legal or proper, since belief in evolution requires at least as much faith as belief in creation and is therefore a religious belief. Evolutionary philosophy is the foundation of atheism and humanism, which are nothing less than non-theistic religions. Exclusive teaching of evolution has the effect of establishing religious systems of this sort as state-endorsed and state-supported religions. The political reservation is, therefore, not only invalid but actually applies in reverse. This is the very reason why there is so much concern about this question around the country.

The financial reservation is understandable, as most schools supposedly do not have enough funds to adequately finance existing programs, let alone a new program such as this. However, it is a simple matter of priorities. New programs of other sorts are continually being introduced, and nothing can be more important than giving the students a fair opportunity to choose between two philosophies that will have profound influence on them, one way or another, all the rest of their lives. Furthermore, the cost is not really very much. Providing one book per teacher, plus perhaps a dozen books for library use, plus an annual workshop would altogether comprise only a minuscule percentage of the district's annual budget, and there are bound to be certain marginal items in other programs that could be postponed if necessary. In fact, most school districts actually have funds already budgeted for supplemental materials.

Teachers

Creationist teachers are in a unique position to play a critical role in this strategic conflict. First of all, they are better able than anyone else to win their fellow teachers over either to creationism or at least to acceptance of an equal-time approach. If they have first become adequately informed themselves, they are then able, over coffee in the faculty lounge, in the faculty lunchroom, or in the homes of their colleagues, to discuss the subject on a friendly, scientific basis, and hopefully to convince them of the viability and importance of the creation model. Books and other literature can be given or loaned, invitations to hear creationist speakers can be shared, and other opportunities for personal help utilized.

As far as the teacher's own classes are concerned, by all means creationism should be included, no matter what the course subject or grade level may be. This is perfectly legal as long as the teaching is factual and scientific, and in fact, such teaching is necessary to balance the evolutionist bias that is almost certain to be present in the textbook and supplementary material for the course.

In some courses—for example, biology, ancient history, etc.—it may well be feasible to incorporate a formal unit on scientific creationism into the course content. The topics in the book *Scientific Creationism* would provide an excellent outline for such a unit, adapted by the teacher to the particular grade level.

More commonly, perhaps, the teacher should merely introduce creation as an alternative whenever the textbook or course plan contains evolutionary teachings or implications. For example, when an earth science textbook discusses the geologic age system and the great age of the earth, the teacher should also discuss the geologic evidence for the catastrophic interpretation of the fossil record and some of the scientific evidences for a young earth.

Other possibilities include the use of creationist films and slides, assignment of student projects which incorporate both evolutionist and creationist interpretations, and invitations to local creationist scientists as guest lecturers. In the latter case, the teacher may also be able to arrange for such speakers to address a school assembly.

Pastors

Because of their wide influence, not only with their own congregations but in the community as a whole, creationist pastors can often play a vital part in getting creationism back into the schools of the community. They have knowledge of the Biblical teachings on creation and are already aware of the problem and concerned about it. Once they realize the importance of promoting *scientific* creationism in the public schools, leaving Biblical and theological aspects to be taught in their churches and in the homes, they can often serve as leaders of community-wide creationist emphases, especially if they will work in cooperation with pastors of other churches and denominations.

Pastors are especially capable at the arts of persuasion and instruction, and this is exactly what is needed. They should be able to arrange opportunities to talk with school administrators at such length as necessary to present the case for creation adequately to them on a personal basis.

In his own church, the pastor should see that his own communicants are well instructed in the scientific, as well as Biblical, aspects of creationism. It is especially important that the children and young people in his church be well equipped with factual evidence for creation.

He can accomplish such instruction through a series of special messages, through using creationist Sunday School literature, through having special speakers, by providing creationist literature in the church library and for his members, and by various other means.

Scientists

Scientists and other professionally trained people (engineers, lawyers, medical doctors, etc.) are often capable of special leadership in creationist efforts. Young people are often led to believe that all scientists and other educated specialists are evolutionists, and the best argument against this fallacious claim is the personal testimony of scientists who are *not* evolutionists. The fact is, of course, that today there are thousands of scientists who are creationists, and usually there are at least several in every

community.

Scientists and other professionals who are Christians have a peculiar trust from the Lord. At the same time, the atmosphere of their professions, emphasizing intellect and prestige as they do, poses a real temptation and danger. People in these positions are especially sensitive to academic ridicule and ostracism and therefore especially vulnerable to intellectual compromise. Furthermore, Christian scientists who have themselves taken a compromising position toward evolution seem particularly antagonistic toward those Christian scientists who will *not* compromise. Somehow an attitude of sweet tolerance toward the unbelieving philosophies of anti-Christian scientists is often accompanied by a bitter intolerance toward creationist scientists, whose very existence is a condemnation of such unnecessary compromise.

Nevertheless, creationist scientists must not be swayed by the objections of their evolutionist Christian colleagues. The facts of science, as well as the teachings of Scripture, are squarely against the evolutionary system and there is no reason whatever (except the fear of men) for yielding to such compromise.

Informed creationist scientists are perhaps the best qualified people in the community to deal publicly with evolutionists' objections to creation in the school, to serve as special speakers and consultants on scientific creationism where needed, and to engage in other similar activities. They should be conversant with all the literature on creationism, be active members in the Creation Research Society and generally serve as the scientific spokesmen for the creationist movement in their own communities. They can also help other creationists in the community who are not scientists avoid making unscientific statements which could react negatively against their cause.

Parents and Other People

The majority of concerned Christians and other creationists do not come directly under any of the above categories. Nevertheless each person is very important. The larger the group of vocal creation-ists in the community, the more probable it is that they can get a sympathetic hearing from school officials.

Parents are especially important, if they have children in the public schools of the district. Through personal conversations with teachers, principals, and school board members, in an atmosphere of friendly helpfulness, but also one of well-informed confidence in the soundness of their arguments, parents often can exert a very significant influence on classroom teachings and attitudes.

If feasible under the particular local circumstances, such citizens should establish a formal community organization, with some appropriate name (Citizens for Scientific Creationism, Parents Concerned for Educational Integrity, Civil Rights for Creationists, Committee for the Improvement of Education, etc.). Someone can be placed in charge of promotion and publicity, with a view to arousing community concern over the problem. Sympathetic news and television reports can be very valuable; on the other hand, a sarcastic news story on creationism can do a great deal of harm, so the search for publicity should proceed cautiously, and the Committee should be as certain as possible that the reporter really has an understanding of the whole issue.

One very worthwhile project which the organization might undertake would be a community census or poll, in which the feelings of the people in the school district on the subject at hand could be determined. Those that have been taken so far confirm that the large majority of citizens do want to see both creation and evolution (rather than either one exclusively) taught on a scientific level in their public schools.

Another project might well be to raise funds to provide creationist books for the classroom libraries in their schools. Another would be to underwrite and promote a Creationism Workshop for teachers, as well as a Creation Seminar for people in general. Debates between evolutionists and knowledgeable creationists might be arranged. Advertisements for creationism can be placed in campus and community newspapers. Many other such projects might well suggest themselves in the particular area.

Students

Finally, we come to those who are the most affected by this controversy, the students themselves. What can creationist students do to counteract the evolutionary teaching in their own classes and schools?

There are many things such students can do, but one thing they should *not* do is to react belligerently or sarcastically against the teacher. As students, their purpose is primarily that of learning rather than of teaching or witnessing. They are both legally and morally under the authority of the school and the teacher, and whatever witness they may be able to give will carry far more weight if done in the proper way and through the established chain of command.

Also, there is no doubt that a teacher will pay more attention to the suggestions and criticisms of a good conscientious student than to those of a lazy and indifferent student. In any kind of effective Christian witnessing, the witness must know what he is talking about, be winsome and tactful, kind and patient, and especially where someone of higher authority is involved, respectful and courteous. Cleanliness and neatness don't hurt, either.

Assuming the above conditions as prerequisites, then the opportunities available to such students might include: raising questions, or offering alternative suggestions, in class discussions; using a creationist approach in speeches and special papers and projects; talking to the teacher privately about available creationist literature and speakers; inviting the teacher and classmates to attend creation seminars or similar meetings; suggesting a classroom debate on the creation-evolution question; giving sound creationist periodical literature or tracts to the teacher; and other similar actions.

Even if the teacher does not respond favorably, the student can still consider it a profitable learning experience. If there is a problem relative to passing tests in the course, the student can usually handle it adequately by prefacing his answers by some such assertion as "Evolutionists believe that—."

In those few cases where the teacher seems intolerably and rigidly bigoted, insisting that the student not only know the arguments for evolution but also believe them himself, it may be necessary for the student to ask his parents or pastor for help in the situation. If this likewise fails, there may finally be no recourse except to withdraw from the course, giving a courteous written explanation as to reasons. Such a last resort, however, should seldom be necessary or desirable. Reports of student experiences around the country indicate, on the other hand, that one or two creationist students have often been able to make a tremendous impact on the class, and even on the teacher, through their careful, courteous, consistent Christian testimony.

1. Estimated publication date April 1975.

2. Now available in both a Public School Edition (no Biblical or other religious material) and in a General Edition (including extensive section on Biblical aspects of creationism).

This "Impact" was converted to HTML, for Web use, from the original formatted desktop article.

Institute for Creation Research

"Thou art worthy, O Lord, to receive glory and honour and power: for thou hast **created all things**, and for thy pleasure they are and were **created**." **Rev 4:11**

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IMPACT No. 67

CREATION SCIENCE AND THE LOCAL SCHOOL DISTRICT

**Institute for Creation Research, PO Box 2667, El Cajon, CA 92021
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**"Vital Articles on Science/Creation" January 1979
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Efforts to introduce the teaching of the scientific evidence for the creation model of origins, distinctly apart from the use of any part of the Bible, along with the evolution model at the state and local level is meeting with increasing success. The scientific, educational, and Constitutional basis for this approach has been set forth in a number of Impact articles¹⁻⁴ and in booklet form.⁵ It has recently been given strong support by an article in the Yale Law Journal.⁶ Action to implement the teaching of the creation model along with the evolution model has been taken by the Columbus, Ohio⁷ and the Dallas school districts,⁸ among others. Some action has been taken at the state level in several states, most recently in South Carolina, as described later in this article.

Mr. Paul Ellwanger of Anderson, South Carolina, after many months of effort, appears to have succeeded in efforts to have the scientific evidence for the creation model presented in his school district. The school board of the local district, apparently due mainly to the opposition of the district superintendent, refused several requests even to hear Mr. Ellwanger's proposal. Mr. Ellwanger refused to be discouraged, and his persistence is now being rewarded. The chronicle of events is documented by the following series of articles and may serve as an aid and encouragement to others.

The Anderson Daily Mail

**Anderson, S.C.
Tuesday, March 14, 1978
Page 1-B**

Creation theories

Anderson wants students to have choice

From staff reports

Did man evolve from apes or from primitive microorganisms? Or was man created by a supreme being?

Opinions differ, and Paul Ellwanger of 2820 LeConte Road believes that schools have a responsibility to acknowledge more than one theory. He says children should have the opportunity to learn the theory that life was created all at once, as well as the theory of evolution.

He plans to ask the Anderson District 5 trustees in today's 5:15 p.m. meeting to make literature on both theories available to its students.

But the district superintendent, Dr. William B. Royster, says that including the religious theory of creation in the school curriculum would be breaking the law. Because of this, he said the school board probably will receive the proposal as information and not take action.

Materials used in the district are on a list of books approved by the State Department of Education, he explained. And the law says public school districts must select their books from that list.

He said the theory of evolution is contained in materials on the adopted list but the religious concept of creation is not included.

"Until it is put on the adopted list," Royster said, "we would be in violation of the law, if we considered using it (creation)."

Ellwanger says instruction in the creation theory through a scientific context without use of the Bible would not violate the U.S. Constitution.

In the written proposal he will offer, Ellwanger says he favors allowing students to consider all the evidence on the theories of origin before deciding what to believe.

Ellwanger, chief respiratory therapist at Anderson Memorial Hospital, proposes that the subject be approached scientifically, rather than from a religious standpoint.

He includes in the proposal a list of books that he would be willing to either loan or give to the district if the board favored his plan. He said these instructional materials do not expound the Bible but instead, "employ scientific discussion by authors highly trained in science."

His presentation is listed as first in order on the agenda of the trustees' meeting. Ellwanger would make no comment other than to refer to the written proposal which will be presented.

Other items listed on the agenda for the board meeting include a report by Trustee Marshall Walker, chairman of the building committee, on the Whitehall Elementary School addition bids and reports from various committees.

Proposal To Anderson School District #5 Board Of Trustees by Paul Ellwanger 03/14/78

Whereas, the Constitution prohibits government from infringing upon free exercise of an individual's religion, and

Whereas, an infringement occurs when a state program has content contrary to religious precepts, and

Whereas, exclusive instruction by public secondary and elementary schools in the general theory of evolution infringes upon the free exercise of creationist students and parents, and

Whereas, many citizens of this community believe in the special creation concept of origins and are convinced that exclusive indoctrination of their children in the evolutionary concept is inimical to their religious faith and to their moral and civic teachings, as well as to scientific objectivity, academic freedom, and civil rights, and

Whereas, even most citizens who are not opposed to the evolution concept at least favor a balanced treatment of these two alternative views of origins in their schools, so as to allow students to consider all of the evidences favoring each concept before deciding which to believe, and

Whereas, instruction in creation in a scientific context without use of the Bible would not violate the establishment clause of the Constitution, and

Whereas, there are now available, though quite limited in options, instructional material which do not expound the Bible in presenting creation science, but instead, employ scientific discussion by authors highly trained in science,

I hereby propose that the Board of Trustees of Anderson School District #5 take whatever steps necessary to have objectively presented in the public classrooms of District #5 a balanced treatment of evolution and creation in all courses and library materials dealing in any way with the subject of origins, such treatment to be limited to the scientific, rather than the religious aspects of the two concepts.

In the event this Board goes on record in favor of this proposal, I respectfully suggest ...

1. That only those instructional materials be considered which would supplement current State-adopted texts in providing unbiased information about these two explanations for origins.
2. That only instructional materials be considered for selection which give an objective and nondogmatic treatment of the creation model, so as not to violate the establishment clause of our Constitution.

The following resource/reference items are immediately available, upon request, and offered as a courtesy/convenience, from Paul Ellwanger, 2820 LeConte Road, Anderson, either as a complimentary copy or loan-item (as indicated): [This section is summarized as follows]

- article by Bird⁶
- an unpublished article by Gish, "Creation, Evolution and Public Education" (available from ICR)
- a news article about Dr. John N. Moore and one of his Impact articles (No. 52, published October, 1977).
- Impact article No. 51, September, 1977, by Henry Morris.
- Impact article No. 36, June, 1976, by Richard Bliss.
- the student's book, teacher's guide, and transparencies entitled *Origins: Two Models, Creation/Evolution* by Richard Bliss.
- *Scientific Creationism*, Public School Edition, by Henry Morris.

**WEDNESDAY MORNING
MARCH 15, 1978**

Creationism To Be Given 'Further Thought'

**By MARY LASSWELL
Staff Writer**

After months of trying, an Anderson man seeking to have creationism taught alongside evolutionism in District 5 schools went before the board Tuesday.

The board said it would give his idea "further thought."

Since last summer, Paul Ellwanger of 2820 LeConte Road has been attempting to get creationism taught in addition to the evolution theory in Anderson schools.

It is possible to teach creationism in a scientific context, without involving the accompanying religious issues or using the Bible, he said.

After Tuesday's meeting, Ellwanger said he hoped the board would give his proposal "very serious consideration" and ultimately accept it.

"I would hope that the board would not take the matter lightly and would not let it rest," he said.

"Too many people who have not really studied the various legal ramifications of this subject have emphasized, and possibly overemphasized the religious overtones," said Ellwanger, giving trustees copies of the typed, three-page proposal.

Reading from a Yale Law journal he brought to the meeting, Ellwanger said creationists believe, among other things, in special creation; in the stability of plant and animal kinds—the idea that one species has not evolved into another over time; and in "catastrophism"—the idea that the earth has undergone sudden rather than gradual changes in the past.

By teaching only the evolutionist model of origins, schools are not giving students a balanced presentation of the ideas that exist on the subject, Ellwanger said.

Both viewpoints should be presented "in all courses and library materials dealing in any way with the subject of origins, such treatment to be limited to the scientific, rather than the religious aspects of the two concepts."

If the board does not take action on his proposal, he said "I really do not know, because it depends on which bridge I have to cross as to how I'm going to cross it." He said there were several options available to him, but he was not specific.

District 5 Supt. Dr. W. B. Royster has said in the past that if creationist literature were used in the schools, the question whether its use violates the principle in the U.S. Constitution of separation of church and state must first be resolved.

Ellwanger had asked to speak to the school board on this subject last summer, but had been referred to the state department of education, first by then-assistant superintendent for instruction Dr. James P. Mahaffey and later by Royster.

Royster said Tuesday that the state board of education, by law, has authority to decide what textbooks may be used in the public schools, and that if creationist materials were to be used in District 5 schools, they would first have to be approved by the state board.

A standing committee of the state board periodically reviews textbooks on the subjects taught in schools and invites publishers to submit texts they want considered for adoption, Royster said, adding that biology and related materials are among subjects in which books are currently up for review.

Ellwanger said he had not polled Anderson-area residents on how they felt about

presentation of creationism as well as evolution, but he said that in polls taken elsewhere, "Never has a poll dropped below 70 percent of those polled being in favor of both sides being presented."

Final Approval Granted by the State

An article carried in the Anderson newspaper on April 22, 1978, included a copy of a letter from Henry G. Hollingsworth, Jr., Director, Office of General Education of the South Carolina Department of Education, stating that Mr. Ellwanger's proposal to the Anderson School Board is within the authority of the local school district and requires no further approval by the State.

Mr. Ellwanger reports that Dr. William W. Duke of Lancaster presented a resolution for introducing creation-science in public classrooms to the South Carolina Board of Education. The resolution was adopted with no dissenting votes. The Curriculum Committee and Policy Committee of the South Carolina Board of Education have been charged with implementing the resolution. An ad hoc committee from around the state of citizens interested in following through on the effort to implement the teaching of creation in the public schools of South Carolina has been formed and follow-up action is being taken. Part of this follow-up action will be an address by Dr. Richard Bliss to the South Carolina Association of School Superintendents at their Fall Conference at Myrtle Beach on October 9. Dr. Bliss will also conduct a workshop on scientific creationism for the science teachers of Lancaster County, South Carolina on October 6;

¹ "Evolution, Creation, and the Public Schools," H. M. Morris, ICR "Impact," No. 1.

² "Introducing Creationism into the Public Schools," H. M. Morris, ICR "Impact," No. 20.

³ "Resolution for Equitable Treatment of Both Creation and Evolution," H. M. Morris, ICR Impact Series #26.

⁴ "A Two-Model Approach to Origins: A Curriculum Imperative," R. Bliss, ICR "Impact," No. 36.

⁵ "Introducing Scientific Creationism into the Public Schools," H. M. Morris, Institute for Creation Research, San Diego, 1975.

⁶ Wendell Bird, "Freedom of Religion and Science Instruction in Public Schools," *The Yale Law Journal*, Vol. 87, pp. 515-570 (1978).

⁷ See *Acts and Facts*, Vol. 5, No. 12, December, 1976.

⁸ See *Acts and Facts*, Vol. 6, No. 4, April, 1977.

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All ICR staff members adhere to a Statement of Faith in the form of two documents: "Tenets of Scientific Creationism," and "Tenets of Biblical Creationism." (see Impact No. 85)

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Institute for Creation Research

"Thou art worthy, O Lord, to receive glory and honour and power: for thou hast **created all things**, and for thy pleasure they are and were **created**." **Rev 4:11**

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IMPACT No. 93

ESTABLISHING SCIENTIFIC GUIDELINES FOR ORIGINS — INSTRUCTION IN PUBLIC EDUCATION*

by Judith Tarr Harding

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"Vital Articles on Science/Creation" March 1981
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Two major challenges face creationists who wish to see the scientific content of creationism penetrate into educational circles and public school curricula.

The first task is to find the most efficient means of obtaining a hearing. Approaches will vary according to the organizational structure of each school district. An impressively growing number of creationists are exploring many avenues—editorials, personnel workshops, lectures, writing, etc.

But a second challenge is far more problematic: how does one achieve communicative dialog about the science involved in creationism when a good number of educators may not be willing to seriously discuss scientific issues? What if those evaluating curricula expansion insist instead upon debating the philosophical-religious overtones of a creationist explanation as an infringement of the separation of church and state? Deadlocks are then inevitable.

A teacher workshop in Baltimore County (Winter, 1978) stalemated at this precise juncture. Creationists were graciously allowed a 40-minute presentation, during which time comments were confined to scientific material. (Previous months were spent preparing supplemental written materials for take-home review after the workshop.) A teacher-panel with questions and answers followed that barely skimmed scientific issues. Most of that time was consumed with topics unrelated to a science workshop—a critique of Christian Heritage College, the religious dignity of evolutionists, the size of Noah's ark, textbook controversies, etc!

Many creationists have been disappointed by such *a priori* dismissal of creationism as a valid scientific model. Such unfortunate communication breakdowns show the imperative of developing clear guidelines by which groups can assess creationist material in a scientific manner. Initially, certain philosophical tenets must be thought through, before scientific material is even introduced.

If at all possible, it would be well if the following suggested criteria, formulated into a ballot, were voted upon by educators BEFORE any scientific data is presented for evaluation:

A vote of "no" indicates that our group will not use such an argument as grounds for rejecting either evolution or creation as suitable curricula material, provided that either origins model can meet the scientific requirements we will collectively establish. A vote of "yes" means such logic may be used as we evaluate the scientific content of our origins curricula.

YES ___ NO ___	1. Is evolutionary theory a teaching that is strictly a matter of science, with no other influence on the philosophical or religious beliefs of others?
	2. Should the religious views of evolutionists, or the uses to which evolutionary theory has been employed politically, philosophically, or religiously...
YES ___ NO ___	a) dictate its suitability for public education, or
YES ___ NO ___	b) determine its scientific validity?
YES ___ NO ___	3. Does evolutionary theory have empirical proof for all its postulates?
YES ___ NO ___	4. Should scientific creation be rejected for curricula on the grounds of one or more of the first four questions just cited (inserting "creation" for "evolution")?
YES ___ NO ___	5. Do the approaches catalogued in Table I constitute scientific arguments that should be resorted to in evaluating any model of origins as a valid science, model?
YES ___ NO ___	6. Should evolutionary theory be taught in classrooms as the only correct view, without giving scientific material for any other view?
YES ___ NO ___	7. Does the rational approach involved in the scientific method rule out any hypothesis concerning origins before the evidence amassed to support that hypothesis has been heard?
YES ___ NO ___	8. Do both evolutionary and creationist views allow for belief in God or other religious interferences?
YES ___ NO ___	9. The main evolutionary hypothesis (based on observable natural phenomena to be supported by class room data is that natural laws, acting mechanistically through time, have produced the variety of organisms we see.
YES ___ NO ___	10. Does this evolutionary hypothesis have philosophical religious inferences?
YES ___ NO ___	11. The main creationist hypothesis (raised on observable natural phenomena) to be supported by classroom data is design ... pre-programmed pattern.
YES ___ NO ___	12. Does this creationist hypothesis have philosophical religious inferences?
YES ___ NO ___	13. The hypothesis of design can be inferred from empirical evidence, not just religious writings (e.g., ecological interdependence, mathematical probabilities of cell assemblage, synchronization of chemical activities within a cell, etc.). (This question should be explored further as scientific guidelines are set.)
YES ___ NO ___	14. Many evolutionist educators believe in God, or have other philosophical beliefs regarding the nature of the world, but avoid

state-church conflicts by limiting their teaching to empirical evidence.

- YES ___ NO ___ 15. If you answered #14 "yes" is it parallel logic to grant that those of creationist persuasion could maintain church-state separation in the same manner as an evolutionist teacher might, so long as they teach both views of origins and limit their approach to empirical evidence?

If educators are willing to try a ballot approach, the above questions may clear up erroneous concepts that exist in the minds of a policy-making group concerning which many creationists may not be aware. If the evaluators agree to use the ballot approach, the next decision is to set rules that qualify any origins view as a scientific model. The following three guidelines seem logically applicable. The same general principles could also be used to solidify the evolutionary model as a science model:

I. CAN THE CHIEF CREATIONIST HYPOTHESIS—DESIGN (pre-programmed pattern) BE INFERRED FROM EMPIRICAL DATA WITHOUT REFERENCE TO RELIGIOUS WRITINGS? (The complexities involved in the origin of a single cell must be thoroughly discussed.)

II. CAN THIS DESIGN HYPOTHESIS INCORPORATE THE MAJOR KNOWN EMPIRICAL DATA USED BY EVOLUTIONISTS AND CREATIONISTS INTO A COHERENT SYSTEM? (Scientifically demonstrable facts — empirical evidence — must be separated from ideas that may have logical supporting evidence, depending on one's interpretation. If, for example, the creationist hypothesis were to deny that fossils are arranged in depositional sequences in many instances, it would be ignoring obvious, empirical evidence. However, uniformity of process rates and dating methods must be shown to admit varied interpretations and conflicting data. They do not fall into the category of hard-core scientific *proof*.)

III. CAN THESE DATA (including the need for local or more widespread catastrophism to interpret the fossil record) BE DRAWN FROM THE VISIBLE WORLD, AND NOT FROM RELIGIOUS WRITINGS?

Those who believe that the catastrophism of the creationist model can only be inferred from the Genesis flood account should bear in mind that:

1. Almost all fossils are buried in sedimentary strata.
2. The process of fossilization requires some form of catastrophism in most cases: i.e., quick burial (often of whole herds) in aqueous sediment or volcanic outpourings, to prevent destruction of remains by decay.
3. A scientific attempt is made to explain worldwide climate changes and glaciation. Such drastic changes, documented by geologic history, cannot be adequately accounted for by local catastrophic events, and thus the model postulates larger-scaled events.
4. A scientific hypothesis of catastrophism seems needed to explain anomalous fossils and "out-of-order" geologic layers of thousands of square miles, where physical evidence for over-thrusting is lacking.
5. An examination of the geologic column shows earmarks of fixed life forms without transitional forms, and catastrophic annihilation.

No one should assume that agreement upon the logical sequences of the first ballot will be easily achieved, and that further discussion of evidence related to the three scientific assessment guidelines will always be objective dialog. If educators will consent to use the ballot approach,

however, it will help objectivity on both sides.

Educators should remember at all times that *science is a communications system*. Scientific "facts" are not in themselves magic wands to settle issues. "Facts" are perceived by each listener through his own sets of educational experiences, interpretive systems, biases, skepticism, and motivational stance. Motivation is extremely crucial; when all has been argued and set forth, the educator may simply yawn and reply, "So ... who cares?"

Such varied interpretive equipment is brought into an arena of almost endless scientific arguments for or against either view. Complicating the situation even further, deep religious-philosophical world-life beliefs are operating in each individual. Misunderstandings and skepticism are not surprising! (See Table 1)

If, however, a solid majority vote on the proposed ballots can be achieved, the stage is at least set for better communication. The creationist's task is then to *carefully confine* his workshop or petitionary material to the three scientific assessment guidelines. The first ballot can be used as a sort of parliamentary reference point if discussion strays from the science of origins into sociological opinions about origins.

Since the Scopes trial, origins in public education has been riddled with communication barriers. Hopefully the approach just set forth could minimize the unfortunate tactics of the past — innuendo, mud-slinging, ridicule. Perhaps the use of such parliamentary scientific rules could stimulate personal scientific growth through more dispassionate investigation into diverse scientific views.

TABLE I

**IDEOLOGICAL STALEMATES
IN THE ORIGINS DEBATE**

1. ABUSE OF A THEORY

Creationist: "Evolution has been used to support many evils, such as Communism, Nazism, racism, etc,"

Evolutionist: "Creationists are divisive, and resort to name calling, quoting out of context, and other dubious tactics."

2. A PRIORI ASSUMPTIONS

Creationist: "Evolution begins by the unproven assumption that a mechanistic view is the only approach that can be considered scientific. This fosters a Climate of freedom *from* religion by recognizing scientific respectability only for those who adopt a mechanistic view that leaves God out (even if one believes in God) in order to be 'strictly scientific.'"

Evolutionist: Creationism expects me to believe that God had to make [or, the world was made] as creationists conceive it, rather than what my study of comparative morphology, fossils, etc. convinces me is true."

3. AUTHORITY

Creationist: "My church (or synagogue) teaches creation, so this must be the right view."

Evolutionist: "How many scientists do you know in major universities who support creationism?"

4. DOGMATISM

Creationist: Only creationism should be taught, as it is the true view. Evolution claims to be the only scientific view by defining 'scientific' as those who agree with evolutionary ideas."

Evolutionist: "Only evolution should be taught, as it is established fact. Creationism is not science; it's religion."

5. FALSIFIABILITY

Creationist: "No evolutionist can prove lifeless matter became living, without aid of any Designer."

Evolutionist: "No creationist can prove a single act of direct creation occurred."

6. INSENSITIVITY TO BELIEFS AND VALUES OF OTHERS

Creationist: "Evolutionary theory is ridiculous."

Evolutionist: "It's a waste of time for creationists to get so upset over a scientific theory that we spend so little time on in education anyway. The issue's not that important."

7. MAJORITY FACTOR'S

Creationist: Most great scientific advances were at one time minority views.

Evolutionist: "The majority of scientists believe evolution."

8. MISTRUST AND MISREPRESENTATION

Creationist: "Evolutionists do not deal honestly with scientific facts."

Evolutionist: "No competent scientist takes any theory other than evolution seriously. Creationism represents a fringe minority threatened by a changing scientific world."

9. MOTIVES

Creationist: "The fact that so many major evolutionary writers emphasize the lack of purpose, dependence upon chance, and reliance upon evolution in providential ways, proves the unsuitability of the theory for public education, as it influences in atheistic or agnostic beliefs."

Evolutionist: "The fact that you see so many references in creationist publications proves that the Creationist Movement is only concerned with defending certain forms of religion. It has no scientific significance."

10. PAST HISTORY

Creationist: "Modern evolutionism is merely a sophisticated form of ancient Egyptian and Greek mythological evolutionary ideas."

Evolutionist: "Creationism is merely a revival of the old defunct catastrophism taught in pre-Darwinian days, and of former ideas about Genesis."

11. PRIORITIES

Creationist: (Probably in a parochial setting) "We teach only creation, because it is the true view."

Evolutionist: "We teach only evolution, since it is the true view."

12. RELIGIOUS STEREOTYPING

Creationist: "Most evolutionists are atheists."

Evolutionist: "Most creationists are fanatics."

13. RELIGIOUS VIEWS

Creationist: "Evolution presents a mechanistic, naturalistic view of man's origin that conflicts with my belief that man was created in the image of

God, and with the reasons Scripture assigns for suffering and death in the world."

Evolutionist: "Creation incorporates an unproven religious idea that should not be forced upon anyone. My view of religion does not require a *fiat* creation."

14. RIDICULE

Creationist: "The cow just magically grew a tail, and became a whale."

Evolutionist: "To hear a creationist tell it, everybody's against him — the research of 100 years, and careful scientists are all wacky."

15. SECONDARY SCIENTIFIC ASSUMPTIONS

Creationist: "Evolutionists salvage their theory by unproven secondary assumptions."

Evolutionist: "Creationists salvage their theory by unproven secondary assumptions."

*** The material in this article should not be regarded as an official policy or recommendation of ICR, but it represents an approach to school authorities that some have found helpful.**

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If you would like to receive our free monthly newsletter "Acts & Facts," or our free quarterly devotional Bible-study booklet "Days of Praise," just request them by filling out this [form](#). If you would prefer to receive our online/email versions of the Days of Praise devotional and Acts & Facts newsletter, you can use this [form](#).

We believe God has raised up ICR to spearhead Biblical Christianity's defense against the godless dogma of evolutionary humanism. Only by showing the scientific bankruptcy of evolution, while exalting Christ and the Bible, will Christians be successful in "the pulling down of strongholds; casting down imaginations, and every high thing that exalteth itself against the knowledge of God, and bringing into captivity every thought to the obedience of Christ" (II Corinthians 10:4,5).

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IMPACT Nos. 95-96

SUMMARY OF SCIENTIFIC EVIDENCE FOR CREATION

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Reviewed by Wendell R. Bird, J.D. , Attorney***

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This impact pamphlet was written by a scientist, and a science educator, and reviewed by an attorney, to provide a brief summary of the scientific evidence supporting creation. The text materials and references listed at the end together give a more thorough discussion of this scientific evidence.

Introduction

Public schools in many localities are teaching two scientific models - the creation model and the evolution model of the origin of the universe, of life, and of man. There is apparent scientific evidence for creation, which is summarized in this pamphlet, just as there is apparent scientific evidence for evolution. The purpose of this pamphlet is to summarize the evidence that shows that:

"The creation model is at least as scientific as the evolution model, and is at least as nonreligious as the evolution model."

This scientific evidence for both models can be taught in public schools without any mention of religious doctrine, whether the Bible or the Humanist Manifesto. There are text materials and teacher handbooks that have been prepared for a fair presentation of both models, creation and evolution. There are also seminars and audiovisuals for training teachers to offer both models of origins.

"This scientific evidence both for creation and for evolution can and must be taught without any religious doctrine, whether the Bible or the Humanist Manifesto."
"Creation-science proponents want public schools to teach all the scientific data, censoring none, but do not want any religious doctrine to be brought into science classrooms."

Definitions of the Creation Model and the Evolution Model

The scientific model of creation, in summary, includes the scientific evidence for a sudden creation of complex and diversified kinds of life, with systematic gaps persisting between different kinds and with genetic variation occurring within each kind since that time. The scientific model of evolution, in summary, includes the scientific evidence for a gradual emergence of present life kinds over aeons of time, with emergence of complex and diversified kinds of life from simpler kinds and ultimately from nonliving matter. The creation model questions vertical evolution, which is the emergence of complex from simple and change between kinds, but it does not challenge what is often called horizontal evolution or microevolution, which creationists call genetic variation or species or subspecies formation within created kinds. The following chart lists seven aspects of the scientific model of creation and of the scientific model of evolution:

The creation model includes the scientific evidence and the related inferences suggesting that:

- I. The universe and the Solar system were suddenly created.
- II. Life was suddenly created.
- III. All present living kinds of animals and plants have remained fixed since creation, other than extinctions, and genetic variation in originally created kinds has only occurred within narrow limits.
- IV. Mutation and natural selection are insufficient to have brought about any emergence of present living kinds from a simple primordial organism.
- V. Man and apes have a separate ancestry.
- VI. The earth's geologic features appear to have been fashioned largely by rapid, catastrophic processes that affected the earth on a global and regional scale (catastrophism).
- VII. The inception of the earth and of living kinds may have been relatively recent.

The evolution model includes the scientific evidence and the related inferences suggesting that:

- I. The universe and the solar system emerged by naturalistic processes.
- II. Life emerged from nonlife by naturalistic processes.
- III. All present kinds emerged from simpler earlier kinds, so that single-celled organisms evolved into invertebrates, then vertebrates, then amphibians, then reptiles, then mammals, then primates, including man.
- IV. Mutation and natural selection have brought about the emergence of present complex kinds from a simple primordial organism.
- V. Man and apes emerged from a common ancestor.
- VI. The earth's geologic features were fashioned largely by slow, gradual processes, with infrequent catastrophic events restricted to a local scale (uniformitarianism).
- VII. The inception of the earth and then of life must have occurred several billion years ago.

I. The Universe and the Solar System Were Suddenly Created.

The First Law of Thermodynamics states that the total quantity of matter and energy in the universe is constant. The Second Law of Thermodynamics states that matter and energy always tend to change from complex and ordered states to disordered states. Therefore the universe could not have created itself, but could not have existed forever, or it would have run down long ago. Thus the universe, including matter and energy, apparently must have been created. The "big-bang" theory of the origin of the universe contradicts much physical evidence and seemingly can only be accepted by faith.¹ This was also the case with the past cosmogonies theories of evolutionists that have been discarded, such as Hoyle's steady-state theory. The universe has "obvious manifestations of an ordered, structured plan or design." Similarly, the electron is materially inconceivable and yet it is so perfectly known through its effects," yet a "strange rationale makes some physicists accept the inconceivable electrons as real while refusing to accept the reality of a Designer." "The inconceivability of some ultimate issue (which will always lie outside

scientific resolution) should not be allowed to rule out any theory that explains the interrelationship of observed data and is useful for prediction," in the words of Dr. Warner on Braun, the renowned late physicist in the NASA space program.

II. Life Was Suddenly Created.

Life appears abruptly and in complex forms in the fossil record,² and gaps appear systematically in the fossil record between various living kinds.³ These facts indicate that basic kinds of plants and animals were created. The Second Law of Thermodynamics states that things tend to go from order to disorder (entropy tends to increase) unless added energy is directed by a conversion mechanism (such as photosynthesis), whether a system is open or closed. Thus simple molecules and complex protein, DNA, and RNA molecules seemingly could not have evolved spontaneously and naturalistically into a living cell;⁴ such cells apparently were created. The laboratory experiments related to theories on the origin of life have not even remotely approached the synthesis of life from nonlife, and the extremely limited results have depended on laboratory conditions that are artificially imposed and extremely improbable.⁵ The extreme improbability of these conditions and the relatively insignificant results apparently show that life did not emerge by the process that evolutionists postulate.

"One example of the scientific evidence for creation is the sudden appearance of complex fossilized life in the fossil record, and the systematic gaps between fossilized kinds in that record. The most rational inference from this evidence seemingly is that life was created and did not evolve."

III. All Present Living Kinds of Animals and Plants Have Remained Fixed Since Creation, Other than Extinctions, and Genetic Variation in Originally Created Kinds Has Only Occurred within Narrow Limits.

Systematic gaps occur between kinds in the fossil record.⁶ None of the intermediate fossils that would be expected on the basis of the evolution model have been found between single celled organisms and invertebrates, between invertebrates and vertebrates, between fish and amphibians, between amphibians and reptiles, between reptiles and birds or mammals, or between "lower" mammals and primates.⁷ While evolutionists might assume that these intermediate forms existed at one time, none of the hundreds of millions of fossils found so far provide the missing links. The few suggested links such as Archæopteryx and the horse series have been rendered questionable by more detailed data. Fossils and living organisms are readily subjected to the same criteria of classification. Thus present kinds of animals and plants apparently were created, as shown by the systematic fossil gaps and by the similarity of fossil forms to living forms. A kind may be defined as a generally interfertile group of organisms that possesses variant genes for a common set of traits but that does not interbreed with other groups of organisms under normal circumstances. Any evolutionary change between kinds (necessary for the emergence of complex from simple organisms) would require addition of entirely new traits to the common set and enormous expansion of the gene pool over time, and could not occur from mere ecologically adaptive variations of a given trait set (which the creation model recognizes).

IV. Mutation and Natural Selection Are Insufficient To Have Brought About Any Emergence of Present Living Kinds from a Simple Primordial Organism.

The mathematical probability that random mutation and natural selection ultimately produced complex living kinds from a simpler kind is infinitesimally small even after many billions of years.⁸ Thus mutation and natural selection apparently could not have brought about evolution of present living kinds from a simple first organism. Mutations are always harmful or at least nearly always

harmful in an organism's natural environment.⁹ Thus the mutation process apparently could not have provided the postulated millions of beneficial mutations required for progressive evolution in the supposed five billion years from the origin of the earth until now, and in fact would have produced an overwhelming genetic load over hundreds of millions of years that would have caused degeneration and extinction. Natural selection is a tautologous concept (circular reasoning), because it simply requires the fittest organisms to leave the most offspring and at the same time it identifies the fittest organisms as those that leave the most offspring. Thus natural selection seemingly does not provide a testable explanation of how mutations would produce more fit organisms.¹⁰

V. Man and Apes Have a Separate Ancestry.

Although highly imaginative "transitional forms" between man and ape-like creatures have been constructed by evolutionists based on very fragmentary evidence, the fossil record actually documents the separate origin of primates in general,¹¹ monkeys,¹² apes,¹³ and men. In fact, Lord Zuckerman (not a creationist) states that there are no "fossil traces" of a transformation from an ape-like creature to man.¹⁴ The fossils of Neanderthal Man were once considered to represent a primitive sub-human (*Homo neanderthalensis*), but these "primitive" features are now known to have resulted from nutritional deficiencies and pathological conditions; he is now classified as fully human.¹⁵ *Ramapithecus* was once considered to be partially man-like, but is now known to be fully ape-like.¹⁶ *Australopithecus*, in the view of some leading evolutionists, was not intermediate between ape and man and did not walk upright.¹⁷ The strong bias of many evolutionists in seeking a link between apes and man is shown by the near-universal acceptance of two "missing links" that were later proved to be a fraud in the case of Piltdown Man (*Eoanthropus*) and a pig's tooth in the case of Nebraska Man (*Hesperopithecus*).¹⁸

VI. The Earth's Geologic Features Were Fashioned Largely by Rapid, Catastrophic Processes that Affected the Earth on a Global and Regional Scale (Catastrophism).

Catastrophic events have characterized the earth's history. Huge floods, massive asteroid collisions, large volcanic eruptions, devastating landslides, and intense earthquakes have left their marks on the earth. Catastrophic events appear to explain the formation of mountain ranges, deposition of thick sequences of sedimentary rocks with fossils, initiation of the glacial age, and extinction of dinosaurs and other animals. Catastrophism (catastrophic changes), rather than uniformitarianism (gradual changes), appears to be the best interpretation of a major portion of the earth's geology. Geologic data reflect catastrophic flooding. Evidences of rapid catastrophic water deposition include fossilized tree trunks that penetrate numerous sedimentary layers (such as at Joggins, Nova Scotia), widespread pebble and boulder layers (such as the Shinarump Conglomerate of the southwestern United States), fossilized logs in a single layer covering extensive areas (such as Petrified Forest National Park), and whole closed clams that were buried alive in mass graveyards in extensive sedimentary layers (such as at Glen Rose, Texas). Uniform processes such as normal river sedimentation, small volcanoes, slow erosion, and small earthquakes appear insufficient to explain large portions of the geologic record. Even the conventional uniformitarian geologists are beginning to yield to evidences of rapid and catastrophic processes.¹⁹

VII. The Inception of the Earth and of Living Kinds May Have Been Relatively Recent.

Radiometric dating methods (such as the uranium-lead and potassium-argon methods) depend on three assumptions: (a) that no decay product (lead or argon) was present initially or that the initial quantities can be accurately estimated, (b) that the decay system was closed through the years (so that radioactive material or product did not move in or out of the rock), and (c) that the decay rate was constant over time.²⁰ Each of these assumptions may be questionable: (a) some

nonradiogenic lead or argon was perhaps present initially;²¹ (b) the radioactive isotope (uranium or potassium isotopes) can perhaps migrate out of, and the decay product (lead or argon) can migrate into, many rocks over the years;²² and (c) the decay rate can perhaps change by neutrino bombardment and other causes.²³ Numerous radiometric estimates have been hundreds of millions of years in excess of the true age. Thus ages estimated by the radiometric dating methods may very well be grossly in error. Alternate dating methods suggest much younger ages for the earth and life. Estimating by the rate of addition of helium to the atmosphere from radioactive decay, the age of the earth appears to be about 10,000 years, even allowing for moderate helium escape. Based on the present rate of the earth's cooling, the time required for the earth to have reached its present thermal structure seems to be only several tens of millions of years, even assuming that the earth was initially molten.²⁴ Extrapolating the observed rate of apparently exponential decay of the earth's magnetic field, the age of the earth or life seemingly could not exceed 20,000 years.²⁵ Thus the inception of the earth and the inception of life may have been relatively recent when all the evidence is considered.²⁶

**"There is scientific evidence for creation from cosmology, thermodynamics, paleontology, biology, mathematical probability, geology, and other sciences."
 "There are many scientists in each field who conclude that the scientific data best support the creation model, not the evolution model."**

References

1. Slusher, Harold S., *The Origin of the Universe*, San Diego: Institute for Creation Research (ICR), 1978.
2. E.g., Kay, Marshall & Colbert, Edwin H, *Stratigraphy and Life History*, New York: John Wiley & Sons, 1965, p, 102;
 Simpson, George G., *The Major Features of Evolution*, New York: Columbia University Press, 1953, p 360: [Paleontologists recognize] that most new species, genera and families, and that nearly all categories above the level of families, appear in the record suddenly and are not led up to by known, gradual, completely continuous transitional sequences.
3. Note 6 *infra*.
4. E.g., Smith, Charles J. "Problems with Entropy in Biology," *Biosystems*, V.7, 1975, pp 259, 264. "The earth, moon, and sun constitute an essentially closed thermodynamic system..." Simpson, George G., "Uniformitarianism," in Hecht, Max A. & Steeres, William C., eds., *Essays in Evolution and Genetics*, New York: Appleton-Century-Crofts, 1970, p. 43.
5. Gish, Duane T., *Speculations and Experiments Related to the Origin of Life (A Critique)*, San Diego: ICR, 1972,
6. E.g., Simpson, George G., "The History of Life," in Tax, Sol, ed. *Evolution after Darwin: The Evolution of Life*, Chicago: Univ. of Chicago Press, 1960 pp. 117, 149: Gaps among known orders, classes, and phyla are systematic and almost always large.
7. E.g., Kitts, David S., "Paleontology and Evolutionary Theory," *Evolution* V. 28 1974, pp.458, 467:
 Evolution requires intermediate forms between species and paleontology does not provide them. For examples of the lack of transitional fossils, Ommaney, F. D. *The Fishes*, New York: Time Life, Inc., 1964, p 60 (invertebrates to vertebrates); Romer, Alfred S., *Vertebrate Paleontology*, Chicago Univ. of Chicago Press, 31 ed., 1966, p.36 (vertebrate fish to amphibians) Swinton, W.E., *Biology and Comparative Physiology of Birds*, Marshall, A.J., ed., New York Academic Press, V.1, 1960, p.1 (reptiles to birds); Simpson, George G., *Tempo and Mode in Evolution*, New York: Columbia Univ., Press. 1944, p.105 (reptiles to mammals); Simons, E.L., *Annals N.Y. Acad. Science*, V.167, 1969, p.319 (mammals to primates).

8. *E.g.*, Eden, Murray. "Inadequacies of Neo-Darwinian Evolution as a Scientific Theory," in Moorhead, Paul S. & Kaplan, Martin M., eds., *Mathematical Challenges to the Neo-Darwinian Interpretation of Evolution*, Philadelphia: Wistar Inst. Press, 1967, p.109:

It is our contention that if 'random' is given a serious and crucial interpretation from a probabilistic point of view, the randomness postulate is highly implausible and that an adequate scientific theory of evolution must await the discovery and elucidation of new natural laws...

9. *E.g.*, Martin, C.P., "A Non-Geneticist looks at Evolution," *American Scientist*, V. 41, 1954, p. 100

10. *E.g.*, Popper, Karl, *Objective Knowledge*, Oxford: Clarendon Press 1975 p. 242

11. *E.g.*, Kelso, A.J., *Physical Anthropology*, 2nd ed., Philadelphia, J.B. Lippincott, 1974. p 142

12. *E.g.*, Ibid., pp.150,151

13. *E.g.*, Simons, E.L., *Annals N.Y. Acad. Science*. V.102, 1962, p.293, Simons, E.L., "The Early Relatives of Man," *Scientific American*, V.211, July 1964 p 50

14. *E.g.*, Zuckerman, Sir Solly, *Beyond the Ivory Tower*, New York, Taplinger Pub. Co., 1970, p.64.

15. *E.g.*, Ivanhoe, Francis, "Was Virchow Right about Neandert[h]al?", *Nature* V. 227, 1970, p. 577

16. *E.g.*, Zuckerman, pp. 75-94; Eckhardt, Robert B., "Population Genetics and Human Origins", *Scientific American*, V.226, 1972, pp.94,101.

17. *E.g.*, Oxnard, Charles E., "Human Fossils: New Views of Old Bones," *American Biology Teacher*, V.41, 1979, p.264.

18. *E.g.*, Straus, William L., "The Great Piltdown Hoax," *Science*, V.119, 1954, p.265 (Piltdown Man); Gregory, William K., "Hesperopithecus Apparently Not an Ape Nor a Man," *Science*, V.66,1927, p. 579 (Nebraska Man).

19. *E.g.*, Bhattacharyya, A., Sarkar, S. & Chanda, S.K., "Storm Deposits in the Late Proterozoic Lower Bhandar Sandstone of ... India," *Journal of Sedimentary Petrology*. V.50,1980, p. 1327:

Until recently, noncatastrophic uniformitarianism had dominated sedimentologic thought reflecting that sediment formation and dispersal owe their genesis chiefly to the operation of day-to-day geologic events. As a result, catastrophic events, e.g., storms, earthquakes, etc., have been denied their rightful place in ancient and recent sedimentary records. Of late, however, there has been a welcome rejuvenation of [the] concept of catastrophism in geologic thought.

J. Harlan Bretz recently stated, on receiving the Penrose Medal (the highest geology award in America), "Perhaps, I can be credited with reviving and demystifying legendary Catastrophism and challenging a too rigorous Uniformitarianism." Geological Society of America, "GSA Medals and Awards," *GSA News & Information*, V. 2, 1980, p.40.

20. *E.g.*, Stansfield, William D., *The Science of Evolution*, New York: MacMillan Publishing Co., 1977, pp. 83-84; Faul, Henry, *Ages of Rocks, Planets and Stars*, New York: McGraw-Hill Co., 1966, pp. 19-20, 41-49. See generally Slusher, Harold S., *Critique of Radiometric Dating*, San Diego: ICR, 1973.

21. *E.g.*, Kerkut, G.A., *Implications of Evolution*, New York: Pergamon Press, 1960, pp.138,139.

22. *E.g.*, Faul, p.61.

23. *E.g.*, Jueneman, Frederick, "Scientific Speculation." *Industrial Research*, Sept.1972, p.15.

24. Slusher, Harold S. & Gamwell, Thomas P., *The Age of the Earth*, San Diego: ICR, 1978.

25. Barnes, Thomas G., *Origin and Destiny of the Earth's Magnetic Field*, San Diego: ICR, 1973.

26. Slusher, Harold S., *Age of the Cosmos*, San Diego: ICR, 1980; Slusher, Harold S. & Duursma, Stephen J., *The Age of the Solar System*, San Diego: ICR, 1978.

"There are text materials and teacher handbooks for public schools that have been prepared for a fair presentation of the scientific evidences for both the creation model and the evolution model. There are also seminars and audiovisuals for training teachers to offer both models of origins."

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Institute for Creation Research

"Thou art worthy, O Lord, to receive glory and honour and power: for thou hast **created all things**, and for thy pleasure they are and were **created**." **Rev 4:11**

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BTG No. 131b

What Really Happened on the Kansas School Board?

by John D. Morris, Ph.D.*

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"Be sober, be vigilant; because your adversary the devil, as a roaring lion, walketh about, seeking whom he may devour" (1 Peter 5:8).

It's now common knowledge that on August 11, 1999, the Kansas Board of Education (KBOE) voted to de-emphasize evolution in Kansas public school science classes. Unfortunately, what we *think* we know as portrayed by the media is contrary to the actual facts.

Once the news broke, it was obvious that evolutionists were in a frenzy, and you would think their world had collapsed. But my investigation quickly showed that neither the media nor the evolutionary "experts" were presenting the facts accurately.

Reading the standards without the discernment borne of years in creation ministry would lead one to wonder why the evolutionists were so upset. Evolution-related concepts are prominent throughout, with specific recommendations that students learn the details of natural selection, mutation, genetic recombination, etc. Evolution-related concepts are actually more prevalent than before. Why were evolutionists raising such a fuss?

Perhaps it was because on tests, students would no longer be required to answer as if they personally believed in evolution. Students are, however, still required to understand evolutionary related concepts.

Perhaps it was because careful definitions of science and the limitations of science were given. No longer were small variations (*microevolution*) within the species paraded as if they were evidence for large-scale *macroevolution*. All of the standard evidences for *microevolution* were repeated

(unfortunately there are no evidences for *macroevolution*, so none were included). Present also were scientific discussions of some of the evidence which doesn't point toward evolution, all of which had been systematically censored from previous documents.

Earlier, the KBOE had commissioned a group of science teachers and writers to update teaching standards for the schools, and no confrontation was intended. But when the draft reached the board, it was noticed that in a statement promising non-discrimination to different belief systems and students, any mention of "creed" or "religious belief" was conspicuously omitted. This led to closer inspection of the document, which revealed the writers group had followed the lead of the abusive California science framework and a later one by the National Academy of Sciences in that it contained abundant, aggressive teaching of *macroevolution* and potential violations of the rights of students and teachers of other viewpoints. So, the board commissioned a second group of writers to amend the work of the first. This revised document was the one which was adopted.

Thus, we see that the work of the KBOE was not motivated by a right-wing power play. Rather, it was the foiled power-play of the evolutionists who were caught trying to gain their ends by stealth.

One good outcome of the decision has been that school boards in several states have begun similar revisions. It would be worthwhile for each state to investigate to see just how many evolutionary stealth campaigns have so far been successful. Can lost ground be recaptured?

* Dr. John Morris is President of ICR.

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We believe God has raised up ICR to spearhead Biblical Christianity's defense against the godless dogma of evolutionary humanism. Only by showing the scientific bankruptcy of evolution, while exalting Christ and the Bible, will Christians be successful in "the pulling down of strongholds; casting down imaginations, and every high thing that exalteth itself against the knowledge of God, and bringing into captivity every thought to the obedience of Christ" (II Corinthians 10:4, 5).

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IMPACT No. 196

TEACHERS CAN TEACH CREATION SCIENCE IN THE CLASSROOM

by Robert L. Simonds, Th.D.*

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Today, many in public education are attempting to use the government to censor scientific evidence that refutes evolution and advances the concept of special creation. It is widely believed that scientific creationism cannot be taught in a public school science classroom. This **is** not true.

The U.S. Supreme Court developed a three-prong test in *Lemon v. Kurtzas* to when government involvement in religious activity does not violate the establishment clause: (1) The activity must have a secular purpose; (2) its primary effect must be neither to advance nor inhibit religion; (3) it must not constitute excessive entanglement of government with religion.

THE BATTLEGROUND

One would think that rational men of science would want to test, evaluate, and discuss any reasonable scientific theory on any given subject, to ascertain probable, testable data to move the theory to the level of a scientific law.

However, the established scientific community has built an entire system around a straw house. The irrationality of this position has created a scientific "house divided," as Dr. Henry Morris has thoroughly documented.¹

Not only does the theory of evolution not conform to the criteria for science, it is also the foundation of many religions, and it totally fails the Supreme Court test of government non-involvement in religion.

This is nothing less than a spiritual battle for the minds of all America's children. Evolution,

consistently applied, denies God's existence and His creative acts. It is the central theme of all humanist theory. Without evolution, the entire atheist religion of humanism would fall.

HOW ABOUT THE CHURCH AND STATE ISSUE?

Dr. John Moore, Professor of Natural Science at Michigan State University for over 30 years, pointed out that in creation science:

No new laws are necessary, there is no possible violation of so-called separation of church and state, since no religious teaching is involved.² But would the United States Supreme Court buy that? Yes. In *Edwards vs. Aguiliard*, 482 U.S. 96 (1987), they said:

... teaching a variety of scientific theories about the origins of mankind to school children might be done with the clear secular intent of enhancing the effectiveness of science instruction.

That ruling also sustained the finding of the Fifth Circuit Court of Appeals, as follows:

No court of which we are aware had prohibited voluntary instruction concerning purely scientific evidence that happens, incidentally, to be consistent with a religious doctrine or tenet.

Therefore, the teaching of creation science is solidly supported by law—as long as the court's rules are followed.

HOW ABOUT ACADEMIC CREDIBILITY?

The main argument of the ACLU in the *Scopes Trial* in 1925 was that "it is bigotry for public schools to teach only one theory of origins (creation)." The argument was against "censorship" of evolution. Now the tables have turned.

A liberal education, by definition, requires all sides of every issue to be aired. Truth from any source should not be feared. That is another academic reason to teach "creation science." Academic freedom permits a teacher to present whatever views he or she deems necessary to clarify a subject.

Censoring out creation science in favor of a religious view of evolution would violate academia's rules against censorship. *Not to allow another valid theory would also violate the academic idea of a liberal education, and to suppress a teacher's right to freedom in learning would violate the concept of academic freedom.*

HOW ABOUT SCHOOL OR STATE POLICIES?

The ACLU and NEA (National Education Association) have spent millions on giving school boards, administrators, and teachers the false perception that Creation Science is a religious doctrine, not science. However, the Institute for Creation Research has strongly challenged that perception and has started the decay of the evolutionary death grip on science. The constituents of ICR are privileged to support and participate in possibly the greatest single movement in American church history in this century.

Until 1989, no state, to my knowledge, ever put in writing that it was permissible to teach "creation science," "divine creation," "ultimate purposes," or "ultimate causes" in a public-school classroom. However, the proposed new "California State Board of Education Policy Statement on

the Teaching of Natural Sciences" says:

Discussions of *any scientific fact, hypothesis, or theory* related to the origins of the universe, the earth, and of life (the "how") are appropriate to the *scientific curriculum*. Discussions of *divine creation, ultimate purposes, or ultimate causes* (the "why") are appropriate to the history/social science and English/language arts curricula: (emphasis mine).

The first sentence affirms that any valid scientific fact ' theory, or hypothesis can be taught. That policy should qualify the theories of creation science. Evolution is no more "testable" or "faisifiable" than creation.

The second sentence opens up the legitimate teaching of Biblical divine creation, ultimate purposes, and ultimate causes, not in only one major discipline, but four (history, social sciences, English, and English literature).

The recent Texas "Proclamation 66" requires all textbooks to:

1. Present more than one theory of evolution (this shows up the internal divisions on evolution dogma);
2. Examine alternative scientific evidence and ideas on origins (this forces the discussion of scientific creationism both as an idea and a theory);
3. Present evidence to test, verify, modify, or refute each theory of evolution discussed;
4. Present any other reliable scientific theories of origins.

It does seem that the educational pendulum could be swinging back to center. However, the battle is not over, by any means.

SUPPORTING THE INTEGRITY OF SCIENCE

Public school curricula should stay within the true realm of science: the observable, the testable, and the predictable. However, this would preclude the dogmatic teaching of evolution. All Christians should insist on this in their public schools.

Science involves methods, procedures, and practices limited by specific principles of investigation. These principles are often violated by evolutionists. You should be kept well informed on evolution's weaknesses. For example, Dr. Moore writes:

The concept of natural selection by survival of the fittest is the basic evolutionary mechanism. This concept does not qualify as a scientific principle

The concept of survival of the fittest itself does not necessarily imply any evolution. Would not the fittest survive, whether they evolved or were created?"³

Science functions in the realm of the testable, i.e., the falsifiable. Any proposed scientific explanation must be amenable to a testing process.

GUIDELINES FOR TEACHERS

If you are a teacher, you should *take a step-by-step approach to maintaining the integrity of science in your classroom.*

1. Realize that many school administrators, school board members, and teachers are closet

creationists. In their hearts they believe in a Creator and many want to support such views but feel their hands are tied. Your task is to show them that both evolution and scientific creationism should be presented in the classroom.

2. Provide solid secular information on scientific creationism such as *What is Creation Science?* (published by the Institute for Creation Research, P.O. Box 2667, El Cajon, CA 92021).
3. Document the legality of teaching scientific creationism. In 1987, the U.S. Supreme Court ruled in *Edwards v. Aguillard* (Case No. 85-1513) that a Louisiana law demanding a "balance" of evolution and creationism be taught, had an unconstitutional purpose of advancing a religious opinion. However, the Court also clarified that:

Teaching a variety of scientific theories about the origins of humankind to school children might be validly done with the clear secular intent of enhancing the effectiveness of science instruction (p. 14) (previously cited).

The Supreme Court noted that teachers "already possess" the flexibility to supplement the present science curriculum with the presentation of theories, besides evolution, about the origin of life (p. 8), and are "free to teach any and all facets of this subject" of all scientific theories about the origins of humankind" (p. 9).

This is clearly a "green light" for scientific creationism to be taught, even though its teaching cannot be mandated, and even though it prohibits the teaching of Biblical Creationism.

4. Sponsor a lecture series at a local public library or auditorium (not a church) on scientific creationism. Invite teachers, administrators, and school board members. Organize the local churches for support of this event.

As a teacher, you are a unique minister of "light." Your work will "salt" the education process. ICR materials have helped our CEE parents' groups win scores of creation/evolution-policy battles across America. Those same materials will strengthen every teacher's resolve and technical abilities.

The creation/evolution war is for the soul of our nation. Every person will be affected by its outcome.

The Humanist Manifesto I (1933), promulgated by the American Humanist Association, describes the basis for its atheism in its very first Tenet, as follows: "(we) regard the Universe as self-existing and not created."

The Christian Bible supports scientific creation evidence when it says: "In the beginning God created the heaven and the earth" (Genesis 1:1).

What message will America's children hear? It all depends on you.

REFERENCES

1. Morris, Henry M., "Evolution—A House Divided," *Impact* 149, *Acts & Facts*, vol. 18, August 1989), 4 pp.
2. Moore, John N., *How to Teach Origins*, Milford, Michigan, Mott Media, 1983, p. 1.
3. Moore, p. 46.

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IMPACT No. 270

AN EDUCATIONAL STEP IN THE RIGHT DIRECTION

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"Beware lest any man spoil you through philosophy and vain deceit, after the tradition of men, after the rudiments of the world, and not after Christ" (Colossians 2:8).

The present generation of students in American schools seem to exhibit more confusion of mind than any other generation in recorded history. This confusion is mostly related to a lack of belief in God and His standard of absolute truth. Fundamentally, I believe the permeating influence of the evolutionary theory is the principle cause of this lack of belief in God and His absolutes. The false philosophy and empty deception of evolutionary theory does not allow for the Biblical admonition of setting our minds upon the things above. This is because of the focus on things of this world.

This state of confusion and lack of belief in absolutes is not limited to secular schools. The problem is also present in the private Christian schools of America and Canada.[1] However, all is not lost; several groups such as the Association of Christian Schools International (ACSI) and the Institute for Creation Research (ICR) are waging the battle against the false theory of evolution and its impact on young people's minds.

One aspect of education where evolutionary theory has had a stranglehold is standardized testing. This is especially true for standardized science achievement tests. These tests have been written from a secular, humanistic, and evolutionary world view. Because of this inherent bias, young people educated in evangelical, Christian, private schools which teach creation science are at a distinct disadvantage.

This situation is changing. ACSI, in cooperation with the developers of the Stanford Achievement Test series, introduced in the fall of 1995 a special Christian School Edition of the Stanford Achievement Test.[2] This test is called the ACSI/SAT-9 Christian School Edition. Copies of this test

may be obtained through ACSI.

Reasons for Development of ACSI/SAT-9 Christian School Edition

Should Christian parents be concerned with the issue of standardized testing? In order to answer this question we Scripture We find that Scripture makes it clear that believers in Jesus Christ will undergo testing as part of the maturing process of a life in Christ (I Thessalonians 2:4; 5:21; Romans 12:2; Hebrews 12:4).

God puts believers to the test in many realms:

(1) Thinking and emotions of heart and mind (Psalm 7:9; 139:23; Proverbs 17:3; I Thessalonians 2:4)

(2) Knowledge (I Peter 1:7; 4:12; James 1:3)

Biblically, parents are responsible for training their children and monitoring the knowledge their children acquire (Genesis 2:9,17; Deuteronomy 6:1-9; Psalm 127:3; Proverbs 22:6; Matthew 15:4; Romans 13:1; Ephesians 6:4; Colossians 3:10).

Clearly (from a Scriptural viewpoint) parents should examine and evaluate their children's progress, both academically and spiritually (Proverbs 20:11).

Another fundamental issue of testing relates to the content base from which the test is to be constructed. Because Psychological Corporation largely serves a secular clientele, the content for their test is based on the curriculum taught in public schools of America. It is no secret that the public school curriculum is mostly evolutionary based. For organizations which serve Christian schools, this is a problem because many of the Christian schools use curricular materials which are creationist-based. This creates a mismatch when the test is used by Christian schools. This can potentially mean that students in Christian schools score lower on the standardized Stanford Achievement Test. The lower scores are not due to achievement-related factors, but rather a built-in bias of the test. This is the issue the new ACSI/SAT-9 Christian School Edition addresses.

Educational Issues and SAT-9

The production of SAT-9 raises some interesting issues and concerns. It also generates some cautions for the Christian educator and concerned parent. Among these are:

(1) The SAT-9 measures achievement only; it does not measure student skill, ability, spirituality, or learning styles. This limitation should be understood by most Christian educators. There is need for a wide range of classroom and school assessments. The same basic caution applies to the homeschooling ogling parent. The axiom is, simply, not to put too much stock in a standardized test score. Remember, standardized tests are limited instruments, even for measuring achievement.

(2) The fact that achievement tests are designed and constructed around what is thought to be the content of school curriculum is of major importance, assuming that Christian textbooks and school curriculum are being sampled for the development of the SAT-9 test and future SAT tests. This is especially important for the developers and writers of Christian school materials to understand. The responsibility and opportunity for these writers and developers has now shifted. The need for high quality, creationist-based textbooks in all disciplines is an imperative.

How Does the Christian School Edition Compare to the Regular SAT-9?

The ACSI/SAT-9 Christian School Edition is known as a custom-made test. It contains the same set of core questions as the regular SAT-9 and will be used for all students taking the SAT-9. The difference lies in the subset of questions outside of the core. These subset questions can be changed to reflect differences in student backgrounds and world views and can be written in a manner which is not offensive to Bible-believing students of Christian schools. The non-core questions of the ACSI/SAT-9 Christian School Edition use a Biblical and traditional-values approach with illustrations, examples, and stories. The core questions provide the link to the national norms of Stanford-9.

What Are Some Benefits of the New Christian Edition?

There appear to be many possible benefits. Among these are:

(1) The new ACSI/SAT-9 Christian School Edition has a science subtest with items which are written from a creationist perspective. The test has also been screened with the intent of removing all questions which are related to a false, evolutionary worldview. Thus the science portion of the new test is compatible with a Christian creationist worldview. The same process was followed for all subtests of the new ACSI/SAT-9 Christian School Edition, including the content areas of reading, mathematics, language, listening skills, science, and social studies.

(2) The new ACSI/SAT-9 test provides an alternative for not only Christian schools, but also for homeschoolers. This is of great importance to homeschool families. Many parents are looking for standardized tests which test what they are teaching. Many homeschooling families are teaching basic creation science and do not wish to have their children indoctrinated in the evolutionary worldview.[3] The development of this new test will have an impact on testing rules and regulations in all fifty states. Many of the states already have some type of testing requirements for those who choose to homeschool their children.[4] Homeschool support groups will now be able to work with state legislators in an effort to get the ACSI/SAT-9 test approved for inclusion in their state's list of approved tests.

(3) The new ACSI/SAT-9 Christian School Edition will be nationally normed, which will allow for the comparison of a student's performance with current national norms. This will be a valuable assessment tool for both Christian school and homeschool children. The fact that the test is nationally normed may benefit homeschoolers in dealing with the issue of reentry into the public school system. Currently sixteen of the fifty states have a rule or regulation governing such an event. Many of the sixteen states require the student to take a standardized achievement test. The state or the delegated local authority makes a determination from the test results for grade placement of the child. Because of the inherent bias in the current standardized tests, many homeschool parents have not been pleased with their child's grade placement; the unfair use of the ACSI/SAT-9 test as an alternative assessment instrument may help to alleviate some of these frustrations. Parents will need to work with their local authorities in order to get permission to use the ACSI/SAT-9 as an alternative test.

(4) The SAT-9 Christian School Edition will also provide a comparison of scores for ACSI students only. This will allow the comparison of one 8th grade ACSI student with other 8th grade ACSI students nationally, and will allow Christian school administrators to compare the levels of achievement of their schools with those of other like-minded institutions. This should provide data from which educational standards and quality can be evaluated, and may also lead to improvement in the quality of the Christian school education.

(5) ACSI/SAT-9 Christian School Edition helps to limit the influence of one of the major criticisms against standardized tests. This criticism is that the content of standardized achievement tests is often a mismatch with the school's curriculum and classroom's teaching. Because many of the questions which were biased or offensive toward a Christian worldview were removed, a portion of

the mismatch problem is removed.

(6) Another criticism of standardized testing has been that teachers "teach to the test." The new ACSI/SAT-9 test will allow Christian educators to "teach to the test" under a whole new perspective. They will be able to teach the children to apply their minds to God's knowledge rather than a man-centered knowledge (Proverbs 22:17). The future of America lies in the hands of the Creator and His children. With the development of the ACSI/SAT-9 Christian School Edition test, the minds of many young people will be affected in a positive manner. In the end, the positive effect will be attributed to the new focus this test helps to establish, which is that true education is centered on "the truth" found in the person of the Creator, Jesus Christ. An educational step for assisting believers in Jesus Christ in *seeing to it that they are not taken captive by the empty deceptions of evolutionary philosophy* has truly been taken.

End Notes

1. For documentation, see Josh McDowell's book, *Right from Wrong* McDowell surveyed 3,795 evangelical Christian youths from 13 denominations (encompassing both public and private school youth). He concluded there is a difference in behavioral patterns of youth who believe in a standard of absolutes as opposed to those youth who do not hold to a standard of absolutes.
2. This milestone in Christian education was accomplished through the joint efforts of ACSI and Psychological Corporation (publisher of the test). The ICR Science Education Department also had a part in the success of this project. We were asked to write test items for the science portion of the test. The late Dr. Richard Bliss, Fred Willson, Dan Criswell, and I participated in this project. This team constructed several questions which were submitted and accepted by Psychological Corporation for inclusion in SAT-9.
3. The ACSI process for test development included the individual writing of each test item. Each test item was screened on several levels. One of the screens was for evolutionary thinking. Any test item which contained evolutionary thinking was dropped from the test items pool. This process was followed for several thousand test items and included test items in all subject areas (not just the sciences).
4. According to this author's publication, *Homeschooling Laws In All Fifty States*, thirty-four of the fifty states have some type of requirement for testing home schooled children. Copies of this publication can be ordered from ICR.

Bibliography

1. Deckard, Steve, *Home Schooling Laws In All Fifty States* (Santee, CA, Deckard Press, 7th Edition, 1994).
2. Eakman, B.K., *Educating for the New World Order* (Portland, OR, Halcyon House, 1991).
3. Fugate, Richard, *Successful Home Schooling* (Tempe, AZ, Alethia Division of Alpha Omega Publications, 1990).
4. Lowrie, Roy, *To Those Who Teach in Christian Schools* (Whittier, CA, ACSI 1978).
5. Morris, Henry, *Christian Education for the Real World* (San Diego, CA, Master Books, 1991).
6. Kennedy, James, *Education: Public Problems and Private Solutions* (Fort Lauderdale, FL, Coral Ridge Ministries, 1993).

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Institute for Creation Research

"Thou art worthy, O Lord, to receive glory and honour and power: for thou hast **created all things**, and for thy pleasure they are and were **created**." **Rev 4:11**

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IMPACT No. 306

A Call to Arms for Conservative Christian Science Educators

by Steve W. Deckard, Ed.D.*

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The young and growing discipline of science education is at a pivotal point of development. This very important field deals with aspects of how we teach our children and inform society about science. From a young-Earth creationist perspective, there is a major problem within the discipline. This problem is the prevalent and persistent onslaught of the false ideology of the evolutionary perspective or worldview.¹ In an effort to combat this problem and establish a firm Biblical base for the discipline of science education, the following tenets are proposed.

Proposed Tenets for Creationist Based Science Education

1. A student's worldview is an important determinant regarding the learning of specific knowledge (I Corinthians 2:14-16).² This is especially true in the scientific disciplines. Worldview development should be an integral part of true science education (and for all education).
2. The makeup of a learner mirrors the Creator and therefore is Trinitarian in nature. The learner uses the senses, the mind, and the spirit in all facets of learning. Complete learning encompasses hands-on (senses), minds-on, and hearts-on (use of spiritual discernment) components. All three components must be in harmony with the Creator for true and complete learning to occur.³
3. Because the learner has a three-fold nature, effective teaching must address all three components of learning.
4. Assessment and testing (examinations) in science education should focus on the content being taught and the learner characteristics. Among these are: (1) testing of factual knowledge; (2) testing of student's understanding of God's creation and its purpose and function; (3) testing of the

specific development of the student's worldview; and (4) the testing of the student's abilities in the three component areas of learning as stated in tenet number two.⁴

5. Specific textbook chapters on Biblical and scientific creationism should be included in all science textbooks written for the Christian community. The rest of the textbook content, as well as all other curricular materials, should contain the principles and elements of Biblical and scientific creationism in a fully integrated form.⁵

6. Students should be exposed to evolutionary philosophy *after* they are thoroughly grounded in a creationist worldview. Persons who are competent, knowledgeable, and are able to explain why evolutionary theory is false and how it contradicts a true Christian creationist worldview, should conduct this teaching.

7. Both creationism and evolutionary theory are belief systems. This statement of fact does not make it wrong for either of them to be discussed and taught in the science classroom. Science does not hold within its domain exclusivity of knowledge and does not possess the answer to all of man's questions and problems. Clearly, the study of science and origins is multidisciplinary; therefore, science teaching must not be limited. The process of limiting is not good teaching and does not allow the student to obtain the big picture.

8. Christian teaching points the student toward the source of all knowledge (God) and explains how that knowledge is obtained by revelation and reason. Science is only one method for obtaining knowledge about the world around us and should be presented as such.

9. Creationism must be taught systematically. Basic principles of creationism must be integrated into the textbooks and curricular materials of each scientific discipline. Such principles include the following:

- a. Time, space, matter/energy are all created entities and therefore had a beginning.
- b. Life was supernaturally created.
- c. Teleological considerations (design and purpose) are appropriate and therefore must be integrated throughout science textbooks and curriculum materials.
- d. The world which can be observed is not the original created world, but rather the cursed and flooded remnant of that world. Proper interpretation of scientific data must include these considerations.
- e. The human mind was formed for the purpose (among others) of exploring and understanding God's creation. Students must be encouraged to recognize this high calling.
- f. The Fall in Genesis 3 has affected the human mind. Limited because of its finiteness, the mind is further clouded by the effects of sin and wrong thinking. The teaching of a fully Biblical creationist worldview is thus paramount in attempts to understanding the creation.
- g. The human mind was formed to function at its best when focused upon the Creator (Colossians 3:2). It also follows that the student's epistemological beliefs (what the student believes about the nature of knowledge and learning) are developmental in nature. As a student matures physically and mentally, he must also develop spiritually. Because the battle between the two worldviews, creation/evolution, is a spiritual one,

the teacher must be aware of the student's spiritual developmental level.

10. A teacher should understand that a student's spiritual beliefs parallel his or her beliefs about scientific knowledge. Just as scientific beliefs form a trichotomy, so do their spiritual beliefs. The trichotomy consists of a certain percentage of the beliefs being tentative, certain percentage unchanging, and a certain percentage undiscovered. Thus, to some extent both science knowledge beliefs and spiritual beliefs change over time. It is this change and development that the teacher can affect in a Christ-honoring manner.

Discussion and Conclusions

The evidence is indisputable, and the battle lines are drawn. It is past time for the Christian community to defend the Biblical, creation-based worldview. With the abundant evidence for Creation, the Fall, and the Flood available, and the extraordinary resources which now exist, there can be no excuse for Christian teachers and Christian schools to capitulate to the evolutionary worldview so hostile to Christianity. It is also time that all youth were taught real and truthful science. These tenets serve as a starting point for such an objective.

References

¹ Although the secular world recognizes the idea of worldview, many do not understand its importance or significance. Therefore it is necessary to define worldview (especially from a Christian young Earth creationist perspective). For the purposes of this document, worldview is an ideology, philosophy, theology, movement, or religion that provides an overarching approach to understanding God and His world, or a set of presuppositions (assumptions which may be true, partially true, or entirely false) which we hold (consciously or subconsciously, consistently or inconsistently) about the makeup of our world (*Developing a Biblical Worldview*, Nehemiah Institute, p. 14).

² The importance of this principle has been established by works such as: *Developing a Biblical Worldview*, by Daniel Smithwick, 1996. *The Capabilities of Science in the Formation of a Modern Worldview*, Steve Deckard, 1997.

³ For example see: Genesis 1:26, Hebrews 5:14, Colossians 3:2, Genesis 6:5, Deuteronomy 4:29, Hebrews 10:22, Matthew 22:37, Acts 17:11, Romans 12:2, and II Timothy 1:7.

⁴ For example see: Psalm 26:2, Jeremiah 12:3, II Corinthians 11:28, II Corinthians 13:5, Galatians 6:4, and I Thessalonians 5:21. Also note: the testing of students in domains outside of content knowledge is an area of on-going investigation and the need for further research is great. Current assessment instruments which address some of the issues raised here include: (1) the PEERS Test; (2) SAT-9, Christian School Edition; and (3) Worldview Test (WVT). Information about the PEERS Test can be obtained by calling 1-800-948-3101. Information about the Association for Christian Schools SAT-9 can be obtained by calling 719-528-6906. For information regarding the WVT see: Deckard, Steve W., and Gregory M. Sobko reference listed below.

⁵ One textbook that may serve as a model of this approach is *Biology Principles and Perspectives* by John Silviu, published by Kendall Hunt, Dubuque, Iowa.

For further study

Deckard, Steve W. (1994). "Practical Model for Integrating Science and Faith," *Acts & Facts* 23(9):i-iv (ICR Impact No. 255).

Deckard, Steve W. (1995). "An Educational Step in the Right Direction," *Acts & Facts* Impact Article 24(12):i-iv (ICR Impact No. 270).

Deckard, Steve W. (1996). "Biology Textbooks Worldview Development and the

Creation Evolution Controversy," *Acts & Facts*: 25(9):i-iv (ICR Impact No. 278).

Deckard, Steve W., Jan Barnett, and Richard Overman (1996). "Implementing a Creationist Based Field Trip," *Acts & Facts*: 25(11):i-iv (ICR Impact No. 281).

Deckard, Steve W., Richard Overman, Bryan A. Schneck, Candace B. Dixon, and Robert E. Brook. "Methodology for Analysis of Science Materials from a Creationist Worldview," *CRSQ*, 31(1) pp.25-27.

Deckard, Steve W. (1997). "The Capabilities of Modern Science in the Formation of a Modern Worldview," *CRSQ* 33 (4) pp.257-261.

Deckard, Steve W. and Gregory M. Sobko, "Toward the Development of an Instrument for Measuring a Christian Creationist Worldview," International Conference on Creationism (1998), Robert E. Walsh, ed., pp. 13-165. Creation Science Fellowship, Pittsburgh, PA.

Smithwick, Daniel J. and Dennis L. Woods (1996). *Developing a Biblical Worldview: An Introductory Course to Basic Christian Philosophy*. Nehemiah Institute.

Wisnieski, Mark E., *The Worldview Approach to Critical Thinking*. Proceedings of the Third International Conference on Creationism (1994), Robert E. Walsh, ed., pp. 593-607. Creation Science Fellowship, Pittsburgh, PA.

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All ICR staff members adhere to a Statement of Faith in the form of two documents: "Tenets of Scientific Creationism," and "Tenets of Biblical Creationism." (see [Impact No. 85](#))

As a missionary organization, ICR is funded by God's people. The majority of its income is provided by individual donors who desire to proclaim God's truth about origins. Gifts can be designated for research, the graduate school, seminars, or any special part of the ICR ministry. All others will be used where most needed. We pledge to use them wisely and with integrity.

If you would like to receive our free monthly newsletter "Acts & Facts," or our free quarterly devotional Bible-study booklet "Days of Praise," just request them by filling out this [form](#). If you would prefer to receive our online/email versions of the Days of Praise devotional and Acts & Facts newsletter, you can use this [form](#).

We believe God has raised up ICR to spearhead Biblical Christianity's defense against the godless dogma of evolutionary humanism. Only by showing the scientific bankruptcy of evolution, while exalting Christ and the Bible, will Christians be successful in "the pulling down of strongholds; casting down imaginations, and every high thing that exalteth itself against the knowledge of God, and bringing into captivity every thought to the obedience of Christ" (II Corinthians 10:4,5).

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U. S. Senate Passes Amendment and Supports Critical Thinking Regarding Evolutionary Theory

Some Democratic and Republican Senators Feel Questioning of Evolutionary Theory in Schools is legitimate

On June 13, 2001, the United States Senate strongly supported an amendment which states,

"(1) good science education should prepare students to distinguish the data or testable theories of science from philosophical or religious claims that are made in the name of science;

(2) where biological evolution is taught, the curriculum should help students to understand why this subject generates so much continuing controversy, and should prepare the students to be informed participants in public discussions regarding the subject."

This amendment 799 to S.1 was introduced by Senator Rick Santorum (R-Pennsylvania) to be part of the Better Education For Students and Teachers Act, and was strongly supported by a 91-8 vote of the Senate.

Some noteworthy comments on the ammendment were made by various senators including those from Senator Ted Kennedy (D-Massachussetts), who supported the ammendment because it encouraged critical thinking:

"the language itself, is completely consistent with what represents the central values of this body. We want children to be able to speak and examine various scientific theories on the basis of all of the information that is available to them so they can talk about different concepts and do it intelligently with the best information that is before them."

Another Senator, Robert Byrd from West Virginia (D), said, "[this] amendment will lead to a more thoughtful treatment of this topic in the classroom. It is important that students be exposed not only to the theory of evolution, but also to the context in which it is viewed by many in our society." He also supported critical thinking and the need to discuss viewpoints of many kinds on this issue by saying:

"I think, too often, we limit the best of our educators by directing them to avoid

controversy and to try to remain politically correct. If students cannot learn to debate different viewpoints and to explore a range of theories in the classroom, what hope have we for civil discourse beyond the schoolhouse doors? Scientists today have numerous theories about our world and its beginnings. I, personally, have been greatly impressed by the many scientists who have probed and dissected scientific theory and concluded that some Divine force had to have played a role in the birth of our magnificent universe. These ideas align with my way of thinking. But I understand that they might not align with someone else's. That is the very point of this amendment--to support an airing of varying opinions, ideas, concepts, and theories. If education is truly a vehicle to broaden horizons and enhance thinking, varying viewpoints should be welcome as part of the school experience."

Finally, Senator Brownback (R) from Kansas took the opportunity of having the theory of evolution as the topic on the floor to "clear the record about the controversy in Kansas." He noted that the actions taken by the State of Kansas School board have been misrepresented by the media and were not out of line:

"In August of 1999 the Kansas State School Board fired a shot heard 'round the world. Press reports began to surface that evolution would not longer be taught. The specter of a theocratic school board entering the class to ensure that no student would be taught the prevailing wisdom of biology was envisioned. Political cartoons and editorials were drafted by the hundreds. To hear the furor, one might think that the teachers would be charged with sorting through their student's texts with an Exacto knife carving out pictures of Darwin.

"However, the prevailing impression, as is often the case was not quite accurate. Here are the facts about what happened in Kansas. The school board did not ban the teaching of evolution. They did not forbid the mention of Darwin in the classroom. They didn't even remove all mention of evolution from the State assessment test. Rather, the school board voted against including questions on macro-evolution--the theory that new species can evolve from existing species over time--from the State assessment. The assessment did include questions on micro-evolution--the observed change over time within an existing species.

"Why did they do this? Why go so far as to decipher between micro and macro-evolution on the State exam? How would that serve the theocratic school board's purpose that we read so much about? Well, the truth is . . . there was no theocratic end to the actions of the school board. In fact, their vote was cast based on the most basic scientific principal that science is about what we observe, not what we assume. The great and bold statement that the Kansas School Board made was that simply that we observe micro-evolution and therefore it is scientific fact; and that it is impossible to observe macro-evolution, it is scientific assumption.

"The response to this relatively minor and eminently scientific move by the Kansas school board was shocking. The actions and intentions of the school board were

routinely misrepresented in the global press. Many in the global scientific community, who presumably knew the facts, spread misinformation as to what happened in Kansas. College admissions boards, who most certainly knew the facts, threatened Kansas students. The State Chamber of Commerce and Industry, and the State universities were threatened based on the actions of school board. All of these effects caused by a school board trying to decipher between scientific fact and scientific assumption. The response to the actions of the board, appeared to many as a response to the commission of heresy.

"For this reason, I am very pleased that my friend from Pennsylvania offered this amendment. He clarifies the opinion of the Senate that the debate of scientific fact versus scientific assumption is an important debate to embrace. I plan to support the amendment and urge my colleagues to join me. "

To view these comments on the online Congressional Record for June 13, 2001, and the supporting statements, carefully follow the following directions:

Go to "<http://thomas.loc.gov/r107/r107.html>" and click on "Senate" for June 13. The table of contents for the Senate for that day appears. Item number 4, the "BETTER EDUCATION FOR STUDENTS AND TEACHERS ACT" should be clicked on. Scroll down about 20% of the page to the first listing for Mr. SANTORUM and click on the link "Page:S6148".

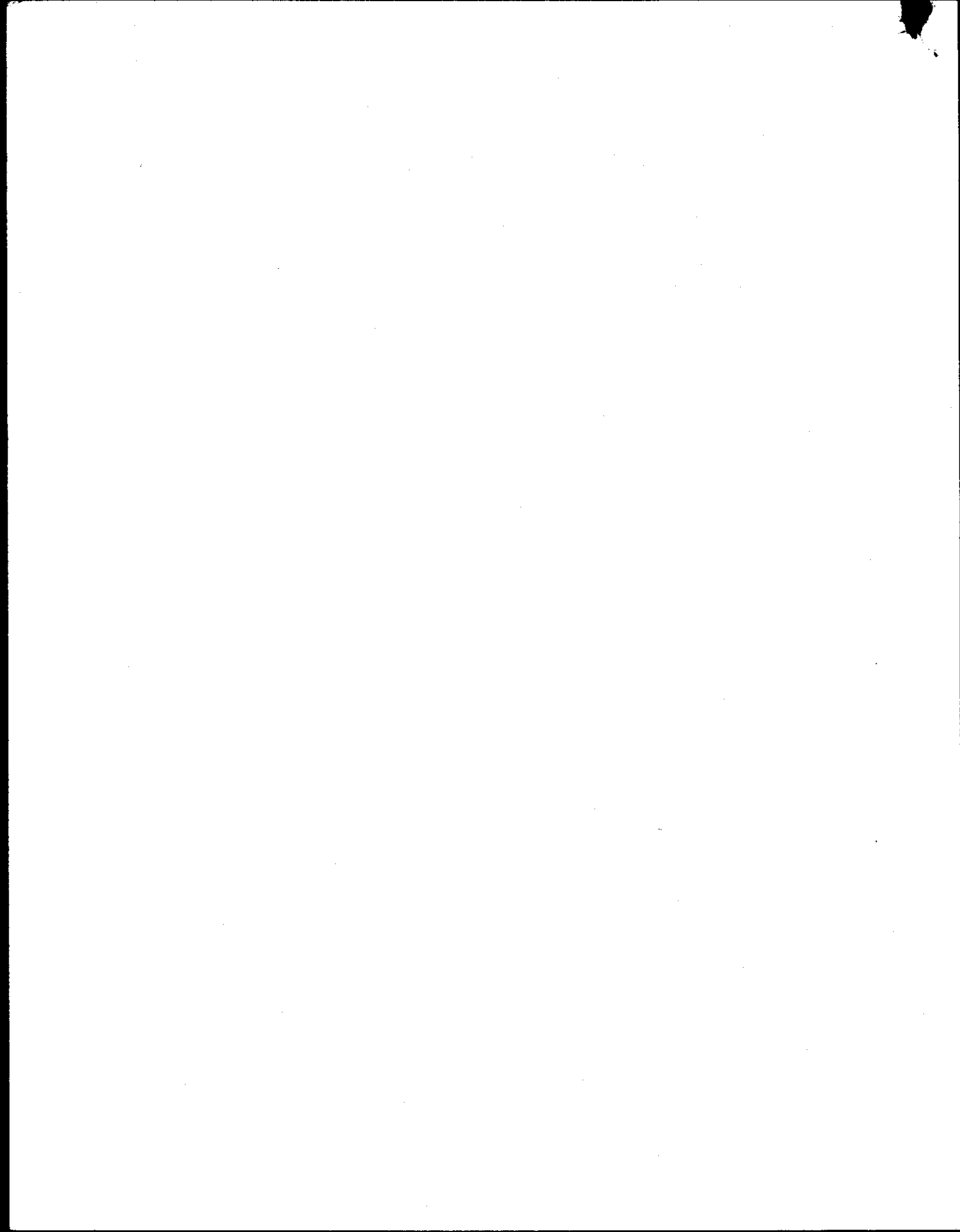
After reading Mr. Santorum's statement you will have to scroll all the way to the bottom of the page, past discussion of a different amendment, and click on "Forward" in the second column of links. Scroll down about a third of the way to the first statement of Mr. KENNEDY on this page.

Then scroll all the way down and again click on "Forward". On the new page, scroll down about a quarter of the way to the first mention of Mr. BYRD. Read his statement and that of Mr. BROWNBACK and the vote follow one after another from this point.

To follow progress of this bill, go to Thomas (<http://thomas.loc.gov>) and search on S.1 or H.R. 1.

Dr. Roland Hirsch is to be kindly thanked for providing the directions for finding this information.

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"Give thanks to the LORD, for he is good; his love endures forever." (Psalm 118:1)





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As he spake by the mouth of his holy prophets, which have been since the world began.
Luke 1:70



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CREATION AND FIRST AMENDMENT RIGHTS

- PRESIDENT'S COLUMN June 2002

by [John D. Morris, Ph.D.](#)

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Early in 1992, ICR won a stunning victory in Federal Court. The state of California had attempted to close the ICR Graduate School, branding those who believed in creation as non-scientists regardless of their scientific credentials and accomplishments. But, by God's grace and with His help, we eventually won three court battles reestablishing Christian/creationist education on a strong legal foundation.

Today many Christian schools and even attorneys are unaware of this precedent-setting ruling and its benefits for all Christian schools. Thus, the time seems right for a rehearsal of the events and details of the ruling of this important case.

The ICR Graduate School was founded in 1981 and given official state "approval" to operate in July. As it grew in size and matured in quality it pursued "accreditation" from the Transnational Association of Christian Schools. Its influence through publications, debates, and research was widening. Meanwhile, unbeknownst to us various doctrinaire anti-creationists (i.e., anti-Christian also) launched an international campaign to stifle the Institute and its Graduate School, viewed by Isaac Asimov as "public enemy number one." Rightly assuming that a strong creation movement gives "credibility" to Christianity and dangerously weakens evolutionist control over America's worldview they stacked the files of the Department of Public Instruction in Sacramento with what one state employee called a "two-foot thick stack of outrage" against us. Chief perpetrator was Superintendent of Public Instruction, Bill Honig, darling of the teacher unions and political left in general.

At this same time, Honig was recruiting prominent evolutionists to produce California's new "science framework" for teaching science in the public schools. This document, aggressively integrated evolution throughout the entire curriculum and has led to similar documents across the country. It led to the uproar in Kansas in 1999, for instance, and is the basis for the current argument in Ohio. A masterpiece of propaganda and deceit it has done incalculable harm. A major offensive against Christianity was underway and they felt ICR, with its bevy of strong arguments and qualified spokesmen, had to be silenced.

In August of 1988 a team of scientists arrived at ICR to evaluate our application for the state's newly mandated "re-approval." Even though the team was predominantly evolutionist, including one outspoken evolutionist who had asked to be on the team even though he had contributed to the "two-foot stack" mentioned above, they voted 3 to 2 *in favor of* re-approval. Two months later Honig pressured one member to change his vote and announced to the press that we had been denied by a 3 to 2 vote. Closure loomed! Honig demanded that we take all creation teaching out of our classrooms. But, we are a private Christian school which had never taken one dime of public money. How could they do this?

In an attempt to survive without a lawsuit, we bent as far as we could but refused to buckle. Honig sent another team in August of 1989 to "verify" that creation was no longer a part of our curriculum. A team of five investigators was hand-chosen, four of whom were nationally known anti-creationists. They were accompanied by a state lawyer and two anti-creation education bureaucrats, one of whom was well known in humanist circles. Needless to say they voted 4 to 1 and issued, in their words, "the death penalty" on ICR's Graduate School.

Coincidentally, ICR's pursuit of full accreditation through TRACS was successful in February of 1990. The TRACS team, fully aware of state scrutiny of ICR, was extremely rigorous in their evaluation, and found ICR's teaching of the highest caliber. Obviously, the problem with the state was of perspective, not of quality. The state was not merely withdrawing our accreditation, they were denying our right to exist regardless of quality and were beginning to squeeze other Christian schools in the state also. Perhaps they expected us to simply accept this ruling and close, but in May of 1990, after every other avenue was exhausted, we filed a lawsuit in Federal Court claiming abridgement of our religious freedom, freedom of speech, academic freedom, and civil rights. Soon similar suits were filed in State District Court and Administrative Law Court, dealing with violation of the State Law and its Education Code, citing numerous improper actions and unprecedented and perhaps illegal "dirty tricks" on the part of the state administrators and lawyers.

Motions to dismiss the case were rejected by each judge in each case, and ICR proceeded to depose employees of the Education Department, visiting committee members, and intervening advocates. Our case, which seemed so strong, was buttressed by documentation of wrong doing and bigotry on the part of the state. Each appearance before the Court was ruled in ICR's favor and soon our approval had been reinstated and the negative reports thrown out. All that remained was the Federal lawsuit, testing whether or not a state regulatory body can require a private school to hold a particular state-mandated philosophy. Sensing great defeat and embarrassing public disclosure, the state attorney offered to settle out of court. We refused. We insisted on a formal "declarative judgment" which would have national application and strong precedent. A wonderfully deep and wide ruling resulted which stands as firm testament to God's sovereign power and His gracious answer to prayer.

The ruling is reproduced below. However, let me call your attention to a few points in particular.

Point C: Allows any private school to design its curriculum and course content as it desires.

Point E: A private school may specify statements of belief and purpose and use them as a guideline for hiring faculty and accepting students.

Point F: Specifically reaffirms that First Amendment rights extend to Christian schools.

Point G: Private schools may teach creation as correct. Also required is education in evolution. This was at Honig's insistence, but it would be irresponsible for a school not to teach about this dominant view of scientists. (They also should teach why it is not correct!)

Point H: Extends the ruling to private K-12 schools and home schools.

These statements, while they do reflect some give and take typical of court actions, nevertheless provide powerful protection for all schools. The Lord powerfully intervened on behalf of all Christian education. Throughout the process we had prayed that these enemies of the cross would themselves fall into the pit they had dug for us (Proverbs 28:10). It happened just that way.

**Civil No. 90-0483-B (M)
JUDGEMENT GRANTING
DECLARATORY JUDGEMENT BY STIPULATION**

Institute for Creation Research Graduate School, et al., -vs.- Honig, et al.

The parties having stipulated that the Court may enter judgement in this matter,

IT IS ORDERED AND ADJUDGED THAT:

1. A declaratory judgement shall issue from this Court. The judgement declares the following:

A. That defendants acknowledged that the 1989 Visiting Committee report should be rescinded and should have no force and effect, and that defendants will recommend to the Council for Private Postsecondary and Vocational Education that it should withdraw by physical removal or notation the 1989 Visiting Committee report and that the 1988 Visiting Committee report that was prepared or accepted after Dr. Kovach decided to change his recommendation from approval to denial.

B. That defendants acknowledge that the August 1988 Visiting Committee report should be considered the final official report concerning the Institute for Creation Research Graduate School. Defendants will recommend to the Council for private Postsecondary and Vocational Education that the August 1988 Visiting Committee report favorable to the approval of ICRGS should be the last official document in the official school file.

C. That defendants acknowledge that a private postsecondary educational institution that meets the statutory standards and its implementing regulations can be approved as a degree granting institution. Except as provided by statute and implementing regulations, an institution may teach any curriculum or include any material in a course's content without being penalized.

D. That defendant Louis ("Bill") Honig agrees that until his present term of office expires on January 20, 1995, that he and his designee to the Council for Private Postsecondary and Vocational Education will abstain from voting on ICRGS's application for approval to grant science degrees.

E. That defendants acknowledge that a private postsecondary educational institution may specify a statement of belief and a statement of purpose for both faculty and students that complies with a national accrediting association recognized by the United States Department of Education.

F. That defendants acknowledge that a private postsecondary educational

institution has First Amendment rights of free speech, religious freedom, and academic freedom. Defendants further acknowledge that a private postsecondary educational institution's First Amendment rights must be considered during the institution's approval review.

G. That defendants acknowledge that a private postsecondary educational institution may teach the creation model as being correct provided that the institution also teaches evolution.

H. That defendants acknowledge that a private K-12 school is not within the jurisdiction of the State Department of Education for the purpose of approval of courses or course content or issuance of regulations, except as provided by law.

Dated: January 29, 1992

s/s Rudi Brewster

Honorable Rudi Brewster

US District Court; Southern District of California

*** Dr. Morris is President of ICR.**

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Our site is best viewed at a resolution of 800 x 600 or higher.

Name: Evolution

Discipline: Legislation

Category: 1st Amendment

Key Words:

Abstract:

Q 1: What is the current law on the restriction of individual rights to practice one's faith in a classroom setting?

A 1: ICR is not a law firm, does not practice law, and is not in a position to give legal advice. However, the U.S. Congress and the President of our country have passed into law a new education bill entitled "No Student Left Out Education Bill" on January 8, 2002. Details of this law and its intent are found in the following URL's:

URL: <http://www.susvalley.bhcom1.com/cgi-bin/db.cgi/7/5/2001?db=newsfaxes>
URL: <http://www.acs.ucsd.edu/~idea/senate.htm>
URL: http://www.adl.org/religion_ps/evolution.asp
URL: http://www.edweek.org/ew/ew_printstory.cfm?slug=28esea.h21
URL: <http://www.infidels.org/activist/state/evolution.shtml>
URL:
http://www.natcensciedd.org/resources/articles/5445_eight_significant_court_decisi_2_15..
URL: List of Colleges and Universities that Support Creationism - 28k
URL: <http://www.icr.org/newsletters/btg/btgjune02.html> - 25k
URL: <http://www.icr.org/pubs/imp/imp-020.htm> - 36k
URL: <http://www.icr.org/pubs/imp/imp-279.htm> - 28k
URL: <http://www.icr.org/pubs/imp/imp-071.htm> - 29k
URL: <http://www.icr.org/pubs/btg-b/btg-114b.htm> - 15k
URL: <http://www.icr.org/pubs/btg-a/btg-103a.htm>
URL:
http://www.icr.org/creationproducts/creationsscienceproducts/Teaching_Creation_Science_in_Public_Schools.html - 3k
URL: <http://www.icr.org/pubs/president/prz-0205.htm> - 25k
URL: <http://www.icr.org/pubs/btg-a/btg-161a.htm> - 30k
URL: <http://www.icr.org/pubs/imp/imp-069.htm> - 28k
URL: <http://www.icr.org/pubs/imp/imp-070.htm> - 25k
URL: <http://www.icr.org/newsletters/btg/btgmay02.html> - 27k
URL: <http://www.icr.org/pubs/imp/imp-306.htm> - 26k
URL: Creation Science and the Local School District
URL: <http://www.icr.org/pubs/imp/imp-080.htm> - 35k
URL: ICR And The Future
URL: <http://www.icr.org/pubs/btg-b/btg-028b.htm> - 15k
URL: <http://www.icr.org/pubs/imp/imp-332.htm> - 29k
URL: <http://www.icr.org/pubs/btg-b/btg-069b.htm> - 16k
URL: <http://www.icr.org/pubs/btg-b/btg-131b.htm> - 15k
URL: <http://www.icr.org/pubs/imp/imp-282.htm> - 29k
URL: <http://www.icr.org/pubs/president/prz-0205.htm>
URL: <http://www.freedomforum.org/templates/document.asp?documentID=3924>
URL: <http://www.icr.org/pubs/imp/imp-080.htm>
URL: <http://www.icr.org/pubs/imp/imp-303.htm>

URL: <http://www.icr.org/pubs/imp/imp-170.htm> - 24k
URL: <http://www.icr.org/pubs/imp/imp-105.htm> - 27k
URL: <http://www.icr.org/radio/fuf/speakers.htm>
URL: <http://www.icr.org/pubs/imp/imp-001.htm>
URL: <http://www.icr.org/newsletters/pc/pcjune02.html> - 26k

In addition, the following books are recommended:

Teaching Creation Science in Public Schools, by Dr. Duane Gish

Kansas Tornado, by Dr. Paul Ackerman & Bob Williams

The Origin of Species Revisited, Vol 1 & 2, by Wendall R. Bird

I have also included some information on selecting a Christian University and the related information on legal precedents (from an evolutionary perspective), the new education bill, etc. If you need further assistance please call on us.

What Could Happen Next?

An Analysis of the Ninth Circuit's Recent Pledge Ruling

Exactly forty years after the United States Supreme Court first declared that official public school opening prayers were an unconstitutional violation of the "separation of church and state," the Ninth Circuit federal court took that line of judicial reasoning to its logical conclusion and declared that the mention of God in the Pledge of Allegiance is also unconstitutional in public schools. ***Newdow v. U.S. Congress et. al.***, 292 F.3d 597 (9th Cir. 2002). ([View more information on the history and importance of the Pledge of Allegiance.](#))

The Ninth Circuit may have gone one step too far in its latest ruling, however, and may have inadvertently demonstrated the full extent of the federal courts' modern (mis)interpretation of the Establishment Clause. If the name of God cannot be spoken in public discourse and is unconstitutional in the Pledge of Allegiance, then the Declaration of Independence and numerous other founding documents, including the Constitution itself, must also be found to be unconstitutional. The Declaration mentions God four times and specifically states that all American freedoms come from God and not from the State. The Constitution recognizes the Biblical day of rest.



The real irony of the California Pledge case, which will almost certainly be overturned after the public outcry it engendered, is that Mr. Newdow, the Plaintiff, does not seem to realize that the only reason he is permitted to be an atheist without penalty in the United States is because the right to believe or not to believe was granted to him by the very God he is seeking to censor. Mr. Newdow is a medical doctor who also holds a law degree and who previously attempted to sue the President of the United States in an attempt to stop him from using God's name in public. Fortunately, that earlier case was dismissed, as most modern Establishment Clause cases should be.

The real issue raised by the controversy over the Ninth Circuit's Pledge case decision should be whether courts will now see the folly of their previous Establishment Clause decisions. Will the courts now begin to walk back the long road they have traveled over the last forty years to establish some balance in constitutional Establishment Clause jurisprudence? Attorneys for the Christian Law Association conducted numerous media interviews explaining the issues involved, and we provided legal opinions to many who were concerned that with the pledge decision, what would happen next? Would all public prayers be stopped? Would all historical references to God be challenged? The Ninth Circuit decision certainly opened the door to the possibility of a radically different America—one that would sterilize out all references to God in public life.



According to the majority opinion in the California case, the government—which includes public schools—must avoid practicing, teaching, or supporting any religious or moral views of any kind or risk violating the Establishment Clause

of the Constitution's First Amendment ("Congress shall make no law respecting an establishment of religion..."). That is the logical outcome of the last forty years of Establishment Clause decisions.

Prior to the first court decisions outlawing prayer in public schools, however, the Establishment Clause was never understood by either judges or ordinary Americans to prohibit the government from promoting God, religion and morality. To the contrary, the men who framed and ratified the Constitution and the Bill of Rights correctly recognized that political freedom and good government require a moral citizenry capable of governing their own persons in a moral and upright manner. Indeed, our Founders and numerous other political leaders for more than two hundred years rightly pointed out that only citizens who are capable of governing themselves will be able to retain the freedoms granted to us by God in our founding documents. When citizens can no longer morally govern themselves, they must necessarily have more and more rules imposed upon them by an ever expanding and oppressive outside governing force—as we see happening in every area of government today. Indeed, our Founders, along with judges and ordinary citizens for two hundred years, promoted religion and education as the most powerful means of developing the self-governing morality required to maintain a free nation. Government, until forty years ago, has openly espoused the encouragement of religion, morality and education among the citizenry as the most useful means of maintaining the freedoms given to us by God.

For example, the first Congress (which adopted the First Amendment with its anti-Establishment Clause) passed the Northwest Ordinance, stating: "Religion, morality, and knowledge, being necessary to good government and the happiness of mankind, schools and the means of education shall forever be encouraged." While prohibiting an "establishment" of any particular religion, for two hundred years the government saw itself as generally encouraging the practice or the "free exercise" of religion (another right protected by the First Amendment). Clearly, the first Congress, and succeeding Congresses in the last two hundred fifty years, saw no conflict between the Establishment Clause and the encouragement of religion and morality in public observances or in public schools. That conflict is a recent judicial interpretation that has been imposed by our legal system beginning only a half century ago.

President George Washington was typical of the common sense combination of religion, morality, and freedom that was encouraged for more than two hundred years in America. In his Farewell Address, Washington remarked that "of all the dispositions and habits which lead to political prosperity, religion and morality are indispensable supports." He further warned against demagogues who would "claim the tribute of patriotism," yet "labor to subvert these great pillars of human happiness, these firmest props of the duties of men and citizens." Washington's words were prophetic with regard to the logical outcome of forty years of anti-God judges and lawyers that came to fruition in the Ninth Circuit Pledge case decision.



What the Ninth Circuit judges have forgotten is that the American cause is foundationally a moral and religious cause, stated perhaps most clearly and eloquently in the assertion of the Declaration of Independence that the "laws of nature and of nature's God" are the source for all of our rights as Americans. It logically follows that the public recognition of religion, morality, and God, particularly the Biblical God recognized in the Declaration of Independence, is absolutely necessary to the continuance of liberty. In that sense, the continuing

recognition of the Creator God, even in public schools, protects the rights of all men and women, including those atheists who seek to challenge God in our courts. If it is the purpose of government "to secure these (God-given) rights," it logically follows that it must also be the duty of government to promote the public recognition of God, religion and morality as found in the Declaration of Independence and in the Pledge of Allegiance—perhaps most especially in the field of education.

Has the sleeping giant of religious America finally been awakened by this outrageous decision? Temporarily for certain, but much of this outrage is still fueled by the patriotic sentiment engendered by the terrible tragedies of September 11th. Unfortunately, most Americans will be happy to go back to sleep when the Ninth Circuit reverses itself and steps back to a level of anti-God jurisprudence that most Americans have grown accustomed to accepting without outrage.

<< View the full text of the Ninth Circuit's opinion in *Newdow v. U.S. Congress et. al.*, 292 F.3d 597 (9th Cir. 2002). >>

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LEGAL OPINION MEMORANDUM

March 2000

On Legal Issues Involved in the Teaching of Evolution and Creationism
in America's Public Schools

By

The Christian Law Association

Seminole, Florida

Question Presented

May creationism be legally taught in a public school science setting?

Summary

While creationism may not legally be taught in America's government schools, nothing prohibits public school teachers from presenting legitimate evidence in science class that both supports and refutes Darwinism, even if such evidence would tend to support the religious theory of creation.

Legal Analysis

The United States Supreme Court has held that scientific creationism is a religion, while it does not regard evolution as religious. This was the Court's determination in the case of *Edwards v. Aquillard*, 482 U.S. 578 (1987). The key case regarding the teaching of religion in public schools is *Abington v. Schempp*, 374 U.S. 203 (1963), which prohibited the *devotional* use of religious materials in public school classrooms. At the same time, however, the Court affirmed the continuing *educational* use of religious materials, presented objectively.

The Court said:

Nothing we have said here indicates that such study of the Bible or of religion, when presented objectively as part of a secular program of education, may not be effected consistently with the First Amendment.

Therefore, religion, including the religious belief in creation, is appropriately brought into the public school curriculum wherever it naturally arises—as it does in the study of origins. Scientific evidence pertaining to all theories of origin can be objectively overviewed in a public school science class without the teacher crossing the constitutional line of proselytizing or devotional use of religion. In fact, the student who is only taught to blindly accept the unproven theory of Darwinian macroevolution despite mounting scientific evidence against it is poorly served by the school district.

The real issue regarding the teaching of evolution in public schools is not a legal question. The real question is whether a science teacher who does not recognize that evolution is merely a theory and not a scientifically proven fact is qualified to teach it in a public school science class. Public school teachers should be required to keep up with current scientific data on evolutionary theories of macroevolution. One good starting point for a teacher to update his or her skills would be to read the significant work of Dr. Michael Behe of Lehigh University, who has effectively challenged Darwinian theories based on recent scientific data in his book, Darwin's Black Box. Dr. Behe teaches biochemistry and molecular biology at Lehigh University in Bethlehem, Pennsylvania. In his book, Dr. Behe spells out his theory of "irreducible complexity." Both the book and the theory were favorably reviewed in the New York Times and Dr. Behe was himself asked to produce a column for the Times outlining his theory. Public school teachers of evolutionary theory should be required to keep up with such new information.

Even before Dr. Behe's book appeared, Dr. Charles Thaxton was the first scientist to propose the theory of "intelligent design" as an alternative to evolution. The forward to Dr. Thaxton's groundbreaking book was written by a prominent atheistic scientist. Dr. Thaxton, who now teaches in Czechoslovakia, first presented his views on The Mystery of the Origin of Life at the state university at Austin, Texas, in 1989. He demonstrated that when scientists attempt to prove evolutionary theory, they are required to manipulate the building blocks of life in a manner that actually disproves evolution and points toward the necessity for an intelligent designer of the processes of life. This theory is compatible with religious views of creation, but not with Darwinism. It is this sort of evidence that must be presented to school children in order to educate them sufficiently in the most modern views of evolution. Instead of presenting a religious theory, public school teachers need only present these new scientific evidences and let the students evaluate which theories of origin they best support. Information about what various religions believe about the origins of life can be presented in an objective manner. Evolutionary theories can be weighed objectively against the emerging evidence to see whether they hold up. This is not teaching religion, but teaching good science.

While Dr. Behe and Dr. Thaxton never mention creationism, their theories support the thesis that some intelligent designer must be linked to the origin of life in much the same way that computer programs can be shown to be intelligently designed. Dr. Phillip Johnson and Charles Colson have both authored numerous books analyzing and debunking myths associated with evolution. Mr. Colson's new book, How Now Shall We Live, focuses on the fact that evolution is primarily a philosophy that undergirds a specific secular world view, and is not a science at all.

Evolution's hold on academe is weakening and will likely continue to wane rapidly as new scientific evidence regarding DNA and the building blocks of life are unlocked. The new scientific evidence presented by Dr. Behe and Dr. Thaxton has not been refuted by

evolutionary scientists. Dr. Behe notes that Darwin himself recognized that if some irreducibly complex organism were identified that did not permit gradual evolution, the theory of evolution would become untenable. Dr. Behe has done exactly that in his work on cellular biology. Public school boards need to mandate that evolution be taught by presenting both the scientific pros and cons. There is no question that such a curriculum would be constitutional. The new evidences are not based on God, but on science. Students would need to take the next step on their own if they choose to plug in God as the "intelligent designer." That is as far as teachers can constitutionally go at the present, but it is probably far enough.

The Kansas Board of Education recently voted to omit questions on evolution from the statewide science exam because they did not feel the state recommended science textbook, which only provided a positive view of evolution, was factual. The Supreme Court has never mandated that Darwinism must be taught as fact; nor have they ever prohibited science teachers from teaching scientific evidence disproving evolution to public school students. If such scientific evidence better supports religious views of the origin of life, there is no constitutional foul. Public school science teachers may constitutionally teach the fact that scientists are beginning to take a new critical look at evidence supporting evolution, which is an objective development in the field of science.

By any modern scientific measure, macroevolution is a theory, not a proven fact. Students who are not given arguments that both support and refute this theory are not being given a good science education. This issue transcends the question of whether the Supreme Court would ever permit the teaching of creationism in public schools. The issue really becomes whether public school science teachers are well or ill informed regarding their subject matter from a scientific perspective.

The United States Supreme Court struck down the State of Arkansas' anti-evolution statute that prohibited the teaching of evolution in public schools. The Court found in *Epperson v. Arkansas*, 399 U.S. 97 (1968), that the primary purpose of the Arkansas statute was religious and had no objective secular or scientific basis. The Supreme Court ruled in *Edwards v. Aguillard*, 482 U.S. 578 (1987), that a state could not mandate the teaching of creationism by requiring that creation theories be taught whenever evolutionary theories were taught. But objective presentations of religious views, which are not devotional or proselytizing, have never been banned from the classroom where they logically fit as they do in any analysis of the origins of life.

There are two lower court cases where teachers were prohibited from presenting views contrary to evolution in a science class. In one, *Peloza v. Capistrano Unified School Dist.*, 37 F.3d 517 (9th Cir. 1994), the teacher was combining religious proselytizing with teaching about creation in the classroom. In the other, *Webster v. New Lenox School Dist.*, 917 F.2d 1004 (7th Cir. 1990), the issue was whether the teacher's First Amendment rights were violated by the school curriculum policy regarding evolution. The court held that the teacher "had not been prohibited from teaching any nonevolutionary theories," but was merely prohibited from "religious advocacy." *Id.* at 1008.

Finally, it is entirely constitutional for a teacher to permit a student to bring his or her own religious perspective into the science classroom discussion. It is perfectly appropriate for a teacher to permit students to present scientific evidence against macroevolution, even if that evidence includes discussion of a religious perspective. It is not good educational

policy to advocate a blind adherence to any particular evolutionary scheme. Furthermore, it is religious discrimination to prohibit students from expressing their religious viewpoints objectively in class. Teachers could set up student debates and other assignments where students were invited to evaluate the conflicting scientific evidence that is currently emerging.

The teacher is an agent of the state capable of violating the Establishment Clause if he or she brings religion into the classroom in a non-objective manner. The student, on the other hand, stands outside of an Establishment Clause analysis because the student is not an employee or agent of the state. With respect to student debates or discussions, the issue is placed squarely into a Free Speech analysis where the issues become religious discrimination and the free expression rights of students in school.

The United States Supreme Court held in the case of *Bd. Of Educ. V. Mergens*, 496 U.S. 226, 250 (1990), that "there is a crucial difference between *government* speech endorsing religion which the Establishment Clause forbids, and *private* speech endorsing religion which the Free Exercise and Free Speech Clauses protect." While the teacher's speech is government speech, a student's speech is private speech protected by the Free Speech Clause even in the public school classroom.

Guidelines for Religious Freedom in Public Schools, was a document that was first issued to all school districts in the United States by President Clinton, Attorney General Reno and Secretary of Education Riley in August, 1995. It was reissued by Secretary Riley in May, 1998. In the section regarding the rights of students with respect to class assignments the document states:

Student Assignments: Students may express their beliefs about religion in the form of homework, artwork and other written and oral assignments free of discrimination based on the religious content of their submissions. Such home and classroom work should be judged by ordinary academic standards of substance and relevance, and against other legitimate pedagogical concerns identified by the school.

It is not a legitimate pedagogical concern for a teacher to prohibit a student from expressing scientific and objective information that refutes evolution, even if such information contains a religious viewpoint. Every school should have a copy of the Religious Expression Guidelines in its school library and educators should abide by its legal conclusions. The Guidelines reflect the current state of the law.

Conclusion

A teacher does not engage in prohibited religious speech when the teacher presents credible scientific information in a public school science class that refutes the theory of evolution. Similarly, a teacher does not violate the Establishment Clause when he or she teaches objectively about various religious beliefs regarding origins. Furthermore, it would be a violation of the First Amendment right of Free Speech in public school if a teacher prohibited students from doing assignments or making class presentations

analyzing which theories of origins best fit with current scientific evidence—whether those theories are secular or religious. Teachers may not chill students' exercise of their own constitutional rights of free speech in completing school assignments. A science teacher may not teach the religion of creationism in the classroom, but may present evidences to objectively support and refute all theories of the origins of life and the universe.

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THE AMERICAN CIVIL LIBERTIES UNION FOR LAW AND JUSTICE

E-NEWSLETTER CONTACT THE ACLU SUPPORT THE ACLU

Department of Education Guidelines for Religious Expression

Student prayer and religious discussion: The Establishment Clause of the First Amendment does not prohibit purely private religious speech by students. Students therefore have the same right to engage in individual or group prayer and religious discussion during the school day as they do to engage in other comparable activity. For example, students may read their Bibles or other scriptures, say grace before meals, and pray before tests to the same extent they may engage in comparable nondisruptive activities. Local school authorities possess substantial discretion to impose rules of order and other pedagogical restrictions on student activities, but they may not structure or administer such rules to discriminate against religious activity or speech.

Generally, students may pray in a nondisruptive manner when not engaged in school activities or instruction, and subject to the rules that normally pertain in the applicable setting. Specifically, students in informal settings, such as cafeterias and hallways, may pray and discuss their religious views with each other, subject to the same rules of order as apply to other student activities and speech. Students may also speak to, and attempt to persuade, their peers about religious topics just as they do with regard to political topics. School officials, however, should intercede to stop student speech that constitutes harassment aimed at a student or a group of students.

Students may also participate in before or after school events with religious content, such as "see you at the flag pole" gatherings, on the same terms as they may participate in other noncurriculum activities on school premises. School officials may neither discourage nor encourage participation in such an event.

The right to engage in voluntary prayer or religious discussion free from discrimination does not include the right to have a captive audience listen, or to compel other students to participate. Teachers and school administrators should ensure that no student is in any way coerced to participate in religious activity.

Graduation prayer and baccalaureates: Under current Supreme Court decisions, school officials may not mandate or organize prayer at graduation, nor organize religious baccalaureate ceremonies. If a school generally opens its facilities to private groups, it must make its facilities available on the same terms to organizers of privately sponsored religious baccalaureate services. A school may not extend preferential treatment to baccalaureate ceremonies and may in some instances be obliged to disclaim official endorsement of such ceremonies.

Official neutrality regarding religious activity: Teachers and school administrators, when acting in those capacities, are representatives of the state and are prohibited by the establishment clause from soliciting or encouraging religious activity, and from participating in such activity with students. Teachers and administrators also are prohibited from discouraging activity because of its religious content, and from soliciting or encouraging antireligious activity.

Resources
Newsletters
Info Letters
Publications

Teaching about religion: Public schools may not provide religious instruction, but they may teach about religion, including the Bible or other scripture: the history of religion, comparative religion, the Bible (or other scripture)-as-literature, and the role of religion in the history of the United States and other countries all are permissible public school subjects. Similarly, it is permissible to consider religious influences on art, music, literature, and social studies. Although public schools may teach about religious holidays, including their religious aspects, and may celebrate the secular aspects of holidays, schools may not observe holidays as religious events or promote such observance by students.

Student assignments: Students may express their beliefs about religion in the form of homework, artwork, and other written and oral assignments free of discrimination based on the religious content of their submissions. Such home and classroom work should be judged by ordinary academic standards of substance and relevance, and against other legitimate pedagogical concerns identified by the school.

Religious literature: Students have a right to distribute religious literature to their schoolmates on the same terms as they are permitted to distribute other literature that is unrelated to school curriculum or activities. Schools may impose the same reasonable time, place, and manner or other constitutional restrictions on distribution of religious literature as they do on nonschool literature generally, but they may not single out religious literature for special regulation.

Religious excusals: Subject to applicable State laws, schools enjoy substantial discretion to excuse individual students from lessons that are objectionable to the student or the students' parents on religious or other conscientious grounds. However, students generally do not have a Federal right to be excused from lessons that may be inconsistent with their religious beliefs or practices. School officials may neither encourage nor discourage students from availing themselves of an excusal option.

Released time: Subject to applicable State laws, schools have the discretion to dismiss students to off-premises religious instruction, provided that schools do not encourage or discourage participation or penalize those who do not attend. Schools may not allow religious instruction by outsiders on school premises during the school day.

Teaching values: Though schools must be neutral with respect to religion, they may play an active role with respect to teaching civic values and virtue, and the moral code that holds us together as a community. The fact that some of these values are held also by religions does not make it unlawful to teach them in school.

Student garb: Schools enjoy substantial discretion in adopting policies relating to student dress and school uniforms. Students generally have no Federal right to be exempted from religiously-neutral and generally applicable school dress rules based on their religious beliefs or practices; however, schools may not single out religious attire in general, or attire of a particular religion, for prohibition or regulation. Students may display religious messages on items of clothing to the same extent that they are permitted to display other comparable messages. Religious messages may not be singled out for suppression, but rather are subject to the same rules as generally apply to comparable messages.

THE EQUAL ACCESS ACT

The Equal Access Act is designed to ensure that, consistent with the First Amendment, student religious activities are accorded the same access to public school facilities as are student secular activities. Based on decisions of the Federal courts, as well as its interpretations of the Act, the Department of Justice has advised that the Act should be interpreted as providing, among other things, that:

General provisions: Student religious groups at public secondary schools have the same right of access to school facilities as is enjoyed by other comparable student groups. Under the Equal Access Act, a school receiving Federal funds that allows one or more student noncurriculum-related clubs to meet on its premises during noninstructional time may not refuse access to student religious groups.

Prayer services and worship exercises covered: A meeting, as defined and protected by the Equal Access Act, may include a prayer service, Bible reading, or other worship exercise.

Equal access to means of publicizing meetings: A school receiving Federal funds must allow student groups meeting under the Act to use the school media -- including the public address system, the school newspaper, and the school bulletin board -- to announce their meetings on the same terms as other noncurriculum-related student groups are allowed to use the school media. Any policy concerning the use of school media must be applied to all noncurriculum-related student groups in a nondiscriminatory matter. Schools, however, may inform students that certain groups are not school sponsored.

Lunch-time and recess covered: A school creates a limited open forum under the Equal Access Act, triggering equal access rights for religious groups, when it allows students to meet during their lunch periods or other noninstructional time during the school day, as well as when it allows students to meet before and after the school day.

The contents of this website do not constitute legal advice. If you are seeking legal advice, you will need to contact an attorney in regard to your legal matter. If you are unable to obtain an attorney, you may call the ACLJ national headquarters at 1/800-296-4529 and we will attempt to assist you.

LEGALLY TEACHING CREATION SCIENCE IN PUBLIC SCHOOLS

By MATHEW D. STAYER, ESQ.

INTRODUCTION

I'm Mat Stayer. As an attorney, I concentrate on constitutional law. Prior to law school, I graduated from seminary and entered the ministry. After pastoring a few years, I began to see how our faith as Christians interacts with the laws around us, either negatively or positively. Through that experience the Lord led me into law school. In 1989 I founded an organization called Liberty Counsel. Liberty Counsel is a religious civil liberties educational legal defense organization. We're based in Orlando, but we operate throughout the entire country. Liberty Counsel provides free legal representation to defend religious freedom. We have found that if Christians have to go out and pay their own attorney to defend their liberties they will give up the fight and walk away.

For example, the Fellowship of Christian Athletes (FCA) in Orlando, wanted to participate in the homecoming parade. The school allowed the student groups to make their own homecoming

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floats for the parade. The FCA student club had a float like the secular clubs, but they wanted to have a Christian message on the side of the float. Dr. Philips High School said, "You can't have your float because it's religious, and we cannot allow a religious float with the secular floats". If those students did not have a resource like Liberty Counsel and had to obtain an attorney, they

would have just simply walked away. But they contacted Liberty Counsel. We resolved the situation. The devil seems to have a way of shooting himself in the foot. If the school would have allowed FCA to have their float like the other secular student floats, the message of Christ would not have reached the larger public. The school tried to resist. However, a couple of students wanted to stand up for Christ, and because there was an organization that was willing to stand beside them, Christ got wide spread media attention. Instead of the FCA float being just one of other floats, the FCA float actually led the homecoming parade. It was the first one in the parade onto the football field. The news cameras were there and the media interviewed the students. The students, and Christ, got a lot more attention than they would have had the school not resisted. That is what happens when Satan tries to suppress the message of Christ. As long as there is somebody willing to stand for their rights, then the thing that the devil meant for evil will actually come out for good.

One of the areas of constitutional law that is very exciting to me involves teachers. Teachers are the domestic missionaries to America whether in public or private school. Teachers are on the front line over the battle for the heart and soul of America.

TEACHING IN PUBLIC SCHOOLS

Teaching in public school is a fascinating challenge. There is no subject matter that can be adequately addressed without talking about religion.

The public school teacher is a citizen of two worlds. A teacher, on a public school campus, is an

There is no subject matter that can be adequately addressed without talking about religion, whether it's literature, science, or math.

individual, and an agent of the state. The Supreme Court, in *Tinker v. Des Moines Independent School District*, said that teachers, like students, don't shed their constitutional rights

when they enter the schoolhouse gate. Teachers have a first amendment right to freedom of speech and a first amendment right to freedom of religion just like any other citizen. However, unlike a student, who is not an employee or agent of the state, a teacher also has certain restrictions. On the one hand, teachers have Free Speech and Freedom of Religion. On the other hand there is the Establishment Clause, which some people refer to when they speak of "separation of church and state." However, the phrase, "separation of church and state," is not in the Constitution.

In the first amendment there are two clauses with regards to religion. One that says Congress shall make no law with respect to the establishment of religion -- the Establishment Clause. The other states that Congress cannot prohibit the free exercise of religion -- the Free Exercise Clause. Also in the first amendment, there is the Free Speech Clause. Since students are not agents of the state, they have the affirmative protections of the Free Speech and the Free Exercise Clauses. They do not have the constraint of the Establishment Clause. The Establishment Clause restrains government, not private individuals. In order to have a Constitutional violation the controversy must involve a private citizen on one side and a public entity on the other side. I cannot violate your right to free speech. I can tell you not to speak, but one private person to another private person creates no Constitutional implications.

A public school teacher operates in both worlds. Teachers are private individuals protected by the Free Speech and Free Exercise clauses, but they are also public individuals, and therefore, they have restrictions imposed by the Establishment Clause. Let me just give you an example of the difference between a student and a teacher. A student can give a gospel tract to another student during non-class time, before or after school or in between class. The tract can be an evangelistic tool advocating that someone accept Jesus Christ. There are no problems with this situation because the Free Speech and Free Exercise clauses protect students. The school would not be involved in the distribution and, therefore, there is no establishment of religion. However, under the Supreme Court's present interpretation of the Constitution, the Establishment Clause would prohibit a public school teacher from passing out the same tract. A student can proselytize, can advocate and can promote their faith. A teacher cannot proselytize or promote their faith, but they can objectively overview religion. A student could say, "If you don't believe in Jesus Christ, you'll go to Hell," and actively advocate their faith. A teacher talking about religion in general would have to say that, "Christianity teaches that if you don't believe in Jesus Christ, then you will go to Hell." Teachers cannot personally advocate, promote or advance Christianity, but can objectively overview Christianity.

TEACHING CREATION LEGALLY

Let's now review several Supreme Court cases. In *Epperson v. Arkansas* the court considered an Arkansas statute that restricted the teaching of evolution. The Supreme Court struck down the statute. The Court said that it was unconstitutional to prohibit the teaching of evolution. The Court found that the reason this statute was enacted was to prohibit an anti-religious viewpoint. The Court ruled it is unconstitutional for a statute to prohibit evolution.

Teachers cannot personally advocate, promote or advance Christianity but can objectively overview Christianity.

Edwards v. Aguillard involved a Louisiana statute that said that if you teach evolution, you must teach creation. The Supreme Court ruled it was unconstitutional to require that a schoolteacher teach creation any time evolution was taught. The Court felt in that the statute was attempting to advance a religious viewpoint. I'll explain some of the reasoning later and point out how you can still teach creation in the public schools.

A third case is not a Supreme Court case. It is a case called *Webster v. New Lennox School District*, 917 F. 2d 1004 (7th Cir 1990). The case did go to the United States Supreme Court. This case dealt with a teacher who was teaching creation. The principal told the teacher to stop teaching creation. The teacher sued the principal on the basis that the teacher had the right to teach creation. The teacher lost. It is important to know why the teacher lost, what the court said, and what it didn't say, because you might have somebody cite this case to you to make you stop teaching creation. Basically, the court said that the principal had authority to tell the teachers generally what kind of curriculum to present in the classroom. It really was not an issue of teaching creation versus evolution as it was the principal's authority over employees within the school. The court held that teachers were not free to set their own curriculum at will. The court went on to say that the teacher would be precluded under this opinion from religious advocacy. The teacher, however, was not precluded under this opinion from talking about creation in general. In this case the teacher was actually promoting creation and advocating a specific Christian view on creation. The court made it very clear that the teacher cannot actively promote a religious Christian view while teaching creation. However, a teacher can overview creation within the science curriculum.

The final case does not deal with teaching evolution, but it applies to teaching in general. The case is called *Lemon v. Kurtzman*.

If Government action passes all three parts of the Lemon test, then there is no establishment of religion. The three parts are:

- 1) The activity must have a secular purpose.*
- 2) The activity cannot have as its primary purpose to advance nor inhibit religion.*
- 3) The activity must not create an excessive, and the key word here is excessive, governmental entanglement with religion.*

This is the so-called Lemon Test. It requires a three-part analysis. It is very simple once you learn it, but it is kind of complicated as people try to put it into practice. It says when looking at government activity with regard to the Establishment Clause, the government activity involving religion has to pass this three-part test. If it fails any one of the three parts, then the activity is an

establishment of religion. If Government action passes all three parts of the test, then there is no

establishment of religion. Number one, the activity must have a, and underline and emphasize the word "a", secular purpose. Number two, the activity cannot have as its primary purpose to advance or inhibit religion. Number three, the activity must not create an excessive, and the key word here is excessive, governmental entanglement with religion.

Most of the Supreme Court justices have criticized the Lemon test. The Supreme Court, nevertheless, has not thrown it out.

I know the Supreme Court has veered from the original intent of the Constitution, and I know the original understanding of the First Amendment didn't require all these hoops. Nevertheless, these are the hoops we have to go through today. I will use a nativity scene situation to explain how the test works. City Hall, which is a government entity and is governed by the Establishment Clause of the First Amendment, cannot legally establish a religion. Take a nativity scene, standing by itself, on City Hall property with City sponsorship, displaying Jesus, Mary and Joseph. Does it have a secular purpose? The Supreme Court would say, "No." Does it primarily, and the key word here is primarily, advance or inhibit religion? Well, certainly, it doesn't inhibit religion. Does it advance religion? The Supreme Court would say, "Yes." Does it cause excessive governmental entanglement? The Supreme Court would probably say, "No." There is only minimal governmental involvement in keeping and maintaining the nativity scene. It does not involve government making religious decisions. The nativity scene passes number three, but it has already failed numbers one and two. The Supreme Court would rule that a nativity scene standing by itself, sponsored by City Hall, would be unconstitutional.

What happens when you put Santa Claus or a reindeer or a Christmas tree within the context of the display? Now you have Jesus, Mary and Joseph, and Santa Claus surrounding the manger. Looking at this display in the total context, does it have a secular purpose? Does the whole presentation have a secular purpose? The Supreme Court would say, "Yes." Why, because there is a secular symbol of the holiday within this religious context. So at least one of the purposes is secular. It passes number one. Is its primary goal to advance or inhibit religion? It certainly does advance religion, but is that its primary goal? The Supreme Court would say, "No," because now there is a secular symbol nearby. Thus the display has a dual purpose. Number three, does it cause excessive governmental entanglement? No, it's just an administrative task to put up the display and take it down. That's not entanglement. The government is not making religious doctrinal decisions. So it passes number three. All of a sudden Santa Claus or a reindeer or a Christmas tree, all being secular, make this display constitutional. The same principals apply if students sing Christmas carols during the Christmas season. If they only sang Christian Christmas carols, would the Court say the Christmas concert had a secular purpose? Answer, "No. It has only a religious purpose." Now, change the scene. Within the context of the Christian Christmas carols, put in a few secular songs, like Rudolph, the Red Nosed Reindeer or Here Comes Santa Claus, and under this magical interpretation, the presentation is now constitutional.

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or Here Comes Santa Claus, and under this magical interpretation, the presentation is now constitutional. Now put yourself in the teaching context. Consider the three part test if you were to only open up the book of Genesis and start focusing on the Bible as the basis for creation. Does the

presentation have a secular purpose? No. Does it primarily advance religion? Yes, so you failed number one and two. How do you change that situation? You change it just like we did the nativity scene and just like we did the Christmas carols. Within the context of teaching creation, you also teach or overview other non-creation, non-theistic theories. For example, if you teach creation and at the same time you include the theory of evolution, you have a secular purpose. If somebody came in and saw you teaching creation one day, they might conclude that you only have a religious purpose. But a reasonable observer must look at the overall context, not just focus on one little item. You need to look at the overall curriculum, the overall course. By the way, I would suggest that you refer to creation as abrupt appearance and to the topic as origins rather than creation versus evolution.

TEACHING IN CONTEXT

The three-part test is the test that governs public school teachers when teaching about religion. If you're talking about literature, can you open the Bible, talk about it and read from it as literature? Yes. For example, you might talk about poetry. You might talk about how English poetry is different than Hebrew poetry. Our poetry often rhymes words like ring with thing, or

The three-part test is the test that governs public school teachers when teaching about religion.

something similar. Hebrew poetry uses thought rhyme or thought parallelism. One thought is juxtapose against another. There are many different examples we

could cover. You can discuss religion when addressing any topic. If you pick up a book, you can talk about the origins of the book. The book comes from Christianity. Before the New Testament Christians, there were no books. Writing was done on big bulky scrolls. The New Testament Christians couldn't carry all these big scrolls, so they cut them up in pieces and sewed them together on the edge. That became what was known as the Codex. The Codex was the first book.

TEACHING CREATION IN CONTEXT

You can overview religion in whatever topic you teach so long as it is relevant. About origins, you can overview different theories of creation. You can discuss evolution some of the counter arguments from a creation or abrupt appearance perspective. While there might be evidence of minor change or adjustment over time, there is no evidence of major change. There is no evidence to support a change in species (i.e. cat to dog). Certainly there is no evidence of flora (plant) and fauna (animal) transfer. You can overview the various theories and then you could say; "Now there are a lot of different theories about evolution and abrupt appearance. Whatever theory you hold, all theories have one thing in common, faith. Whether it is evolution or creation, both require faith. To believe evolution, you need a lot of faith to bridge the huge gaps in the fossil record. There is no evidence of flora and fauna transfer. There is no evidence for "macro-evolution". It takes a major leap in faith to assume that evolution demonstrates how animals and plants originated. The theory of abrupt appearance or creation also requires faith.

It takes a major leap in faith to assume that evolution demonstrates how animals and plants originated.

While there is evidence to support creation, nobody was there at the beginning. Nobody was there for

evolution and nobody was there for creation. You still must have faith that something predated the first appearance of animals, plants, and humans. Deciding what that was ultimately relies upon faith. Whichever theory of origins you ultimately accept, neither can be considered a proven fact. Evolution is believed by faith, and creation is believed by faith. Someone who believes in abrupt appearance is not some weird wacko. You must get students to understand that evolution is simply a faith-based theory just like creation is a faith-based theory. Rather than elevating evolution and tearing down creation you can show that both are on the same level – that is, both are theories, not established fact. Indeed, if you discuss the evidence for and against evolution, it becomes obvious that one must have more faith to believe in evolution than in creation.

World religions look at the origin of the world as part of theology.

After you cover the scientific issues regarding origins, you can then consider how world religions view origins. You can also point

out that it is important to look at origins, because from a philosophical standpoint, you must know where you originated. You must know who you are, and you must know your destiny. If you do not know one of those three, there is something lacking in your self-understanding. Some scientists have tried to point to evolution as our origin. Other scientists have tried to point to creation as our origin. World religions look at the origin of the world as part of theology. For example, you can discuss the Egyptian theology of creation. The Egyptians in their Memphite Creation writings spoke about God, whom they called Ptah, as the one who brought the world into existence by a word. He spoke and the world came into existence. As for me, I don't mind comparing Christianity to other non-Christian religions. You remember the Old Testament prophet when he prayed to God while several hundred other prophets prayed to Baal to bring fire in a demonstrable way. He did not say, "Do not pray to Baal". He said go ahead and pray to your God. I will pray to my God, and we will see which one answers by fire. You know the result. Whenever you put truth and falsehood beside each other, there is no question in my mind that the truth will win. I have no reservation about using another religion when I'm talking about Christianity. If I am afraid that Jesus is not big enough, powerful enough, and convincing enough to put himself and his word along side some other word or some other false theology, then I do not have enough understanding or faith in my own God. So it does not bother me to allow someone else to have a platform. That is why it does not bother me to have someone teach evolution as long as you have the equal opportunity to teach abrupt appearance or creation.

At any rate, in addition to the Egyptian creation theory you could talk about the Babylonian creation theory. Then you can discuss the creation story in the book of Genesis and you can read from the book of Genesis. Whether it takes one day, several days, or several weeks, you can conclude your presentation by summing up the topic. You can overview the different evolution and creation theories. The bottom line, when all is said and done, is that both theories must be accepted by faith. When you put all the information before the students, it will probably be the first they've ever heard of origins besides evolution. Until the time they come to your class and hear you speak, they've probably heard one view, and that one view teaches evolution as fact and creation as myth. When they come out of your class they will say that is not true. You've have opened the door for them to make a decision.

IDEAS FOR TEACHING CREATION

While teaching creation and evolution you can ask the students, "How many of you believe that you had apes or monkeys in your ancestry tree?" Of course, you'll probably get a lot of laughter. Open the class for discussion. A teacher can bring outside material into their classroom, whether

While teaching creation and evolution you can ask the students, "How many of you believe that you had apes or monkeys in your ancestry tree?"

on creation or other issues. You can bring in an outside speaker. What happens when you bring in an outside speaker? Is the speaker an agent of the state? No, the speaker

is an individual citizen you invited. You can also host a debate format, where you have an evolutionist and a creationist debate the topic. Let them debate and let the students ask questions. The main thing is you've opened up the market place in contrast to the narrow view of the market place that they have been taught. You expanded their horizons. You have allowed the students to have contact with another view that they probably never heard of or had contact with before your class.

One particularly good video is the Mt. St. Helens video produced by the Institute for Creation Research. I don't know if you've ever seen this or not, but if you have not seen it, you ought to order a copy. It is one of the most amazing videos I've ever seen on this topic. The video talks about the explosion of Mt. St. Helens. It talks about Spirit Lake and how the petrified forest may have formed. You and your students may think it takes millions of years to create the petrified trees. The video shows how the North Slope of the volcano came down, hit the lake, caused the water to go up the mountain beside it, broke the trees and brought the trees back down into the lake. Then the trees got water logged and some of them turned upright as the root ends were heavier. The trees settled on the bottom at different times and the sediment stabilized these trees in a standing position. In a short period of time a petrified forest can be formed. The video also shows how layering can form in a matter of months rather than millions of years.

CONCLUSION

Teachers have a lot more liberty than you think to teach creation and to teach religious and Christian influences. If you ever have a question, or encounter a problem call Liberty Counsel at

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1-800-671-1776. Give us a call at any time. You can also find us on the web at www.lc.org. We provide free information and legal representation

QUESTIONS AND ANSWERS

The information in this booklet was first provided as a lecture in a teacher's workshop. During the workshop, teachers had the opportunity to ask Mat Staver questions. This section provides those questions and answers. In some cases others made comments at the workshop. To understand who is talking, the initial question will be preceded by "Question" in bold. Mat Staver's answers and comments are preceded by "Staver" in bold. Comments by others at the workshop are preceded by "Comment" in bold without identifying who made the comment.

Question: As far as school clubs like FCA or Youth for Christ, when teachers sponsor those clubs, are the teachers allowed to have an active part or are they just sponsoring the students?

Staver: Under the Equal Access Act of 1984 the teacher is supposed to be essentially in a non-participatory capacity. The teacher is the sponsor, kind of like the chaperone, and generally is not to have an active advocacy role within that club. It is a student led, student-initiated club. A lot of teachers do take an advocacy role. If the school chooses to prohibit the advocacy role or active participation, then a school probably could do so under the Equal Access Act. If a student club met off campus, then a teacher could probably take an active role, but during the school hours, they should take a non-participatory role.

Question: How would the school hours be defined?

Staver: School hours generally are 15 to 30 minutes before or after school is in or out. The general idea is to give the students time to get off campus after school or have enough time before school that not all the students are necessarily on campus.

Question: Is there a particular reason you would not use the word creation, or is it just because it is a hot word?

Staver: Because it is a hot word. There is not any real legal significance to it. But it is a hot word. I think you are presenting the same concept. You could say abrupt appearance. For our purposes talk about abrupt appearance. Something was not there, now it is, spontaneously. One day it is not there. One day it is. It did not evolve through time. Abrupt appearance takes the hot button out of the context of the discussion. Within this context talk about both creation and evolution theories. You have a secular purpose because part of it is secular and part of it is not. Does it have as its primary goal to advance religion? Well, part of it would, but part of it does not, so it is not its primary goal. Does it cause excessive governmental entanglement? No, because you are objectively over-viewing the issue. You are not making doctrinal decisions. You are simply giving an objective overview of the context or the issue.

Question: Do public school teachers need to go to the point where they document that they have attempted to present the material in this fashion. If you get sued and you cannot document this, and it is your word against that student's, what happens?

Staver: I think a teacher would probably be prudent to document in their own personal outline what they are covering each day, so they can go back and say on November the 20th, this is the topic we covered. November 21st, this is the topic we covered, so that you can see the broad parameter that the teacher is covered. I think if you cover this broad parameter, you are going to pass all these three tests.

Comment: Just to add to it. Anything along this line, I try to make Xerox copies, so it is not an argument later about what is said or not said. It is very clear-cut anytime the administrators have questions we can prove what happened in the classroom. The administrators just want to stay out of court. They don't care about the subject. They just want to stay out of court.

Staver: Right. A student may come up to you on the day that you talk about the biblical view of creation and complain, or a student may complain to the principal. If you can go to the principal and show that you covered all these different topics, that was only one day. If the principal does not want to get sued and wants to stay out of trouble and if they see that you are being objective and you are being fair, what more can they ask for?

Question: We all know that there are many volumes of printed resources on the evolutionary theory. What strategies might we use in our schools to try to get some of these creation materials into our libraries on an equal opportunity access basis? Do you have any suggestions? Our taxpayer money is being used to buy these materials and our libraries are full of the other side. What can we do to get equal opportunity and equal access for students to be able to find resources on their own? A teacher lecturing from a lectern is not as powerful as a student looking at a book and gathering their own information.

Staver: First of all you can't force the material into your library.

Questioner: I was just thinking about what strategies we could use.

Staver: One of the things that we suggest is that you donate a book to the library. Get a book and donate it to the library. The library would have a harder time refusing a donated book than it would to refuse to pay for a book. Then if they refuse a donated book, you would have to put them on the spot as to why they are refusing the book. Get a reputable book that is going to be a reputable source of information. One particular book I like is called "The Origin of Species Revisited" by Wendell Bird. This is a reputable book in my opinion. There are a lot of other reputable books out there. There are reputable videos also that present the issue from an objective viewpoint. So try to donate. Talk to the librarian to see what the process or procedure is to get new books added if they want to purchase them.

Now, once you get the books into the library, then you have a foot in the door because the school cannot remove the book. There is a constitutional implication for removing the book. The school cannot remove the book for anything other than the fact that it is educationally unsuitable. Educational unsuitability would be that you may have students that are kindergarten and you have a book that is way above their heads. Or you may have a book that's out of date or the book cover is torn and tattered. If the school tries to get a book out because of the content of the message, like because it's religious or Christian specifically, then that action violates the right to Free Speech. Remember you have the right to Free Speech that allows you to obtain information from the government to read. The students have a right to Free Speech to prevent the library from removing material if the removal is only based on the content of the message. A lot of libraries, for example, try to remove Bibles thinking they cannot have them. The library violates the Constitution by removing religious books because of their religious context.

Question: I know that people have tried to donate books like, "What is Creation Science" to libraries, and the libraries have refused to accept the books. What would be the next step?

Staver: If a library refuses a book, you cannot force the book in there. There are some communities that have a review committee for books, and if there are certain committees, get somebody on the committee that could make recommendations for bringing certain books into

the library. I know that there are some in central Florida where parents are on the committee to recommend certain kinds of curriculum to their library. That would be one way to do it. The other way might be to go to a school board and put it on the agenda to have them vote on the issue. That would be the last resort because if you did that, it's going to be public information. And the discussion will address why do you want the book. Schools are supposed to be, according to the Supreme Court, a market place of ideas, kind of a smorgasbord of ideas, all different kinds of ideas. Some are good, some are bad, some are offensive, and some are not. This is a view on a particular topic, and if you are slicing the pie on only one view, you have not given students the smorgasbord of the market of ideas. So I think you should approach it from that standpoint, that this gives them a smorgasbord or a market place of ideas where students can pick and choose. There are a lot of students in the school that would want to have access to this kind of material, but they are not able to get access. We are denying them the right to have access to it and expand their educational horizons. So from an academic market place viewpoint, why would you be against putting this book in the school? Put the "monkey" on their backs. What is your reason to keep this out? If their reason to keep it out is only from a standpoint of preventing a religious viewpoint, then the board may have violated the lemon test. Is their action primarily to advance or is it primarily to inhibit religion? Lemon is a double edge sword. You might ultimately say, "If you are refusing this primarily because you are against a religious viewpoint, then you have violated the Establishment Clause."

Question: If you are presenting both sides, and the student asks you what do you think, which one of these views, if any, do you hold? Are you allowed to answer because you are an agent of the state, or is that not permitted?

Staver: That's a good question. If the teacher is asked, "What's your personal view? Then the teacher can answer, "My personal view is, I believe in creation." You might add that your view is not necessarily the school view. "You asked me my view. My view is I believe in creation. I believe in abrupt appearance. I believe in the story that is presented in the book of Genesis."

Comment: I do not tell anybody my point of view, because I find out that as soon as I do, then my plans for the year are ruined. If I tell them, they know I am coming from a particular point of view. It is a world of fun having them trying to figure out my beliefs. I tell them that after we finish out the school year, I might tell them. I work hard to know both points of view and play the devil's advocate to anything that may come up.

Staver: That is a good point because that kind of keeps up their curiosity level. If you give them your particular view up front and they are opposed to that view, then they are going to shut you off for the rest of the course. If you keep an open mind, they will try to figure you out. That is a good approach.

A teacher once told me he was teaching a space technology course. During the Persian Gulf War, the class studied smart bombs, satellites and laser guidance, etc. While he talked about space technology, he also talked about world events relevant to space technology. The question came up, "Why do you think this little piece of land is always involved in wars and conflicts?" One student might give some reason and another student might come up with something else. The students will present a lot of questions and answers themselves.

Question: If you are doing a chapter on origins, and a student asks, "What about creation?" and the students begin the discussion, how far can the teacher go in encouraging that discussion to continue, or try to guide that discussion before he has "crossed the line"?

Staver: It is hard to say here in a sterile environment rather than being in the classroom. I think the teacher has to know the class, be sensitive to those particular students, and try to guide the discussion. I do not think you want to let the discussion or the debate get to the point where ninety percent of the students are beating up ten percent of the students and cramming it down their throats. That is not good for any kind of situation. If you see that, you might want to stop them, and then even focus back on the ten students, and ask, "Now why do you think that way?" Then turn to the other students and lead a normal civilized discussion and debate among the students.

Comment: In my class, we had rules for the debate between the students. Absolutely no emotional responses. You can only use what is on your card, and the material on the card has to be from your research that was done before. Any remarks that were emotional or not from the notes on the card are disqualified. In the class they give their emotional responses when you are discussing this stuff. But if you are going to do a side-to-side debate, then do not allow emotional responses. Comments have to come from science that the students researched.

Staver: That is a good point. In fact, you could have one student volunteer to take the creation or abrupt appearance presentation, and one student volunteer to take an evolutionary point of view. That way you are not assigning sides and the students go home and tell their parents that they have to take a position they do not want to take. The other way though is to bring in outside speakers, individuals who are adults who want to make a presentation. I would make sure that the person is going to give a good presentation. I always find that if you have a reputable person presenting an abrupt appearance or creation viewpoint, it will make the evolutionary viewpoint seem illogical.

Question: The Mt. St. Helen's video contains an evangelistic message toward the beginning and the last five minutes. Would you suggest that the teacher not show that part?

Staver: I would suggest that the teacher not show that part. You could start it after that beginning, view it, then stop it before you get to the evangelistic approach. To me, that video is very convincing in terms of creation, and it is also very convincing in terms of a deluge and the forming of the Grand Canyon strata within a short period of time. That is a fantastic video and is an example of things that you can present to your students.

Question: Are you familiar with the process of textbook adoption in the state of Florida?

Staver: Not that familiar with the textbook adoption program. I know that there is a mass curriculum that is adopted or a list that is adopted. Once you get those books on the resource list you go to your school and say this is on a resource list, now why do you want to leave it off? I think you have an even more compelling argument.

Comment: A lot of books like "The Amazing Story of Creation" and "Dinosaur by Design" present the creation material from an obvious biblical basis. The question may come up, what

affect would that have on taking material like that into the public school room? Mat may want to expound upon this, but, basically, as long as you have other material available, or are bringing other material in, or it is not just these books against the textbook, but there are other supplementary material available, that would probably be all right. Did I get that right, Mat?

Staver: Yes, it is the same principle that we talked about in terms of a secular purpose, and primary purpose of advancing or inhibiting religion. It is unfortunate, but the Supreme Court, in order to make religion constitutional from the government standpoint, says that it has to be mixed with something secular. As long as you mix it up, then it is okay. So there wouldn't be a problem with taking some of these books into your public school classroom as long as you have other secular material.

RESOURCES

The following resources are available from Liberty Counsel at (800) 671-1776.

"Teacher Rights Brochure"

"Faith and Freedom"

"Religious Expression in Public Schools"

The following additional resources are recommended.

"The Literature of the Bible" by Leland Ryken. Published by Zondervan.

"The Origin of the Species Revisited—Two Volumes" by W. R. Bird. Published by Thomas Nelson.

"Mount St. Helens, Explosive Evidence for Catastrophe" by Dr. Steve Austin. Published by the Institute for Creation Research (video).

Other freedoms

Did you know that a sidewalk which abuts a public school — and is open to public traffic — is a public forum? Witnessing and Bible/tract (e.g., creation tracts) distribution may not be prevented in such areas (subject to limited controls in the interest of public safety and order).

Did you know that "release time" (i.e., when students are excused to go off campus for other learning experiences) is one of the most under-used, constitutionally permitted tools for churches and parents to influence public schools for good?

Did you know that public schools may teach **about** religion, including material about the Bible and other religious matters, including the history of religion, comparative religion, Biblical literature, and the role of religion in American history and in other countries?

Did you know that school libraries can't discriminate against Creation/Christian books on the basis of ideology?

WAKE UP AMERICA!

There is actually **MUCH** that can be done to present the Gospel to today's generations. Use your **FREEDOMS** to reach these generations who are being indoctrinated in the hopelessness of evolutionary humanism!

Sincerely,



Ken Ham

P.S. The Christian Law Association

(CLA) has two booklets that

EVERY Christian needs to read. By the way, AiG receives nothing from the sale of these books. We just want the American public to know they exist and to obtain them to spread the Gospel. CLA is offering a special reduced price for both booklets, which involved many hours of research and writing. Mention AiG when ordering.

Titles:

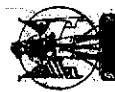
Do Christian Students have any Rights in Public Schools?, \$7.00 post paid.

Witnessing: The New Frontiers, \$7.00 post paid.

SPECIAL PRICE FOR BOTH BOOKS: \$10.00 POST PAID.

Order directly from: Christian Law Association, P.O. Box 4010 Seminole, FL 33775-4010, or phone: (813) 399-8300; Fax (813) 398-3907. Mention "AiG."

Do Christian Students have any Rights in Public Schools?



Christian Law Association
P.O. Box 4010
Seminole, FL 34645

A ministry of help to Bible-believing churches and Christians

Make copies of this fact sheet to pass out to others! (For example, copy, fold, and use as a church bulletin insert.) Not copyright restricted.

Public schools: Christians have rights!

by Ken Ham, Executive Director,
Answers in Genesis

In 1995 President Bill Clinton sent a memorandum to Attorney General Janet Reno and Secretary of Education Richard W. Riley. The President stated:

I have been advised by the Department of Justice and the Department of Education that the First Amendment permits — and protects — a greater degree of religious expression in public schools than many Americans may now understand. (emphasis ours)

Over the years as I've traveled all across America, I've found that many people believe that the Bible, prayer, Christian clubs, discussions on Creation — both Biblical and scientific — or almost anything to do with Christianity are not allowed in any way in public schools. This is FALSE.

It's about time that Americans knew the facts! Christians actually have much more freedom than they've been led to believe. There are great opportunities to present the Creation/Gospel message in public schools. Christians need to aggressively use their rights and freedoms and stop being intimidated by people who don't really

understand the law.

Sadly, because of intimidation by the American Civil Liberties Union (ACLU) and other humanist organizations with an agenda to rid society of anything Christian, teachers and school districts have tried to purge the public school classroom of anything they deem religious.

IMPORTANT NOTE:

This article is not intended to be, and does not constitute, the giving of legal advice. In this short article we can only summarize the rights of students and teachers in public schools. It's important that one understand exactly how things can be effectively accomplished under the law and by understanding decisions by the U. S. Supreme Court. It is important to remember that this area of the law is constantly changing. For this

reason we urge readers that before implementing anything mentioned in this article that you obtain copies of two booklets available from the Christian Law Association (CLA), and that you contact competent legal counsel for advice.

These booklets were written by Christian lawyers who have carefully studied the U. S. Supreme Court (and other court) decisions.

If you follow their guidelines, you will be amazed at how much freedom there is to present the Christian message to public school students. Information will be given at the end of this article as to how to obtain these booklets. We thank the Christian Law Association for the special offer they've made to get these booklets into the hands of Christians.

Teachers and school officials

The First Amendment to the U.S. Constitution declares that "Congress shall make no law respecting an establishment of religion" by government.

For the public schools of America, the word **establishment** has been now deemed to mean this: Teachers and school officials, who are representatives of the government, may not do anything to favor religion.

This means that **teachers** may not conduct religious devotions, prayer or Bible reading at the start of the school day. School officials may not sponsor prayers at graduation services, or post the Ten Commandments or religious symbols.

However, school teachers may use the Bible in instructional

ways – as literature, history, in comparative religious classes, and ethics. It is only formal, structured prayer and formal, structured devotional use of the Bible in public schools that are forbidden under the First Amendment's "establishment of religion" clause.

Students

American citizens need to remember

that the First Amendment also guarantees that individuals have the right to the "free exercise" of their religion (or non-religion) and free speech rights. **Therefore, public school children have rights in public schools, and schools must accommodate the religious expression of public school children.**

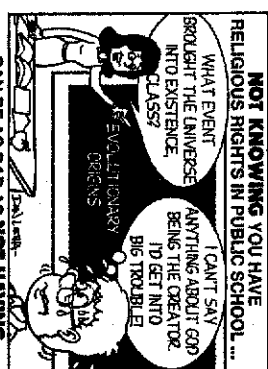
Keep in mind that because most public school teachers and school district officials are typically not lawyers, many are not familiar with what the U. S. Supreme Court permits in public schools. This lack of knowledge will require an education process. The lawyers from the Christian Law Association (CLA) are willing to help at any time concerning these matters. (See information on page iv.)

Specific freedoms

Many will be surprised at the freedoms in public schools. The following are just some of these many freedoms that are described in detail in the CLA booklets. **Again, it is imperative that one read the details in these booklets before trying to implement any of the following.**

■ **May a student give out Gospel tracts or religious literature to his classmates?** YES! However, this can only happen in the same manner as it would be for students permitted to distribute non-religious material.

■ **May a student witness to his classmates about Jesus or pray with other students on the school campus?** YES! (before or after



school, at lunch or during other times when students are permitted to interact with other students).

■ **May a student read the Bible during the school day?**

YES! (Any time that students are allowed to read *non-instructional* books, Bible reading must be permitted.)

■ **May students organize Bible clubs in public school?**

YES! (Public secondary schools must allow Bible clubs the same privileges as any other school club.)

■ **May students write book reports, English papers or do oral assignments based on religious subjects?** YES! (Such work must be judged by teachers using ordinary academic standards, and religious topics may *not* be discriminated against or singled out for special restrictions.)

NOTE: It would *not* be unconstitutional for a teacher to allow students to share their personal religious viewpoints in the classroom at appropriate times or in appropriate assignments. The teacher may (constitutionally) permit religious students to share their views if the views of all other students are also allowed.

Freedoms to present Creation!

Can the Biblical and scientific aspects of the creation message be presented in the classroom? A teacher in a public school could permit **student-led** discussions in the classroom on such issues as the origins of man and the universe, *including* creation science. The teacher may also permit the students to research and write papers on these issues. However, the teacher must be careful to remain neutral throughout the discussion. Christian students could request their teachers to allow student-led discussions. They could then share the material from *AiG's* books, and its *Creation* magazine, etc., as part of this discussion. Students can share their faith in Jesus Christ explicitly.

Depending on the individual school board policy, teachers may present views of origins other than evolution to their students, provided they don't favor any one view and all views are presented in a "non-religious" way.

Students could also form a creation science club at the school. This student club will be subject to the same restrictions as all other clubs at the school, but the school may not discriminate against this club on the basis of ideology.

Public school students also have the right to witness to fellow students and even hand out *Creation/Gospel* tracts as long as such expressive activity does not interfere with the educational mission of the school or the rights of other students.

Mary Baldwin

From: Dan Casto [dancasto@hotmail.com]
Sent: Thursday, December 12, 2002 12:27 PM
To: bwest@access.k12.wv.us
Subject: Standards

Suggested Response to Proposed Standards

We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, we believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Scientific objectivity will lead to good science and religious neutrality. Furthermore, this complex and highly controversial subject should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations.

Our concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade.

Teaching students that they are a part of a "natural world" that is not designed is philosophy and not science. It is the philosophy of Naturalism. Naturalism is a belief that life emerges via purely unguided natural processes and not by design. Naturalism is the fundamental tenet of atheism, agnosticism and secular humanism while design is the fundamental tenet of theistic religion.

Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. The standards establish objectives that will lead to an understanding about "Evolution Only." Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. In this respect the standards are one sided and dogmatic. Their obvious objective is to promote a Naturalistic world view.

Origins science is the science which seeks to answer the questions

"What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidable impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. To promote critical thinking, scientific objectivity and religious neutrality, we suggest the following changes to the standards:

1. Revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations.

2. Revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teachings with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. [In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not designed for a purpose.]

3. Add explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. [Many provisions of the standards would seem to encourage this concept indirectly. However, this encouragement needs to be explicitly focused on origins science, because textbooks presently teach only naturalistic theories of origins and discourage criticisms of evolutionary theory. Furthermore, teachers have been penalized when they have attempted to teach this subject honestly and objectively.]

4. Add objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."]

Mary Baldwin

From: John Arend [JArend@icr.org]
Sent: Thursday, December 12, 2002 2:27 PM
To: bwest@access.k12.wv.us
Cc: Kcpriest@aol.com
Subject: Public School Science Standards

Institute for Creation Research
P.O. Box 2667
El Cajon, CA. 92021

Ms. Brenda West
West Virginia Department of Education
Office of Student Services and Assessment
Building 6, Room 722, 1900 Kanawha Boulevard, East
Charleston, West Virginia 25305-0330

Dear Ms. West,

It has been brought to my attention that you are soliciting public comments in efforts to perfect the Science Standards for the West Virginia Public Schools hopefully through a focus on 'good science'. Although ICR is not based in West Virginia, I believe the information contained in the accompanying fax regarding the new legislation, H.R. # 1 applicable to Science Standards enacted by the U.S. Congress and signed into law by President Bush in early January of this year requires consideration and compliance. These ten articles are a select portion of the documentation provided in another more comprehensive assemblage of articles entitled "Public School (Let's Roll) Science Standards Packet Summary" that can also be provided at no charge (by snail mail) upon request.

I believe the key theme to understand with regard to the intent of this new law is contained in the Congressional Report, which accompanied President Bush's education initiative and stated:

"Where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand the full range of scientific views that exist, why such topics may generate controversy, and how scientific discoveries can profoundly affect society."

I look forward to being of possible further service to you at the West Virginia Department of Education (WVDE).

In the Creator's Service,

John G. Arend, B.S. (Geology), M.S. (Science Education), M. Div.
Public Information Services Director
ICR

Mary Baldwin

From: Kcpriest@aol.com
Sent: Thursday, December 12, 2002 5:31 PM
To: bwest@access.k12.wv.us
Subject: Science Standards Comments

Dear Ms. West:

I am presenting four separate suggestions for revision of the Science Standards currently up for public comment. Certainly the WVDE will agree that changes need to be made. The four separate comment categories I am submitting are numbered (in parenthesis) below. It is reasonable that some parts (or all) of suggestions (2) through (4) could be implemented into revisions of the Standards.

Please acknowledge receipt of this email.

Thank you.

Karl C. Priest
Math Teacher (Kanawha County)
769-0217

(1) Since evolution exists nowhere, never has and never will and since evolution is not only the phantom of the universe, it is the inverse of reality--I propose that **evolution be eliminated** entirely from the curriculum.

(2) Knowing it is likely that suggestion (1) will not readily be accepted I suggest that an **Intelligent Design component be inserted** into the curriculum. I have taken specific parts of the Standards and made revisions (in bold). Since some standards are repeated at various levels I only selected one example. Obviously the suggested changes should be instituted wherever it occurs in other levels.

Page 1

Standard 1: History and the Nature of Science

The study of science as a human endeavor provides for the acquisition of ideas leading toward the current knowledge base that represents science content. The nature of science encompasses the basic values and beliefs that make up the scientific world view, how scientists go about their work and the general culture of scientific enterprise.

Studying historical and current discoveries, **including Intelligent Design**, of scientists and scientific milestones provides students with information about how discoveries have influenced current scientific thought and advancements. Students should understand that the continuous development of scientific knowledge shapes history. The study of the history and nature of science clarifies scientific inquiry and the role of science in the development of world cultures.

Standard 3: Unifying Themes

Broad unifying themes complement the perspectives presented in the other content standards. These themes are fundamental to understanding and unifying the various science disciplines. Major unifying themes are systems, models (**including Intelligent Design**) and changes.

Standard 5: Scientific **Technology** and Application

Page 3

Standard 3: Unifying Themes (SC.S.3)

Students will:

- * demonstrate an understanding of interdependent themes **and design** present in the natural and **technological** world (e.g., systems, order, organization, **and design**; evidence, models, and explanation; constancy, change and measurement; equilibrium and evolution; form and function),

- * demonstrate the ability to draw conclusions about and predict changes in natural and **technological** systems.

Standard 4: Science Subject Matter/Concepts (SC.S.4)

Students will:

* demonstrate knowledge, understanding and applications of scientific facts, concepts, principles, theories and models **(including Intelligent Design)** as delineated in the objectives,

SC.4.4.25 become familiar with the geologic **column**.

Page 56 (7th Grade)

Standard 1: History and the Nature of Science (SC.S.1)

Students will:

* demonstrate an understanding of the history of science and the **development** of scientific knowledge;

Earth's History

SC.7.4.29 compare and contrast periods of geologic **column** using rocks and rock layers.

SC.9.4.39 interpret topographic maps, weather maps and charts, and astronomical models such as solar systems, galaxies, constellations, stellar types and stellar **development**.

History and the Nature of Science Objectives

Students will:

SC.10.1.1 formulate scientific explanations based on **observations** and experimental evidence, accounting for variability in experimental results.

SC.10.2.8 design, conduct, evaluate and revise experiments (e.g., identify questions and concepts that guide investigations; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models using logic and evidence; recognize alternative explanations **(including Intelligent Design)**; communicate and defend a scientific argument).

Unifying Themes Objectives

Students will:

SC.10.3.1 analyze systems to understand **design** in the natural and **technological** world; use systems analysis to make predictions about behaviors in systems; recognize order in units of matter, objects or events.

Evolution, **Design**, and Interdependence of Organisms

SC.10.4.8 compare the embryonic development of invertebrate and vertebrate animals (e.g., ontogeny and phylogeny, diversity, taxonomy) **with alternative explanations**.

SC.10.4.9 construct and manipulate models which show variations **(with limitations)** in living things.

SC.10.4.10 recognize that fossil records provide a scientific explanation for variation in the species and common ancestors **and that the "Cambrian Explosion" raises serious questions about this concept**.

SC.10.4.11 relate the role of natural selection **(with its limitations)** to the development, diversity and or extinction of a species.

Theories About Origin and Evolution in the Earth Systems and Universe

SC.10.4.36 investigate **theories for and against** fossils as evidence for evolution and indicators of paleo-environments.

SC.10.4.37 compare and contrast morphological features of fossils to present-day organisms.

SC.10.4.38 use fossil evidence, **for and against, estimating** the relative and absolute ages of rock layers.

Performance Descriptors (SC.PD.10.4)

Distinguished

The student demonstrates exceptional and exemplary performance with distinctive and sophisticated application of knowledge and skills that exceeds the standard in science subject matter/concepts. Students demonstrate knowledge, applications and interconnections of the objectives in Standard 4 in the following categories:

The Cell and Molecular Basis for Heredity

Evolution, **Design**, and Interdependence of Organisms

Matter, Energy, and Organization in Living Systems

Structure and Properties of Matter

Chemical Reaction

Energy

Motions and Forces
Energy in the Earth System
Geochemical Cycles
Origin and Evolution, **or Design**, in the Earth Systems and Universe
Students analyze interconnections among the above categories.

Standard 6: Science in Personal and Social Perspectives (SC.S.6)

Students will:

- * demonstrate the ability to evaluate personal and societal benefits when examining health, population, resource and environmental issues;
- * demonstrate the ability to evaluate the impact of different points of view on **the theory of evolution**, health, population, resource and environmental practices;

Evolution and Intelligent Design

- AB.4.21 discuss evidence (**for and against**) evolution and natural selection, including examples such as peppered moth, fossil records, biogeography, molecular biology and comparative anatomy.
- AB.4.22 investigate and discuss that behavioral response is a set of actions determined in part by heredity and in part from experience.
- AB.4.23 research pioneers and current authors of evolutionary **and Intelligent Design** ideas.

AC.4.3 research and evaluate the contributions of Dalton, Planck, Bohr, Einstein, and de Broglie, Heisenberg, and Schrodinger to the **development** of the atomic theory.

AES.4.2 identify and describe the structure, origin, and **development** of the lithosphere, hydrosphere, atmosphere and biosphere.

AES.4.16 investigate the **development** of the ocean floor that results in the creation of new materials and features.

(3) A third proposal which would, according to polls, satisfy a sizable majority of the public is to **clearly state that evolution can be criticized** by public school science teachers. A simple paragraph, at the beginning of the Standards, would meet this need. I present two suggestions for giving teacher guidance in what they can do.

A. The Buckna/Laidlaw "Origins of Life" Policy

As no theory in science is immune from critical examination and evaluation, and recognizing that evolutionary theory is the only approved theory of origins that can be taught in West Virginia: whenever evolutionary theory is taught, students and teachers are encouraged to discuss the scientific information that supports and questions evolution and its underlying assumptions, in order to promote the development of critical thinking skills. This discussion would include only the scientific evidence for and against evolutionary theory, as it seeks to explain the origin of the universe and the diversity of life on our planet.

B. The Priest Proposal (A Paraphrase of Darwin's Own Words)

There is a majesty of life and students should be able to view all sides of the question of origins with impartiality. This will remove the prejudice by which the subject is overwhelmed. A large field of inquiry will be opened on the causes of origins and variation. West Virginia students and teachers should weigh the scientific evidence on all sides of the origins issue.

(4) Lastly, I submit something that will satisfy every fair-minded citizen of West Virginia and that is to **eliminate the indoctrination of public school students** into the basic premise of atheism. The United States Constitution mandates that states be neutral toward religion. The West Virginia Science Standards are NOT neutral toward religion. For example, Content Standard 3 (Unifying Themes) begins to indoctrinate children at the kindergarten level and continues to do so at every level into high school. This standard implies that natural things (i. e. the child) are not designed. This is a philosophical premise that has major religious implications. This same standard states that students will demonstrate an understanding of evolution. Standard 5 reinforces the belief that natural things are not designed. A whole lot of West Virginians have a real problem with this dogmatic approach to origins.

The Standards should be revised to eliminate the naturalistic teaching that natural objects and systems are not designed. Most of my suggested changes in (3) would remain with the exception of specific references to Intelligent Design. A provision should be added that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. Also, objectives should be added that will require students to learn about the naturalistic assumption (that the world is not designed) which is used in current origins science and clearly stated in the Standards.

Mary Baldwin

From: Brian Jarrell [brianj@wv-cis.net]
Sent: Tuesday, December 17, 2002 12:32 PM
To: bwest@access.k12.wv.us
Cc: AFA of West Virginia
Subject: WV State Science Standards Ploicy

I am a parent with 4 children in the West Virginia Public school system. I resent the fact that policy 2520.3 deliberately is steering my children to accept and believe Darwinian evolution as a fact when it is only a theory. There was a time in our Nation when Intelligent Design & Creation by God was taught along side of Darwin's theory of evolution, in that time children had a choice, today it is a dictatorship where one theory is taught that has long ago been in doubt and in Question. Its time for a change and WV has been at the bottom of the list in the nation for way to long .Let change begin here first and for a change let the rest of the nation follow us, that's what America is all about.

Sincerely,
Brian & Rebekah Jarrell
Rt. 3 Box 81
Milton WV 25541

Mary Baldwin

From: Ed Garrett [treefarm@sat-co.net]
Sent: Tuesday, December 17, 2002 2:03 PM
To: bwest@access.k12.wv.us
Subject: evidence against evolution

Dear Brenda West:

I am a creationist, and recently had a conversation with the geologist and anticreationist Dr. Joe Meert, Assistant Professor in the

geology dept. at the University of Florida. If you are considering science standards in West Virginia, it should be interesting to

see what anticreationists consider "evidence against evolution."

Dr. Meert would not admit the existence of any kind of evidence that indicated problems with evolution, but when I asked him about

the "concept of progress in evolutionary biology" he said "there is no such thing as 'progress in evolution'." He was quite

emphatic about this. I asked him why, then, he expected the public to believe that simple, primitive forms of life progressed to

man. He never addressed this question in any way, either to refute it or confirm it, although he sent me several emails afterward

and I continued to ask for some kind of answer. He only tried to confuse the issue by raising irrelevant points.

I can only conclude that scientists who are dedicated to the promotion of this "theory" are also dedicated to ignoring all evidence

against it and trying to make sure the public never hears of any such evidence.

Creating fair science standards will be difficult at best with the kind of confusion about "evidence against evolution" that will be

thrown at you. If I can help let me know. I have other information that might be of interest.

Yours, Ed Garrett

Mary Baldwin

From: Genny Davis [gennyd@meer.net]
Sent: Tuesday, December 17, 2002 9:36 PM
To: bwest@access.k12.wv.us
Subject: Policy2520.3 WV State Science Standards

Whereas, children should be permitted to explore and therefore not fed all information as the only truth. And whereas the majority of parents believe in a higher power, and giving one side of the Evolution theory runs counter to our beliefs. Therefore, children in these stressful times need room to arrive at their own beliefs.

Mary Baldwin

From: Carol Mitchell Smith, MACE, PhD [mitchellsmith@charter.net]

Sent: Wednesday, December 18, 2002 7:27 AM

To: bwest@access.k12.wv.us

Subject: Policy 2520.3 comments

1. I am writing to comment on Policy 2520.3 – WV State Science Standards which are currently open for comments. It appears regarding origins of life that children are only given the theory of evolution. I do not believe this is good for our children. I believe children should be encouraged to think for themselves and have other theories presented in the classroom. Please revise the Standards to reflect my concerns.
2. Policy 2520.3 appears to be one sided in the presentation of the origins of life. Please allow other views and theories to be explored by our children in school. Evolution is not fact but a theory. Why then is it the only theory being presented in the classroom? This is wrong!
3. I am a parent with children in West Virginia's school system. I resent the fact that Policy 2520.3 deliberately is steering my children into accepting and believing Darwinian evolution as a fact when it is only a theory. There are other theories regarding origins and they should be included in Policy 2520.3
4. As a parent, I am writing to comment on Policy 2520.3. I believe children should be able to understand a full range of scientific views that exist regarding the origins of life in the classroom. I believe Policy 2520.3 should be amended to bring this about.
5. Please amend Policy 2520.3 to expressly state that teachers have the academic freedom to discuss other theories in the classroom such as Intelligent Design.
6. Policy 2520.3 appears to promote evolution as the only true science regarding origins of life. Evolution is only a theory. There is much disagreement within the scientific community regarding this theory. If this theory has any merit then it should be able to withstand critical examination. Children should have other views to be able to think critically. Please revise the policy to reflect this.
7. Policy 2520.3 is bias regarding the origins of life. There is no mention in this policy of other theories on this subject. Children should not be force fed the dogma of evolution. Other theories need to be presented and the policy should spell this out.

-- Carol Mitchell Smith, MACE, PhD

5107 Jason Drive

Mary Baldwin

From: rhunt [rhunt@ovis.net]
Sent: Wednesday, December 18, 2002 9:25 PM
To: bwest@access.k12.wv.us
Subject: scientist gives opinion

I, Robert N Hunt, am a respected research scientist working for Bayer Corp. God gave me the brain to do my work, God created me and you and this world and I will testify so in Charleston if you would like.....Respectfully yours, Robert N Hunt, 451-2207, Research Center, New Martinsville, WV 26155

Mary Baldwin

From: John Rinehart [jjrinehart@charterbn.com]

Sent: Thursday, December 19, 2002 11:29 AM

To: bwest@access.k12.wv.us

2. Policy 2520.3 appears to be one sided in the presentation of the origins of life. Please allow other views and theories to be explored by our children in school. Evolution is not fact but a theory. Why then is it the only theory being presented in the classroom? This is wrong! I can understand your not teaching creationism as the only way, but it should also be presented. There should not be such bias presented in the school rooms

Thank you for your consideration.

John J. Rinehart

405 Division Street

Shady Spring, WV 25918-8448

304-763-3567

Mary Baldwin

From: Carol Mitchell Smith, MACE, PhD [mitchellsmith@charter.net]
Sent: Thursday, December 19, 2002 4:23 PM
To: bwest@access.k12.wv.us
Subject: Policy 2520.3

Dear Ms. West:

I sent some comments to you yesterday in error. Please disregard them.

Please consider the following to be my comments on Policy 2520.3.

Policy 2520.3 is incomplete and needs to include teaching other theories besides evolution. Theories such as Intelligent Design must also be included. This way our students will learn to think critically and to compare and contrast among competing theories. Although teaching competing theories is challenging, and makes the picture "muddier" in some ways, it also teaches our children to see things in a more nuanced way, to consider opposing viewpoints and to learn to weigh the differences between theories. Please include other theories when teaching about the beginnings and development of our world; it will broaden our students' minds and teach them to think more rigorously about the world in which they live.

Thank you very much.

-- Carol Mitchell Smith, MACE, PhD
5107 Jason Drive
Cross Lanes, WV 25313
(304) 776-4147

Mary Baldwin

From: Mason Meadows [masonmeadows@yahoo.com]

Sent: Thursday, December 19, 2002 11:09 PM

To: bwest@access.k12.wv.us

Subject: Policy 2520.3

I am writing to comment on Policy 2520.3 – WV State Science Standards which are currently open for comments. It appears regarding origins of life that children are only given the theory of evolution. I do not believe this is good for our children. I believe children should be encouraged to think for themselves and have other theories presented in the classroom. Please revise the Standards to reflect my concerns.

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Mary Baldwin

From: Reid Clark [reidclark@perrow.org]
Sent: Friday, December 20, 2002 11:17 AM
To: bwest@access.k12.wv.us
Subject: Policy 2520.3

As a parent, I am writing to comment on Policy 2520.3. I believe children should be able to understand a full range of scientific views that exist regarding the origins of life in the classroom, including such theories as Intelligent Design. I also believe that any view as widely held as Creationism should be presented for study without bias. Freedom in our education system surely means that all viewpoints are studied or at least presented. I believe Policy 2520.3 should be amended to bring this about.

Thank you for your work on this matter.

Reid Clark
218 Spruce Lane
Poca, WV 25159

Mary Baldwin

From: Viclicurry634@cs.com
Sent: Friday, December 20, 2002 11:30 PM
To: bwest@access.k12.wv.us
Subject: Education and Policy 2520.3

Gentlemen:

It seems that Policy 2520.3 promotes evolution as the only true science regarding origins of life. Evolution is only a theory. The scientific community disagrees regarding this theory. Any theory having any inherent value should be able to withstand critical examination. Children should have other views to be able to think critically. It seem educationally sound to revise the policy to reflect other views regarding origins of life.

Thank you for your serious consideration of this suggestion.

Yours truly,

Vida I. Curry

Mary Baldwin

From: Willard Wynne [wilard@ix.netcom.com]
Sent: Tuesday, December 31, 2002 1:55 PM
To: bwest@access.k12.wv.us
Subject: Proposed Science Standards for WV

As a citizen of West Virginia I am concerned with the possibility that students in this state will be given a scientific background based only on the idea of evolution. I take great exception to this decision. Who is qualified to make that decision that God had no hand in creation. I would love to know the name of the person who has made this definitive decision.

Following is a preprinted presentation that I agree with and would hope you would take it into consideration when deciding what children should be taught.

We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, we believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Scientific objectivity will lead to good science and religious neutrality. Furthermore, this complex and highly controversial subject should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations.

Our concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade.

Teaching students that they are a part of a "natural world" that is not designed is philosophy and not science. It is the philosophy of Naturalism. Naturalism is a belief that life emerges via purely unguided natural processes and not by design. Naturalism is the fundamental tenet of atheism, agnosticism and secular humanism while design is the fundamental tenet of theistic religion.

Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. The standards establish objectives that will lead to an understanding about "Evolution Only." Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. In this respect the standards are one sided and dogmatic. Their obvious objective is to promote a Naturalistic world view.

Origins science is the science which seeks to answer the questions "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidable impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. To promote critical thinking, scientific objectivity and religious neutrality, we suggest the following changes to the standards:

- 1. Revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations.**
- 2. Revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teachings with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. [In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not designed for a purpose.]**
- 3. Add explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically**

about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy. [Many provisions of the standards would seem to encourage this concept indirectly. However, this encouragement needs to be explicitly focused on origins science, because textbooks presently teach only naturalistic theories of origins and discourage criticisms of evolutionary theory. Furthermore, teachers have been penalized when they have attempted to teach this subject honestly and objectively.]

4. Add objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."]

Thank you for your consideration.

Willard Wynne

473 Nancy Jack Road

Gerrardstown WV 25420

Mary Baldwin

From: Deborah Brown [dsbrown@access.k12.wv.us]
Sent: Friday, January 03, 2003 11:35 AM
To: Brenda West
Subject: FW: Assistance request
Importance: High

Brenda:

Have you received this message and have you entered the comments given by Mr. McCoy? Could we talk about this briefly next week? Let me know of your availability--thanks.

Debbie

-----Original Message-----

From: Pam Cain [mailto:pcain@access.k12.wv.us]
Sent: Friday, January 03, 2003 10:44 AM
To: Deborah Brown
Subject: FW: Assistance request
Importance: High

-----Original Message-----

From: Kevin McCoy [mailto:kmccoy@afo.net]
Sent: Monday, December 30, 2002 6:40 PM
To: Rebecca Tinder
Cc: Pamela Cain; David Stewart
Subject: Re: Assistance request
Importance: High

Dear Ms. Tinder:

I have sent two previous emails to you pertaining to your previous request for "...the alternative language you would suggest be placed in the policy to address the goals" regarding Policy 2520.3 - Science Standards which are currently open for comment on the West Virginia Department of Education. I also left a voice mail message on your telephone today to verify you received these emails after verifying you were in the office today. I would very much appreciate a response from you addressing the proposed language and answering the two questions contained in this email

First, I propose the following amended language be added to the policy as follows:

Statement of Purpose and Intent Regarding Origins of Life

"The West Virginia standards regarding origins of life are intended to ensure that students are taught and equipped to critically examine origins theories and to identify and distinguish between scientific fact, theory, and error. There is more scientific disagreement about Darwinian evolution than about other scientific theories. Therefore, students should know about evolution and why scientists today continue to investigate, critically analyze, and in some instances, reject aspects of evolutionary theory that nevertheless continue to be taught as undisputed fact in classrooms. Teachers should also have the academic freedom to teach about, and subject to the same rigorous examination, other origins theories such as the Design theory."

My reasoning for the necessity of adding this language is I believe this language will ensure students will be taught and equipped to critically examine origins theories and to identify and distinguish between scientific fact, theory, and error, in keeping with academic excellence and furtherance of a robust academic inquiry.

Failure or refusal by the Department to address these concerns would signal an attempt to block such academic discussion and would signal the Department's intent to select only from the body of knowledge of a

particular segment which it proscribes for the sole reason that it is deemed to conflict with a particular scientific theory....Darwinian evolution.

Furthermore, it is our belief not to allow this language to be amended into Policy 2520.3 will send the message that teachers and students must steer clear and hold back from robust academic discussion of origins, lest sanctions be leveled. The end result would inevitably be schoolchildren being condemned from elementary to high school ages to stale and often outdated textbook presentations of the once reigning Darwinian orthodoxy.

Secondly, and in closing, I would appreciate if you would address the following questions as follows:

1.) Would you please give me your legal opinion on the constitutionality of other theories, including Intelligent Design being permitted in Policy Number 2520.3 - Science Standards?

2.) Are you of the opinion Policy 2520.3, as it is written now, allows for the discussion of other theories, including Intelligent Design in the school classroom? If so, would you please direct me to the section in Policy 2520.3 to support this? I also would like to know if you would support this concept?

Sincerely,

Kevin McCoy, State Director
AFA of West Virginia
P. O. Box 11752
Charleston, WV 25339
304-965-6700

----- Original Message -----

From: Rebecca Tinder
To: AFA of West Virginia
Cc: dsbrown@access.k12.wv.us
Sent: Wednesday, December 18, 2002 9:16 AM
Subject: RE: Assistance request

Dear Mr. McCoy:

I am in receipt of your inquiry, which will be included as a comment to the policy and addressed accordingly. I would appreciate, however, receiving the alternative language you would suggest be placed in the policy to address the goals. As you are aware, the policy revisions resulted from a consensus of a diverse group of educators who worked diligently on the same. I look forward to reviewing your alternative language soon.

Rebecca M. Tinder
General Counsel
WV Department of Education
(304) 558-3667

-----Original Message-----

From: AFA of West Virginia [mailto:afawv@afo.net]
Sent: Wednesday, December 18, 2002 5:21 AM
To: rtinder@access.k12.wv.us
Subject: Assistance request

Dear Ms. Tinder:

Would you please give me your legal opinion on the constitutionality of other theories, including Intelligent Design being permitted in Policy Number 2520.3 - Science Standards?

On November 27, 2002, I spoke to Ms. Cain regarding Policy 2520.3 - Science

Standards which is currently open for comment on the West Virginia Department of Education web site.

I shared with Ms. Cain my serious concerns relating to this policy because it appears from a cursory examination of Policy 2520.3 students are only given evolutionary dogma as pertains to origins. Additionally, I stated the policy is so one sided on this issue that there is no room to criticize evolution let alone offer other theories including Intelligent Design. Ms. Cain agreed that students should be given other theories as to origins and forwarded my letter to you.

My concerns are derived partly from the following language in Policy 2520.3.

Origin and Evolution in the Earth Systems and Universe

SC.10.4.36 investigate fossils as evidence for evolution and indicators of paleo-environments.

SC.10.4.37 compare and contrast morphological features of fossils to present-day organisms.

Evolution

AB.4.21 discuss evidence of evolution and natural selection, including examples such as peppered moth, fossil records, biogeography, molecular biology and comparative anatomy.

AB.4.22 investigate and discuss that behavioral response is a set of actions determined in part by heredity and in part from experience.

AB.4.23 research pioneers and current authors of evolutionary ideas.

I would like to know if you are of the opinion Policy 2520.3, as it is written now, allows for the discussion of other theories, including Intelligent Design in the school classroom? If so, would you please direct me to the section in Policy 2520.3 to support this this? I also would like to know if you would support this concept?

I propose that language be added to Policy 2520.3 to assure students from elementary to high school ages are not condemned to stale and often outdated textbook presentations of the once reigning Darwinian orthodoxy.

This goal can be accomplished by adding language which:

- (A) Encourages the presentation of scientific evidence regarding the origins of life and its diversity objectively and without religious, naturalistic, or philosophic bias or assumption;
- (B) Requires that whenever explanations regarding the origins of life are presented, appropriate explanation and disclosure shall be provided regarding the historical nature of origins science and the use of any material assumption which may have provided a basis for the explanation being presented;
- (C) Encourages the development of curriculum that will help students think critically, understand the full range of scientific views that exist regarding the origins of life, and understand why origins science may generate controversy.

Addressing the above mentioned concerns will guarantee teachers and students the right to discuss the scientific data both supporting and challenging Darwinian evolution, without the fear that such academic discussions can end in discipline.

Failure by the Department to address these concerns will signal an attempt to block

such academic discussion and would signal the Departments intent to select only from the body of knowledge of a particular segment which it proscribes for the sole reason that it is deemed to conflict with a particular scientific theory....Darwinian evolution.

Please let me know your thoughts on this matter.

I look forward to hearing from you soon.

Sincerely,

Kevin McCoy, State Director
AFA of West Virginia
P. O. Box 11752
Charleston, WV 25339
304-965-6700

Mary Baldwin

From: Linda Hoskins [roanaid@yahoo.com]
Sent: Saturday, January 04, 2003 12:47 PM
To: bwest@access.k12.wv.us
Subject: Science Standards

Please revise the Science Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. This should be a part of the whole "science" that is taught.

Sincerely,
Linda Hoskins
Kanawha County
Charleston wV

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<http://mailplus.yahoo.com>

Mary Baldwin

From: CorrinnaCorrinna@aol.com
Sent: Sunday, January 05, 2003 9:36 PM
To: bwest@access.k12.wv.us
Subject: Should evolution be taught in our classrooms?

What is a theory? It is an opinion, an educated guess, but a guess nonetheless. Why then is evolution taught exclusively to our youth? If you must teach evolution in some form, teach it's alternative also, the biblical view of how our world was created. Let our youth decide for themselves which "theory" they wish to believe. Are we saying our youth are so ignorant, that they can handle only one explanation? Knowledge is learning to think for oneself. Provide the information and let our youth do some "critical thinking" on their own. I am sick of the anti-religious movement. They seem to ignore the very thing this country was founded on, God. Our forefathers didn't offer freedom from religion, but freedom OF religion. Look at how our morality has declined since they have taken prayer and the Ten Commandments out of the school! I. Our nation is in a sad state of affairs when they uphold immorality in all forms. Life is not sacred anymore. Every day we murder those without a voice, forgetting that the ones who are doing the murdering do not believe in the very oath that they take, the Hippocratic Oath. When we can teach evolution freely, but cannot mention God's creation, it is truly horrid. When God is to be taken off of our money and out of our Pledge of Allegiance, what a mockery. Let parent's voices be heard. Let this be some small gain towards getting order and decency back. Teach creation in schools, even if you must teach evolution along with it. At least our children will have a choice! I am a parent with two beautiful children in Poca Elementary. I do not wish them to know only of the Big Bang THEORY!!!!!!!!!!!!!!!!!!!!!! Remember, we live in the United States of America! How God has blessed this country! We need to uphold him, not only in our personal lives, but in our schools as well. It wasn't so long ago, that the bible was taught as a subject in our schools. Thank you for your time. Listen to the people, parents, but most of all, God.

Sharon E. Newsome

Mary Baldwin

From: Sue Grace [s_grace@charter.net]
Sent: Monday, January 06, 2003 12:22 AM
To: bwest@access.k12.wv.us
Subject: West Virginia Science standards

Dear Ms. West,

Please add to the Standards explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy.

A thorough education in any field or subject demands all the information, pro and con, pertaining to said subject be examined.

West Virginia's children deserve education as opposed to indoctrination.

Thank you for your time.

Sue Grace

Mary Baldwin

From: WV's for Science Ed. Excellence [wvsee@charter.net]

Sent: Monday, January 06, 2003 1:42 PM

To: bwest@access.k12.wv.us

Subject: standards

1. We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Please change the Standards so children are not indoctrinated with evolutionism and add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.
2. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, I believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Please change the standards so evolutionism does not dominate the instruction on origin and diversity of life.
3. Scientific objectivity will lead to good science and religious neutrality. Origins is a complex and highly controversial subject and should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations.
4. My concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. This is wrong. Please change the standards to eliminate that problem.
5. The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade. This is wrong. Please change the standards to eliminate that problem.
6. Teaching students that they are a part of a "natural world" that is not designed is philosophy and not science. It is the philosophy of Naturalism. Naturalism is a belief that life emerges via purely unguided natural processes and not by design. Naturalism is the fundamental tenet of atheism, agnosticism and secular humanism while design is the fundamental tenet of theistic religion. This is wrong. Please change the standards to eliminate that problem.
7. Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. This is wrong. Please change the standards to eliminate that problem.
8. The standards establish objectives that will lead to an understanding about "Evolution Only." Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. In this respect the standards are one sided and dogmatic. Their obvious objective is to promote a Naturalistic world view. This is wrong. Please change the standards to eliminate that problem.
9. Origins science is the science which seeks to answer the questions "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidable impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.
10. I suggest the standards be changed to promote critical thinking, scientific objectivity and religious neutrality regarding origins.
11. Please revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations. Also, please add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.
12. Please revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teachings with objectives that would encourage students to investigate and critically analyze the

evidence which supports both the design and naturalistic hypotheses. [In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not designed for a purpose.]

13. Please add to the Standards explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy.

14. Please add to the Standards objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."] Also, please add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.

Jerry E Davis

Mary Baldwin

From: Noel Wise [NFWise@msn.com]
Sent: Monday, January 06, 2003 9:08 PM
To: bwest@access.k12.wv.us
Subject: evolution in the schools

Ms. West:

I am worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Please change the Standards so children are not indoctrinated with evolutionism and add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.

Scientific objectivity will lead to good science and religious neutrality. Origins is a complex and highly controversial subject and should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations.

Please revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teaching with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. (In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not designed for a purpose).

Thank you for your consideration into this matter.

Noel Wise, MA, LSW
119 Christa Circle
South Charleston, WV 25309

NFWISE@MSN.COM

Mary Baldwin

From: MTCarte@aol.com
Sent: Monday, January 06, 2003 9:07 PM
To: bwest@access.k12.wv.us
Subject: Science Standards

Ms. West,

As the West Virginia Science Standards are currently being evaluated I would like to comment on instruction regarding origins. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, I believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Please change the standards so evolutionism does not dominate the instruction on origin and diversity of life. Thank you.

Mike Carte

Mary Baldwin

From: MMonk@advancedspecialtycontractors.com

Sent: Monday, January 06, 2003 9:22 PM

To: bwest@access.k12.wv.us

Subject: Don't make monkeys out of us!

Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis.

This is wrong. Please change the standards to eliminate that problem.

It is hard to imagine that an intelligent, articulate, open-minded person could believe that we evolved from apes. Where is the evidence? If it has been going on for millions of years, why aren't there millions of "cross-species" fossils? Just a thought for the open-minded to ponder.

Please don't let the school system continue to try to make monkeys of our children!

Mary Baldwin

From: Alice Click [aliclick45@hotmail.com]
Sent: Monday, January 06, 2003 10:08 PM
To: bwest@access.k12.wv.us
Subject: Comment on Science Standards

Comment on WV Science Standards:

My concern is that the proposed West Virginia Science Standards do not reflect objectivity in teaching objectives for origin science. Instead they seek to promote an "Evolution Only" or naturalistic worldview. I suggest the standards be changed to promote critical thinking and scientific objectivity. We should encourage students to investigate and critically analyze the evidence that supports both the design and naturalistic hypotheses.

Respectfully Submitted,

Alice Click
233 Chestnut Rd.
Mount Alto, WV 25264
304-895-3590

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<http://join.msn.com/?page=features/virus>

Mary Baldwin

From: Andrea [andrea.r@citynet.net]
Sent: Monday, January 06, 2003 10:53 PM
To: bwest@ACCESS.K12.WV.US
Subject: West Virginia Science Standards

Scientific objectivity will lead to good science and religious neutrality. Origins is a complex and highly controversial subject and should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations.

Andrea Radtke
5371 Big Tyler Road, Apt 714
Cross Lanes, WV 25313-1048
776-5950

Mary Baldwin

From: HaroldClark7@aol.com
Sent: Monday, January 06, 2003 11:33 PM
To: bwest@access.k12.wv.us
Subject: Re: A Personal Plea From Karl Priest

In a message dated 1/5/2003 10:11:20 PM Eastern Standard Time, Kcpriest writes:

. My concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. This is wrong. Please change the standards to eliminate that problem.

Harold Clark
Haroldclark7@aol.com

Mary Baldwin

From: Mark K. Jowett [mjowett@charter.net]
Sent: Monday, January 06, 2003 11:59 PM
To: bwest@access.k12.wv.us
Subject: West Virginia Science Standards

Dear Ms. West,

We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Please modify the Standards so children are not indoctrinated with evolutionism, and add objectives that would encourage students to investigate and critically analyze the evidence which supports both intelligent design and naturalistic hypotheses.

Most importantly, as it is not proven, it is still the "theory of evolution"--other theories should be allowed and considered (e.g., intelligent design) with respect to tolerance, open-mindedness, and cultural diversity.

Respectfully,

Mark

Mark K. Jowett
Assistant Professor and IT Department Coordinator
University of Charleston, WV
Director of Distance Education
<http://www.theclaycenter.org/thecenter.htm>
Owner - Quality Instruction
<http://www.qualityinstruction.com>
E-mail:
mjowett@ucwv.edu
mjowett@charter.net

Mary Baldwin

From: Elizabeth Gallaher [egallaher@dnr.state.wv.us]
Sent: Tuesday, January 07, 2003 9:17 AM
To: pka00201@alpha.wvup.wvnet.edu
Cc: epyle@mail.wvu.edu; loyster@citynet.net; wyonk@citynet.net; mirichar@access.mountain.net; kjacquez@access.mountain.net; fonner@ovis.net; scorder@access.k12.wv.us; drockey@access.k12.wv.us; debhelmer@yahoo.com; pobenauf@wvu.edu; bwest@access.k12.wv.us; pbarnhar@access.k12.wv.us
Subject: helpers for Project WILD coorelations

Hi Jody,

We met at the WVSTA Conference, but you probably don't remember. I'm starting to organize a team of science and English teachers to help develop a correlation of Project WILD to the state content learning standards. I already have Joe Evans and Jim Meads on board, but I need at least four more people to help. I'm shooting for either a February or March meeting. The plan is to meet at a state park on a Friday evening, start the correlation, eat and sleep and then finish things up on Saturday. I (Project WILD) will pick up the tab on lodging, meals, and mileage. I just need people. Do you have any suggestions? If so, I'm trying to get everything together by the end of the month.

Thanks a bunch.

Elizabeth

Elizabeth Gallaher
WV DNR Wildlife Resources
Project WILD
1900 Kanawha Blvd., East
Bld. 3, Rm. 842
Charleston, WV 25305
t. 304-558-2771
f. 304-558-3147

Mary Baldwin

From: Ashley Switzer [switzer.home@citynet.net]
Sent: Tuesday, January 07, 2003 10:23 AM
To: bwest@access.k12.wv.us
Subject: WV Science Standards

Dear Ms. West,

Origins science is the science which seeks to answer the questions, "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidably impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses and please add to the Standards explicit provisions that will encourage teachers to discuss science objectively without philosophic, naturalistic or religious bias or assumption.

Sincerely,

Ashley Switzer

Mary Baldwin

From: Gordon Wells [glwells48@yahoo.com]
Sent: Tuesday, January 07, 2003 2:26 PM
To: bwest@access.k12.wv.us
Subject: Science Standards

Dear Ms. West:

Origins science is the science which seeks to answer the questions "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidable impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.

Thank you,

Gordon Wells

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**Policy 2520.3: Science
Content Standards and Objectives for
West Virginia Schools**

Please use this form when commenting on proposed Policy 2520.3. You may attach additional sheets if necessary.

Individual/Organization: William S. Harris, Ph. D. and John H. Calvert, J.D.,
Intelligent Design network, inc.

Title: Managing Directors

Street Address: P.O. Box 14702, **City:** Shawnee Mission **State:** Kansas, 66217

Comments/Suggestions

Explanation of Terms, Abbreviations

A glossary of scientific terms should be included in the standards.

Science Kindergarten Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 1st Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 2nd Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 3rd Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 4th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 5th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 6th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 7th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 8th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 9th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 10th Grade Objectives and Performance Descriptors

See Suggestions 1, 2, 3, 4 and 5 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Advanced Biology Objectives

See Suggestions 1, 2, 3, 4 and 5 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Biology - Technical Conceptual Objectives

See Suggestions 1, 2, 3, 4 and 5 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Human Anatomy and Physiology Objectives

See Suggestions 1, 2, 3, 4 and 5 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Advanced Chemistry Objectives

None. Our comments are limited to those aspects of the Policy that deal with or impact teachings about biological origins.

Chemistry-Technical Conceptual Objectives

None. Our comments are limited to those aspects of the Policy that deal with or impact teachings about biological origins.

Advanced Environmental Earth Science Objectives

None. Our comments are limited to those aspects of the Policy that deal with or impact teachings about biological origins.

Advanced Physics Objectives

None. Our comments are limited to those aspects of the Policy that deal with or impact teachings about biological origins.

Physics-Technical Conceptual Objectives

None. Our comments are limited to those aspects of the Policy that deal with or impact teachings about biological origins.

Please return comments by January 10, 2003, to:

Brenda West

Office of Student Services and Assessment

West Virginia Department of Education

1900 Kanawha Boulevard, East

Building 6, Room 722

Charleston, WV 25305-0330

Telephone: 304.558.2546 --- Fax: 304.558.1613

E-mail: bwest@access.k12.wv.us

Mary Baldwin

From: PattyPulli@aol.com
Sent: Wednesday, January 08, 2003 8:35 PM
To: bwest@access.k12.wv.us
Subject: New WV Science Standards

I have comments regarding the new West Virginia Science Standards.

Please revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations.

Please add to the Standards objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."

The proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. The standards establish objectives that will lead to an understanding about evolution only. Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. Please change the standards to eliminate that problem.

Thank you for your consideration.

Sincerely,

Patricia L. Pulliam

Mary Baldwin

From: PackPackmountain@aol.com

Sent: Wednesday, January 08, 2003 10:12 PM

To: nightengale87@charter.net; copilot@wv-cis.net; mcadle@wv-cis.net; kimbrewer@charter.net; evets10@hotmail.com; CaseyPack@earthlink.net; ann6@charter.net; wtradco@charter.net; together@citynet.net

Subject: OPPOSITION TO POLICY 2520.3

To Whom It May Concern,

It is my understanding that policy 2520.3 advocates the teaching of evolution only in the West Virginia school systems. This is totally against my desires to assure that the student body in West Virginia will be taught the Christian values that this nation was founded upon historically.

It is my prayer that you will see that this is not the will of the people of West Virginia as a whole.

Kenny Pack

Please send your e-mail to this address: bwest@access/k12.wv.us

Mary Baldwin

From: Sandra Vanluik [oma00294@mail.wvnet.edu]
Sent: Wednesday, January 08, 2003 10:28 PM
To: bwest@access.k12.wv.us
Subject: Revised Scope and Sequence for CATS Seven through Ten

Brenda,

The Science Dept. of Eastern Greenbrier would like to add our support to the proposed revised grouping of Content Standard and Objectives submitted by Kanawha County.

Sandy VanLuik
Eastern Greenbrier Junior High

Mary Baldwin

From: Gladisjean@aol.com
Sent: Wednesday, January 08, 2003 10:39 PM
To: bwest@access.k12.wv.us
Subject: New Scientific Standards

Ms. Brenda West

I suggest the standards be changed to promote critical thinking, scientific objectivity and religious neutrality regarding origins.

Thank You for reading,
Mrs. Beth Cox, mother of 4

Mary Baldwin

From: Jason Moore [helenboy@yahoo.com]
Sent: Thursday, January 09, 2003 12:33 AM
To: bwest@access.k12.wv.us
Subject: EVOLUTION ONLY?????

To Whom it May Concern:

I was alarmed to hear recently that there is a possibility that some sort of legislation could be passed that would make the THEORY of evolution the only origin of man option to teach in our public schools. Though not shocked, I was alarmed. There has been a disturbing trend in our public schools of late. What is often thought of as a religious term is now being manifested in our school systems. It's what we call "indoctrination". We have become guilty of force-feeding our students one way, and only one, in so many areas. Many students falter because we have only one teaching method: memorize, regurgitate, then forget. I am a product of this system myself. We want to make sure that students don't think for themselves; we want to make sure that they think like so many civil rights activists and lobbying groups want them to think. I have an idea. Let's try education. Let's try equipping our youth with the ability to reason. Let's make it possible for them to make intelligent choices. Let's help them to make important life decisions. We all know that the world throws many curves at us at many unexpected places. Let's make sure our children know how to assess the FACTS and make their INFORMED decision based on those, not on someone else's OPINION or fancy thought. Please don't force feed them something that isn't even proven true. If you're going to teach theories, give them all a chance and let the students MAKE UP THEIR OWN MINDS!!!! (Again, based on fact, not theory.) Math, grammar, music...they all have definites. Biological science has definites as well. Evolution is not an absolute. No matter what any lobbyist tries to tell you, me, or our students.

Thank You for Your Time,
Jason D. Moore
Taxpayer, Voter, Concerned
Citizen.

=====
Bound and Freed By His Call,
Jason D. Moore
Genesis 4:7

Mary Baldwin

From: Ken & Sheila Lilly [lillypad@wv-cis.net]
Sent: Thursday, January 09, 2003 9:39 AM
To: bwest@access.k12.wv.us
Subject: We oppose Policy 2520.3

Good morning Ms. West:

We would like to communicate that we do NOT support Policy 2520.3. We understand that it is trying to eliminate any hint of religious education by allowing only evolution to be taught. Evolution is not an acceptable theory for origin of man, as it has many challenges trying to prop up its arguments that we have evolved from an amoeba or a happenstance of exploding gases. Thank you for your time.

Ken and Sheila Lilly
101 Skyview Drive
Beckley WV 25801-2198
lillypad@wv-cis.net

Mary Baldwin

From: Jsmithcwfa@cs.com
Sent: Thursday, January 09, 2003 7:25 AM
To: bwest@access.k12.wv.us
Subject: Science Standards

The proposed science standards teach children that the "natural world" is the basis for origins, leading them to believe that man and beast along with the world are merely objects. That impression, if taken to its logical conclusion, has profound consequences. If we are merely the result of natural processes, then eugenics is okay, experimentation on human beings without consent is okay, and on it goes.

It is wrong to teach only one side of origins...true "academic freedom" gives the students ALL theories and the tools for them to decide. Give them the evidence for all views of origins in an objective way. This does not mean that one has to teach "religion" in the school...the fact that even the smallest organism is irreducibly complex is one way of showing that some sort of design was involved in creation, rather than a mindless and spontaneous event that launched life on earth. Both ideas can be taught side by side and then the child given the ways to explore further if they wish. Give the students a chance to think critically on the most important question in the universe. I am a registered pharmacist and when I went to school science was more about exploring a variety of hypotheses and setting out to prove or disprove them. It was not about promoting an agenda that the hierarchy of scientists who hold a naturalistic worldview need to promote in order to keep their status and grant money coming in.

Education should be about giving students the whole truth, not agendas and pet theories.

J Smith, RPh

Mary Baldwin

From: Ken Lilly [klilly@abc.edu]
Sent: Thursday, January 09, 2003 9:14 AM
To: bwest@access.k12.wv.us
Subject: I oppose Policy 2520.3

I wanted to express my opposition to Policy 2520.3. Thank you!

Kenneth E. Lilly
VP for Business
Appalachian Bible College
P O Box ABC
Bradley WV 25818-1353

Mary Baldwin

From: Don and Joanne Alban [dalban40@citynet.net]

Sent: Thursday, January 09, 2003 9:28 AM

To: bwest@access.k12.wv.us

We would like to say that we do NOT support Policy 2520.3. We understand that it is trying to eliminate any hint of religious education by allowing only evolution to be taught. It is a "religion" of itself and if it is allowed to be taught, then why not can true Christianity be allowed a platform?

Evolution is not an acceptable theory for origin of man, and yet it continues to be put before our children, thus devaluating the beautiful plan of creation that the God of creation has written in His Word for mankind.

Dr. and Mrs. Donald Alban
1800 Maxwell Hill Road
Beckley, WV 25801

Mary Baldwin

From: Paula Toney [ptoney@abc.edu]
Sent: Thursday, January 09, 2003 12:27 PM
To: bwest@access.k12.wv.us
Subject: Policy 2520.3.

New Year Greetings to You, Ms. West!

I would like to go on record as OPPOSING Policy 2520.3. I believe its proposed intent would be a terrible injustice to the educational system of our State.

Thank you,
Paula Toney
PO Box ABC
Bradley, WV 25818

Mary Baldwin

From: Jim Fritz [jfritz@abc.edu]
Sent: Thursday, January 09, 2003 9:40 AM
To: bwest@access.k12.wv.us
Subject: Policy 2520.3

Dear Ms. West,

We would like to let you know that we OPPOSE Policy 2520.3. Evolution is an unverifiable scientific THEORY.

Dr. & Mrs. James and Kathy Fritz
P.O. Box ABC
Bradley, WV 25818
jfritz@abc.edu

Mary Baldwin

From: Walt Burch [wburch@abc.edu]
Sent: Thursday, January 09, 2003 9:40 AM
To: bwest@access.k12.wv.us
Subject: Response to Policy proposal

I wanted to send this communication out to you saying that I strongly oppose Policy 2520.3. How could anyone support such a policy? We will pray that the policy does not pass. This is a battle worth fighting. Satan already has too much control over our children.

Genesis 2:7 is plenty of support against such a liberal policy.

In Christ's service,

Walter Burch
Business Manager
Appalachian Bible College
1-304-877-6428 x3204
wburch@abc.edu

Ephesians 2:8-10

Mary Baldwin

From: Financial Aid [financialaid@abc.edu]
Sent: Thursday, January 09, 2003 10:24 AM
To: bwest@access.k12.wv.us
Subject: Policy 2520.3

Dear Sirs:

I am opposed to Policy 2520.3. I do not think that the teaching of evolution as the only origin of man is appropriate. I think

we should be open to share other theories and give young minds a chance to explore and decide for themselves what they want to believe. The theory of Evolution is simply a theory, man has not been able to prove to my satisfaction that I have

evolved from a slug. I think that you will find it is not as widely accepted as many believe. Again I would like to say that I

am opposed to Policy 2520.3.

Thank you,
Cindi Turner
Beckley, WV

Mary Baldwin

From: Library [library@abc.edu]
Sent: Wednesday, January 08, 2003 10:39 PM
To: 'B. West'
Subject: policy

My name is Gayle Haynes and I am an employee of Appalachian Bible College and I am writing to you to let you know that I am opposed to the policy 2520.3. I do not believe in evolution.

Thank you for your time. May God bless.

Mary Baldwin

From: Secretary to VP for Development [development@abc.edu]

Sent: Thursday, January 09, 2003 1:41 PM

To: bwest@access.k12.wv.us

Subject: OPPOSE POLICY 2520.3

To Whom It May Concern:

I am a voter in the Beckley area and I strongly oppose policy 2520.3.

Jonathan Rinker

Mary Baldwin

From: Dan Carfrey [dcarfrey@abc.edu]
Sent: Thursday, January 09, 2003 10:44 AM
To: bwest@access.k12.wv.us
Subject: Policy 2520.3

Hello, Ms. West,

I would like to voice my opposition to Policy 2520.3. As I understand it, this policy seeks to remove teaching of any religious viewpoints pertaining to creation and scientific research in our state. This kind of effort removes any objectivity in the teaching of scientific evidence, which does not support the theory of evolution. If evolution is taught, it should be taught as only a theory, and other viewpoints like the creation account of the book of Genesis should also be talked about. Our forefathers never intended the separation of any religious content in our educational system. They were rather against the establishment of one church over another by way of governmental decree. Those advocating this kind of policy are actually seeking to use government to oppose religion - which is contrary to what true objective education is all about. Thank you. Dan Carfrey, Vice President for Student Services, Appalachian Bible College

Mary Baldwin

From: Shirley Carfrey [scarfrey@abc.edu]
Sent: Thursday, January 09, 2003 11:11 AM
To: bwest@access.k12.wv.us
Subject: Policy 2520.3

We would like to say that we DO NOT support the proposal Policy 2520.3!
If our children are to be subjected to the theory of evolution, and it is
not an acceptable theory for some -- then how can you eliminate religious
education because it is not acceptable to some?
Thank you for taking note of this opinion.

Shirley Carfrey and Dan Carfrey
205 Appalachian Hgts. Rd.
Bradley, WV 25818
Phone: (304) 877 6590
FAX: (304) 877-5082
E-mail: dancarfrey@aol.com

Mary Baldwin

From: ABC Academic Dept. [academics@abc.edu]
Sent: Thursday, January 09, 2003 11:56 AM
To: 'B. West'
Subject: Policy 2520.3

Dear Ms. West:

We would like to indicate to you that we do not support Policy 2520.3. We understand this bill would eliminate all references to religion in public school and only evolution would be taught in Science classes. Evolution is the opinion of some and should not be taught as the only source of the origin of man.

Thank you.

Dennis and Cathy Persinger
225 Forest Road
Daniels, WV 25832
academics@abc.edu

2/3/03

Mary Baldwin

From: Timothy Dillon [tdillon21@hotmail.com]

Sent: Thursday, January 09, 2003 11:22 AM

To: bwest@access.k12.wv.us

We oppose Policy 252.3. We don't think evolution should be taught in schools.

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Mary Baldwin

From: Kevin Suiter [ksuiter@abc.edu]
Sent: Thursday, January 09, 2003 12:03 PM
To: bwest@access.k12.wv.us
Subject: Opposition

Dear Ms. West,

I am writing to express my opposition to the WV Board of Education's proposal, Policy 2520.3. In my opinion, there is nothing that has done more to undermine Christian values than the THEORY of evolution as taught religiously in the public school classroom.

Thanks for hearing my objections and registering my opposition to this proposal.

Respectfully,
P. Kevin Suiter, D.M.A.
Music Program Coordinator
Appalachian Bible College
Bradley WV 28642
(304)877-6428, ext. 3255
ksuiter@abc.edu

Mary Baldwin

From: Deborah Brown [dsbrown@access.k12.wv.us]
Sent: Thursday, January 09, 2003 2:37 PM
To: Brenda West
Subject: FW: A question for you Ms. Brown...

FYI

-----Original Message-----

From: Deborah Brown [mailto:dsbrown@access.k12.wv.us]
Sent: Thursday, January 09, 2003 2:28 PM
To: jared robertson
Subject: RE: A question for you Ms. Brown...

Mr. Robertson:

Policy 2520.3, Science Content Standards and Objectives for West Virginia Schools, is out on comment through January 10, 2003. If you have comments that you would like to be part of the official log, you may send those to Brenda West (bwest@access.k12.wv.us).

Deborah Brown, Executive Director
Office of Instructional Services
Building 6, Room 330
1900 Washington Street East
Charleston, WV 25305
Telephone: 304.558.7805
Fax: 304.558.0459
E-mail: dsbrown@access.k12.wv.us

-----Original Message-----

From: jared robertson [mailto:jrobertson13@hotmail.com]
Sent: Thursday, January 09, 2003 1:43 PM
To: dsbrown@access.k12.wv.us
Subject: A question for you Ms. Brown...

Ms. Brown,

Someone at work today gave me a copy of an email that was detailing Policy 2520.3 with the WV Dept of Education concerning the teaching of the origin of man in our school systems.

Could you verify to me that this is true and not a hoax? The email basically says that the Policy mentioned above will limit schools to only teach evolution as the origin of man, and will not permit other origins to be taught. It asks for responses to go to a Ms. West at bwest@access.k12.wv.us by Friday, Jan. 10.

As a Christian, and as a son of a man who has taught in our school system for over 30 years, I'm shocked and appalled at this suggestion. I want to reply in full to Ms. West, along with many other people I know who feel the way I do, but I did not want to go down this line if this was simply a hoax of some sort.

Thank you for your time,

Jared Robertson

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Mary Baldwin

From: GenRev22@cs.com
Sent: Thursday, January 09, 2003 3:26 PM
To: bwest@access.k12.wv.us
Subject: Science Standards

1/09/03

Brenda West,
Office of Student Services
WV DOE Building 6, Room 722.
1900 Kanawha Boulevard East
Charleston, WV 25305

Dear Ms. West:

As a former evolutionist I am pleased to welcome West Virginia into the firestorm that is the origins controversy. I've been watching the proceedings since Kansas in 1999. Ohio was interesting, New Mexico is getting involved and now West Virginia steps up!

You will hear that advocating "Intelligent Design" will lead to teaching religion in school. Not true. Advocating design in intricate, complicated living creatures is no more religious than walking into a room and finding a jigsaw puzzle on the table and recognizing that someone completed it before you arrived. Many scientists are finding the complexity of life's processes leads to the inevitable conclusion that life was designed.

Darwin told us there was an original cell composed of simple compounds, such as proteins and amino acids and no more complex than Jell-O. Now we are finding DNA (required for the simplest reproduction) is more complicated than a jigsaw puzzle and contains more information than the Encyclopedia Britannica. How does "information" develop without an outside source? Wouldn't that be a great question for science class?

No, according to the National Academy of Sciences, the American Association for the Advancement of Science and other mainline groups. They claim teaching ID would be "religious" and not allowed under our Constitution. This is not correct. Teaching various theories of origin in our schools can be done if the intent is clearly science education. If the course is not predominately religious the teaching of a possible "Designer" is not religious in itself.

According to the Supreme Court (Edwards v. Aquillard), teachers have (the) flexibility to present theories, besides evolution, about the origin of life.

I hope you are aware Intelligent Design is not a fringe viewpoint. More and more research scientists are seeing the evidence, since it is honest and compelling and becoming proponents at the expense of the established science community. Others are taking a stand. Gallup Poll surveys over the last 16 years show that only 10% of Americans believe pure chance and natural (random) process explain life.

Good luck in trying to do determine what is best for your students. The scientific method, investigation and study seem to take a back-seat to rhetoric and obfuscation. Remember, in class there is no such thing as a

2/3/03

dumb question. Only when questions are not asked will ignorance prevail.

Best regards,

Brad Cook
Avondale, MO 64117
Genrev22@cs.com

Mary Baldwin

From: Admissions [admissions@abc.edu]
Sent: Thursday, January 09, 2003 5:47 PM
To: bwest@access.k12.wv.us
Subject: response to policy 2520.3

I am in strong opposition to policy 2520.3.

To try to eliminate all reference to religion in public schools is unfortunate. In no way does a simple reference to or even practice of a specific religion provide any type of determination of endorsement of said religion by that school. Religion is a part of who we are as human beings, and Americans. To not allow teachers, students, school systems, etc... the opportunity to reference religions, religious exercises, or to even expose students to a variety of teachings and practices with what they may allow is to reject what and who we are as Americans and is against all principals and purposes of education. The problem arises when certain religions or religious practices are not allowed to be referenced or practiced, and some are.

The intent of trying to appease one by subjecting the many to unnecessary restrictions dismisses the rationale of striving for the "common good" which is what should be considered. Individualism becomes extreme when it dismisses the idea of ever suffering personal offense. Neither should decisions of this magnitude be made solely under pressure of minority thought, which is usually the case...a small minority fighting for its own rights as individuals at the expense of the rights of the majority (greater

good). The individual is to be respected and can be, but the principle of "toleration" as it is too often defined, disregards the issue of respect and demands that the individual's actions be accepted and allowed and embraced to the exclusion of the rights of the many.

Mary Baldwin

From: Ferguson839@cs.com
Sent: Thursday, January 09, 2003 6:30 PM
To: bwest@access.k12.wv.us
Subject: Policy 2520.3

I am writing in regard to Policy 2520.3. I feel our children should be given more than one option when it comes to explaining origins of life. I understand the theory of evolution has its validities as far as the science world has shown them, but I believe there may be other possible explanations. Our children should be allowed to think for themselves on some issues and this should be one of them. Evolution is only a theory, but it is being taught as if it was a fact therefore it is only one side of the explanation. Therefore other theories should be included in Policy 2520.3.

Sincerely,

Benjamin Ferguson
260 Bridge Court
Dry Creek, WV

25062

2/3/03

Mary Baldwin

From: Charles Porterfield [dcep@cwv.net]
Sent: Thursday, January 09, 2003 9:06 PM
To: bwest@access.k12.wv.us
Subject: Policy 2520.3

As healthcare professionals and parents, we support the inclusion of Intelligent Design in the science curriculum. Otherwise, exposure only to the theory of Evolution would result in a narrow education of our children. Thanks.

Charles Porterfield, DO

Denise Porterfield, MA, RD

Mary Baldwin

From: Erica Dillon [yesdillon@hotmail.com]

Sent: Thursday, January 09, 2003 9:25 PM

To: bwest@access.k12.wv.us

Subject: policy 2520.3

I am a parent and a teacher in the West Virginia school system. I do not like the fact that Policy 2520.3 is trying to teach children that evolution is a fact. I DO NOT want to have to teach this in my classroom nor have my child taught this in her classes. Please amend the policy to state that teachers have the academic freedom to discuss other theories in the classroom. Children should have the right to have other views presented and then think and make the decision for themselves. Please revise the policy to reflect my standards

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Mary Baldwin

From: Daniel [dkhoskins@charter.net]
Sent: Thursday, January 09, 2003 9:26 PM
To: bwest@access.k12.wv.us
Subject: Science Standards Comments

Ms. West,

When I first heard that the WV science standards were being revised, my mind went back to my 10th grade Biology class. Within the first week of school, my teacher stated that she wouldn't cover Evolution because it was too controversial. Students need to understand why it is a controversial subject and should be taught about the **scientific** evidence for and against evolutionary theory so that they may learn critical thinking skills and be able to make an educated and informed decision on the subject.

Daniel K. Hoskins
5913 Church Drive
Charleston, WV 25306

Mary Baldwin

From: George Canterbury [glc_25827@yahoo.com]

Sent: Thursday, January 09, 2003 9:42 PM

To: bwest@access.k12.wv.us

Subject: policy 2520.3

i'm sending this e-mail to let you know that i am
very opposed to the policy 2520.3 that will teach
you only evolution in science. i think that would be
very wrong.

thank you,
glc_25827@yahoo

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Yahoo! Mail Plus - Powerful. Affordable. Sign up now.

<http://mailplus.yahoo.com>

Mary Baldwin

From: angie smith [spanky115@hotmail.com]

Sent: Thursday, January 09, 2003 9:42 PM

To: BWest@access.K12.WV.US

Subject: LEAVE GOD IN SCHOOL

I OPPOSE 2520.3 GOD CREATED US!

ANGIE SMITH

The new MSN 8: smart spam protection and 2 months FREE*
<http://join.msn.com/?page=features/junkmail>

Mary Baldwin

From: Skrewdriverfan@aol.com
Sent: Thursday, January 09, 2003 10:26 PM
To: bwest@access.k12.wv.us
Subject: West Virginia Science Standards

Please recorde the following comment from my email for the publication which has a posting deadline of Jan. 10 Thank you, Aaron

The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade. This is wrong. Please change the standards to eliminate that problem.

Mary Baldwin

From: calmquist@nsource.com
Sent: Thursday, January 09, 2003 10:32 PM
To: bwest@access.k12.wv.us
Subject: WV Science Standards

Dear Ms. West:

I am a concerned parent residing in Kanawha County with three children currently in the elementary grades. I am a Senior Engineer at Columbia Gas with a degree in Petroleum Engineering having graduated with honors with a 3.6 GPA. Geological Sciences is something I understand quite well. But as an objective student of science, I haven't simply accepted the evolutionary dogma I was taught. I have done considerable other reading regarding matters of origins, regarding criticisms of evolutionary theory, and regarding evidences for intelligent design.

I have found the criticisms of evolution to be well founded. Some evolutionists have abandoned Darwinian 'gradual' evolution and espouse rapid and large changes from one species to another. This is referred to as punctuated equilibrium. They have had to resort to theories such as this that are much harder to believe simply because the evidence for Darwinian evolution is so poor. If Darwinian evolution were correct, there ought to be millions of intermediate forms in the fossil record. But as best as I can tell, there are no valid intermediate forms, though a few examples are confidently spoken of. But there should be millions of in-between forms! Numerous forgeries of supposed 'links' have been uncovered over the years, but most textbooks still present these forgeries as accepted scientific links, even though these 'links' are now clearly documented as forgeries.

Thus you can understand my concern when I read the new WV science standards and see that naturalism and Darwinian evolutionary theory are still set forth as a scientific fact that our students are to be taught -- without any opportunity for the teacher to present any of the several huge problems inherent with this theory. For example, evolutionary theory completely violates the first and second laws of thermodynamics! These are known observable scientific laws. And yet we are to believe that somehow in past years these laws could easily be abrogated so that evolution could occur. Every observable mutation we see today is harmful to life and reproduction, yet we are to believe that mutations in the past were beneficial ?!

Our students deserve better! They should be taught to think and not to accept things blindly. They should be given the opportunity to hear opinions that differ from the accepted norm. (I would be glad to assist our teachers by providing an outside opinion - to the extent that my work would allow, anyway.) As best as I can tell, the accepted norm is based more on religious conviction than on a true weighing of all the evidence. I am utterly amazed at how most evolutionists staunchly defend their faith with no willingness to evaluate the evidence.

It is thus my recommendation that the WV Science Standards be revised so

that the naturalistic assumptions of evolutionary theory be clearly exposed. The one-sided naturalistic teaching that natural objects and systems are not designed should be eliminated. Instead, an objective should be established stating that students should be able to critically analyze the evidences for naturalistic evolution and for intelligent design and be able to present what they perceive to be the best evidences for both theories.

It is also recommended to revise the Standards so that children are not introduced to origins science until they attain an age and maturity to be able to understand the philosophic implications of the competing theories, presumably around 10th grade or so.

Sincerely,

W. Craig Almquist
4803 Virginia Avenue
Charleston, WV 25304

Mary Baldwin

From: Robert C Patterson [curtcb68@juno.com]
Sent: Thursday, January 09, 2003 11:08 PM
To: bwest@access.k12.wv.us
Subject: Fw: A personal Plea

Ms. Brenda West
Building 6, Room 722
1900 Kanawha Blvd., East

Email: bwest@access.k12.wv.us

FAX: 558-1613

Dear Ms. West,

I have been requested to choose one of the following 16 comments that best expresses my heart felt belief. I can not make such a decision because each summaries how I believe about this subject. etc.

Thank your for your kind consideration,

Robert C. Patterson

626 Pioneer Lane

Charleston, WV 25312

Curtcb68@juno.com

Suggested comments (CHOOSE ONE):

1. We are worried about the teaching objectives of the West Virginia Science standards as they relate to the origin of life and its diversity. Please change the Standards so children are not indoctrinated with evolutionism and add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.
2. Although our origin is a legitimate scientific inquiry, it also is a subject that unavoidably impacts religious and nonreligious beliefs. As such, I believe it should be taught objectively without any philosophic, religious or naturalistic bias or assumption. Please change the standards so evolutionism does not dominate the instruction on origin and diversity of life.
3. Scientific objectivity will lead to good science and religious neutrality. Origins is a complex and highly controversial subject and should not be introduced to students until they attain the age and maturity necessary to fully understand given explanations and the implications of those explanations.
4. My concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" or naturalistic world view. This is wrong. Please change the standards to eliminate that problem.
5. The standards are explicitly premised on philosophical naturalism. Beginning in Kindergarten, children are to learn that they are merely natural objects that have not been designed for any particular purpose. They are to learn that, as natural objects, they just happen or "occur" via a purposeless and unguided "evolutionary" process. The same lesson is prescribed for each following grade level through the 12th grade. This is wrong. Please change the standards to eliminate that problem.
6. Teaching students that they are a part of a "natural world" that is not designed is philosophy and not science. It is the philosophy of Naturalism. Naturalism is a belief that life emerges via purely unguided natural processes and not by design. Naturalism is the fundamental tenet of atheism, agnosticism and secular humanism while design is the fundamental tenet of theistic religion. This is wrong. Please change the standards to eliminate that problem.
7. Science has not established via the scientific method or any accepted evidentiary basis that life is not designed. Instead a significant and growing body of evidence exists to the contrary. However, the proposed standards, while claiming that life is not designed, ignore evidence for design by setting no objectives for the investigation of the design hypothesis. This is wrong. Please change the standards to eliminate that problem.
8. The standards establish objectives that will lead to an understanding about "Evolution Only." Absent are objectives that will encourage critical analysis of that theory or any objective consideration of alternative theories. In this respect the standards are one sided and dogmatic. Their obvious objective is to promote a Naturalistic world view. This is wrong. Please change the standards to eliminate that problem.
9. Origins science is the science which seeks to answer the questions "What is the origin of life? What is the origin of the diversity of life? Where do we come from?" By seeking to discuss these questions with children, West Virginia has taken on an activity that will unavoidable impact religious and nonreligious beliefs. Rather than take sides on an issue so important to religion, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.

10. I suggest the standards be changed to promote critical thinking, scientific objectivity and religious neutrality regarding origins.

11. Please revise the Standards so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations. Also, please add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.

12. Please revise the Standards to eliminate the naturalistic teaching that natural objects and systems are not designed. Replace those one sided teachings with objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses. [In particular see Standard 3 and Standard 5 where students at every grade level are to learn that systems are divided into natural systems and designed systems and that the distinguishing feature of natural objects and man made objects, is that the former are not designed for a purpose.]

13. Please add to the Standards explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy.

14. Please add to the Standards objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science. [The unstated naturalistic assumption is that the natural world is not designed. Instead of identifying this assertion as a mere assumption, the standards imply that it is a self evident fact. Appropriate disclosure of the assumption is consistent with performance descriptors already contained in the standards, such as those that encourage students to "predict the impact of skepticism, bias, methodology, logical reasoning and creativity on scientific investigations."] Also, please add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.

Mary Baldwin

From: melissa hylton [nahylton@yahoo.com]
Sent: Thursday, January 09, 2003 11:11 PM
To: bwest@access.k12.wv.us
Subject: i oppose policy 2520.3

Myself and my mother-in-law, Judy Hylton (no email), would like to make it known that we oppose policy 2520.3 Evolution is not how we came to exist and shouldn't be taught in our schools. Darwin even admitted that we were created by God before he died.

Peace be With You

Melissa

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Mary Baldwin

From: J. B. Pitts [jpitts@nd.edu]
Sent: Friday, January 10, 2003 12:39 AM
To: bwest@access.k12.wv.us
Cc: jpitts@nd.edu
Subject: West Virginia science standards

Dear Ms. West,

As a physicist pursuing a second Ph.D., the second being in the philosophy and history of science, I have had a chance to look over some of the proposed West Virginia educational standards. I have also had a chance to look over the suggestions and comments posted at <http://www.IntelligentDesignNetwork.org/wvletter.pdf>. I find that these comments generally would improve education in West Virginia or anywhere else, so I encourage you to consider them seriously.

Best wishes,
James Brian Pitts
James Brian Pitts
Ph.D., physics (U. Texas at Austin)
gravitation

graduate student
history and philosophy of science
University of Notre Dame

Mary Baldwin

From: Mary Webb [merry_web@hotmail.com]

Sent: Friday, January 10, 2003 8:15 AM

To: bwest@access.k12.wv.us

I am writing regarding Policy 2520.3. I feel it is not right to teach students only one theory for origins of life. I think that in teaching our children, one of the most important things they should learn is to question different theories. To have an open mind regarding life origins as well as other facets of life, children should be taught all possible theories and then allowed, with parental guidance, to make their own choice as to what they should believe is true.

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Mary Baldwin

From: Business [business@abc.edu]
Sent: Friday, January 10, 2003 9:20 AM
To: bwest@access.k12.wv.us
Subject: Policy 2520.3

Atten: Ms. West

We would like to oppose Policy 2520.3. We understand this policy is trying to eliminate all religious education by only allowing evolution to be taught. We do not believe in evolution and would want the Biblical viewpoint presented as well. Thank you for allowing our voice to be counted.

Ed and Donna Chesley
PO Box ABC
Bradley, WV 25818

Donna Chesley
Secretary to the V.P. for Business
Phone - (304) 877-6428
Email - business@abc.edu
Home - (304) 877-5618
Home email - donnacl@inetone.net

Mary Baldwin

From: Melody Wallen [MWallen@lewis-goetz.com]

Sent: Friday, January 10, 2003 10:05 AM

To: bwest@access.k12.wv.us

Subject: Policy 2520.3

Ms. West:

I am writing you regarding policy 2520.3. As a parent of two daughters attending school in Raleigh County, I firmly believe that Intelligent Design should be included in the sciences along with the theory of evolution. Only teaching the theory of evolution, would not only limit the childrens' education, but cause more confusion for them, as well.

Please consider parents' opinions on this policy.

Thank you,

Melody Wallen

Mary Baldwin

From: david adler [dadlerwv@hotmail.com]
Sent: Friday, January 10, 2003 10:09 AM
To: bwest@access.k12.wv.us
Subject: WV Science Standards: Scientific Inquiry and Origins Teaching

Dear Ms. West -

Controversy surrounding the teaching of origins theory seems to be an ever-present issue.

Much evidence and most scientifically-minded people support the concept of naturalism and evolution. Yet each year new findings are incorporated into the naturalism / evolution model, significantly altering previous assumptions. Further, the proponents of origin-by-design have evidence that, to an open minded individual, clearly shows inconsistencies within the evolutionary model.

We are presented with a wonderful opportunity to teach our children how to honestly investigate multiple views in an area of scientific thought. From hypothesis to conclusion, we can choose one of three paths. We could choose to ignore certain scientific evidence, and teach origin-by-design only. We could choose to ignore other evidence, and teach natural / evolution origin only. In my opinion, either of these two approaches is wrong and would be a disservice to our children. The third choice is far better: to present both sides of this issue (in an unbiased manner) along with the supporting evidence, and teach our kids how to inquire objectively, think critically, and evaluate the results.

Now isn't this what science is all about?

I ask that the West Virginia Science Standards adopt this or a similar approach.

Thank you.

David Adler
St. Albans, WV

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Mary Baldwin

From: Kevin J Bahr [kevinbahr@juno.com]

Sent: Friday, January 10, 2003 12:17 PM

To: bwest@access.k12.wv.us

Subject: Policy 2520.3

I am writing regarding policy 2520.3. Our science classes are only teaching evolution. This is only a theory, but it's being taught as fact. If you have to make a decision regarding school policy, you don't only hear from the janitor do you? Or not just the financial department. Or not just the teachers. Or not just the students. You hear all the reasonable opinions and make a decision based on all the information. Our children deserve at least that much. Separation of church and state was established to protect the church from the government controlling it; not to keep God out of the school. I challenge you to travel to a muslim nation, or a hindu nation and tell them they can't pray to their god in public. Or even mention him as a theory. This nation was founded "under God", and the laws based on the bible. To remove God from the school system would be an outrage.

I thank you for your time and consideration in this matter.

Sincerely yours,
Kevin Bahr

Dr. David Stewart, Superintendent
West Virginia Department of Education
Capital Complex
Charleston, WV

Dr. Stewart,

The current comment response forms for the Standards and Objectives do not provide an opportunity to comment on the major problem with the Standards and Objectives for Science. The major problem here is that they are too unrealistic for effective instruction in grades 7-10. In grades 7-10 science instruction needs to become more focused. The Standards for these grades need to set forth a lab based coordinated and thematic science program that is consolidated and teachable.

A group of science teachers in Kanawha County have developed a working draft of Standards and Objectives for 7-10 Science that would improve the effectiveness of science instruction dramatically. These standards have the science processes and science content organized in a pattern that will empower teachers to teach more and students to learn more.

For a number of years we have struggled to implement the CATS program. We understand its strengths and weaknesses. Unlike the current revision out on comment which built on the weaknesses and is hard to understand and impossible to implement effectively, this working draft has kept the strengths and built a strong program on these strengths. This draft has organized the science standards into a format we can understand and will be able to implement.

We respectfully request your support for the adoption of a set of Standards and Objectives for 7-10 Science similar to those set forth in the working draft. Furthermore, I feel that if the State's Proposed Content Objectives stay the same, I will be forced to switch jobs to a different teaching area. The states proposed content area are so scattered that I find it hard to keep continuity within the classroom especially since there is no one textbook that covers all those objectives effectively. A textbook not aligned with the objectives is especially hard for beginning teachers as well as seasoned teachers. The proposed Kanawha County Objectives are much better but still need some work. Please work with the Science teachers of this state and help us improve science education even more. I look forward to hearing the state's opinion of the Kanawha County proposal.

Sincerely,

Nicholas P. Belmont

Mary Baldwin

From: Donald McCallister [dfmccallister@yahoo.com]
Sent: Friday, January 10, 2003 2:17 PM
To: bwest@access.k12.wv.us
Cc: Gov@wv.gov.org
Subject: West Virginia Science Standards-Policy 2520.3

TO: Ms. Brenda West
Office of Student Services and Assessment
Building 6, Room 722
1900 Kanawha Boulevard, East
Charleston, WV 25306-1613

From: Don McCallister
206 Vanvoorhis St.
Beckley, WV 25801

Dear Ms West:

I am writing to you today to offer my comments regarding Policy 2520.3, West Virginia State Science Standards.

The children of West Virginia deserve better than this one sided approach. Our children should be offered the opportunity to hear other sides if available, not only one side (and that side being a theory only that many, many scientists today believe is full of error with no physical or scientific proof.

On the other hand teachers and students of West Virginia should be allowed to teach and the students hear that another approach to this question of where did the earth come from and how did we get here is offered in a book called the Bible which written over 450 years ago in our English translation, unlike Darwin's theory has never to my knowledge scientifically or otherwise been proved to be scientifically or otherwise wrong. On the other hand I have heard the testimony of many scientist who have set out to disprove the Bible and have found it to be true and become believers in the book. Not only has it never been disproved but it remains the most read book ever written.

Now if the next thing you would say is that you are by law required to separate the Bible from education because of a "theory" separation of Church and state, I would offer that this is also a theory and upon proper examination of the facts is a flawed "theory". Upon examination of men who wrote our Constitution anyone wanting the facts would find that all but two of these men were either pastors or

elders in their respective churches or former churches and would in no way design a law that would keep the Bible out of the hands of teachers or students in America.

The other point I feel needs to be considered is an economic point for the State of West Virginia, The West Virginia Department of Education and your division. i believe if this policy #2520.3 is allowed to stand and no other theory or truth is taught in our public schools , there will be a mass exit over take place over the next two to three years from West Virginia public schools to private Christian schools because parents want their child to be taught all theories or truths about how and why the earth exists. If my theory is played out and West Virginia Schools as they have over the last several years loose more enrollment due to the policies could the Governor and the other budget bodies of this great state say less enrollment means less need for salaries in State Agencies. Governor Bob Wise is already correctly looking in this direction so I ask why would you and your department give them more to work with by allowing a policy that will drive more students, teachers and families out of our state system, and in doing so creating a situation which will surely create less students creating less need for people in the state agency.

I would offer a better use of department funds and personnel in looking into the theory that West Virginia has not lost as much enrollment as is stated but that most of that enrollment drop has switched to private schools and could such a restrictive policy as 252createreat the biggest exit to date causing loss to the West Virginia Public School funding.

Thank you for the opportunity to express my concerns and my comments.

GOD BLESS AMERICA, GOD BLESS WEST VIRGINIA, and GOD BLESS YOU.

Donald F. McCallister
206 Vanvoorthis St.
Beckley, WV 25801

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Mary Baldwin

From: Freddy Lilly [FLilly@lewis-goetz.com]

Sent: Friday, January 10, 2003 2:40 PM

To: BWEST@ACCESS.K12.WV.US

Subject: POLICY 2520.3

Please Teach Intelligent Design along with Evalution.

THANKS VERY MUCH

FREDDIE LILLY

Mary Baldwin

From: Debbie McVey [DMcVey@lewis-goetz.com]

Sent: Friday, January 10, 2003 2:44 PM

To: 'BWest@access.K12.WV.US'

Subject: Policy 2520.3

Please teach intelligent design along with evolution.

Thanks,
Debbie McVey

Mary Baldwin

From: Hollyjeanlilly@aol.com
Sent: Friday, January 10, 2003 2:38 PM
To: bwest@access.k12.wv.us
Subject: (no subject)

Ms. West,

We are writing to let you know that we DO NOT support Policy 2520.3. We don't believe that evolution should be taught to our students. THANKS, Robert and Elva Jean Lilly, 123 Walter St., Beckley, W.Va. 25801

Mary Baldwin

From: Joanne McCallister [jcmiteach@yahoo.com]
Sent: Friday, January 10, 2003 3:51 PM
To: bwest@access.k12.wv.us
Subject: Policy 2520.3

Dear Ms. West:

As a West Virginia teacher (St. Francis de Sales School, 4th grade), I feel all students in the state of West Virginia deserve to be taught all known views of how the earth came into being so they can process this information and make decisions for themselves.

They certainly get enough of one side in school and they should be presented all sides.

I certainly do not want only creation taught, but all evidence should be presented and explained.

Sincerely,

Joanne C. McCallister

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Mary Baldwin

From: Janelewisclay@aol.com

Sent: Friday, January 10, 2003 4:35 PM

To: bwest@access.k12.wv.us

Subject: darwinian evolution

. policy2520.3 appears to promote evolution as the only truescience regarding origins of life. evolution is only a theory. there is much disagreement within the scientific community regarding this theory. If this theory has any merit then it should be able to withstand critical examination. children should have other views to be able to think critically. please revise the policy to reflect this.

Mary Baldwin

From: Arielroth@cs.com
Sent: Friday, January 10, 2003 9:22 PM
To: bwest@access.k12.wv.us
Cc: jcalvert@worldnet.att.net
Subject: Comment on Science Standards

Dear Ms. West:

I have looked at the comments and suggestions made by the IDnet about the West Virginia Science Policy submitted on January 6, 2003. I favor these suggestions and any other ones that will introduce a spirit of inquiry and academic freedom in the science classroom. Science needs to be introduced as an open search for truth, not as a restricted and closed system of thought. In fairness and concern for all, alternatives to evolution need to be considered.

Ariel A. Roth, Ph.D., in Zoology, University of Michigan; Editor of ORIGINS for 23 years; Consultant and/or witness to the States of California, Oregon, and Arkansas regarding the teaching of origins.

Mary Baldwin

From: Anita [aplacidi@charter.net]
Sent: Friday, January 10, 2003 9:38 PM
To: bwest@access.k12.wv.us
Subject: I oppose policy2520.3

I don't think they should teach evolution in schools.

Outgoing mail is certified Virus Free.
Checked by AVG anti-virus system (<http://www.grisoft.com>).
Version: 6.0.441 / Virus Database: 247 - Release Date: 1/9/2003

Mary Baldwin

From: GenRev22@cs.com
Sent: Saturday, January 11, 2003 1:44 AM
To: bwest@access.k12.wv.us
Subject: Cobb County GA

Ms. West,

In my e-mail of yesterday I forgot to mention that the Cobb County, GA. school board recently voted to allow teachers the latitude to discuss both intelligent design and the naturalistic assumption that supports evolutionary theory:

"Discussion should be moderated to promote a sense of scientific inquiry and understanding of scientific methods and to distinguish between scientific and philosophical or religious issues."

Evolution is supported by a philosophical assumption that only natural causes exist. One can not really "understand" this issue without discussing the other cause: design.

Here is a press release regarding their choice.

+++++

Cobb County Gets It Right
By Larry Taylor

As a parent with three children in Cobb County, Georgia middle and high schools, I have been following with interest the evolution controversy that has divided our community for months. Now that the school board has issued its implementation guidelines for teachers, advocates on both sides of the issue are spinning the final outcome to proclaim victory. For parents and teachers alike to fully understand how the new policy guidelines will impact science instruction, a careful review of the facts may be helpful.

First, the new policy guidelines restrict the classroom instruction to the approved curriculum only. While on the surface this seems to be a defeat for the opponents of Darwinism, it is really a victory for fairness to those of all viewpoints. Upon careful review of my children's science textbooks, I have found no assertions that evolution on the grand scale (macro-evolution) has been proven to be true. In fact, the textbooks go out of their way to present macroevolution in vague terms such as "some scientist think" and "we'll never know for sure". Contrary to this uncertainty however, some Cobb science teachers insisted otherwise in public debates before the school board, and even went so far as to attack those holding opposing views as "uneducated", "right-wing", and "extremists", as well as an assortment of other outdated stereotypes. While these teachers are certainly free to hold these politically incorrect views, the new policy insures that their personal beliefs and biases are not interjected into the classroom instruction.

Second, the new policy guidelines mandate that teachers allow classroom discussion concerning the controversies surrounding evolution,

as long as the discussions remain scientific in nature. The policy goes on to state that it "may be appropriate to acknowledge that science itself has limits" and doesn't have all of the answers, and that discussions about scientific theories and religious beliefs need not be necessarily exclusive of each other. In other words, if a student would like to discuss in class the growing mountain of scientific evidence against macroevolution such as the troublesome fossil record and the lack of transitional fossils, then this policy guarantees the right to do so. The policy also opens the door to discussions about other scientific viewpoints and concepts such as "irreducible complexity" by Lehigh biochemist Dr. Michael Behe and "design inference" by Baylor mathematician Dr. William Dembski.

Third, the policy states that under no circumstances should teachers use instruction in an effort to coerce students to adopt a particular religious belief or set of beliefs. While this appropriately insures against a Christian teacher coercing a Jewish, Muslim, or agnostic student with religious indoctrination, it also correctly prohibits the teacher from indoctrinating a religious student with the naturalistic ideology that life arose spontaneously from nonliving matter with no assistance from a divine or intelligent agent. Furthermore, the policy instructs teachers to show respect for the personal religious beliefs of all students and to maintain a posture of neutrality towards religion, and forbids them from interjecting their personal faith-based beliefs, or lack thereof, into the classroom instruction.

The policy closes with a pledge of support for teachers who teach this controversial and divisive subject with professionalism and objectivity. Cobb County is blessed with some of the best and most dedicated teachers in America, and those that handle controversial subjects such as these with sensitivity, honesty and objectivity deserve our full support and appreciation. The Cobb school board also deserves credit for the courage and foresight to address this issue, and perhaps unwittingly, for creating a blueprint for other school districts on how science instruction need not be a divisive influence in a community.

Larry Taylor is a founding member of Parents For Truth In Cobb, an advocacy group supporting objective science instruction. For information or comments, send emails to: botay1@juno.com; or write to: Larry Taylor, Parents For Truth In Cobb; 1050 East Piedmont Rd., Suite E-103; Marietta, Ga., 30062.

+++++

Best regards,

Brad Cook
Avondale, MO 64117

Mary Baldwin

From: Joe Wynne [jwynne@charter.net]
Sent: Saturday, January 11, 2003 9:35 AM
To: bwest@access.k12.wv.us
Subject: Oppose Policy 2520.3
Importance: High

We would like to communicate that we do NOT support Policy 2520.3.

Mary Baldwin

From: Amanda Moore [manda_dayl@yahoo.com]
Sent: Saturday, January 11, 2003 2:09 PM
To: bwest@access.k12.wv.us; afawv@afo.net
Subject: Evolution policy #2520.3

To whom it may concern,

I write to voice my opinion and hopefully to influence those who represent us (as a nation) legally. I have recently heard about the law that's being voted on which could leave our children with no choice. Our nation cries constantly...when in favor of a more liberal choice...that we should have CHOICE. But, if we take away the option for our children to hear the story of Creation and even other theories (as some would say) then we make Evolution fact and not theory. As a Christian, I would like to see only Creation taught. However, in all fairness, I would expect that those who don't believe in the Bible would want options....other "theories". But, I ask that you not make our children's choice for them. If you do, I will assume that Evolution is no longer theory, but fact. Having studied it myself, I know the flaws of the theory of evolution. It is far from fact. As a voter and concerned parent! t...I hope that you'll hear the voice of us who stand against the abandonment of intelligent choice.

Thank you for your work on our behalf,

Amanda Moore

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Mary Baldwin

From: Barbara Smith [BASmith@dot.state.wv.us]
Sent: Monday, January 13, 2003 8:39 AM
To: bwest@access.k12.wv.us
Subject: standards sent 1-10-03--resent 1-13-03

Ms. Brenda West
Building 6, Room 722
1900 Kanawha Blvd., East
Charleston, WV 25305

The educational process in our schools should encourage many different concepts. Critical thinking, along with objective and thorough investigation of data and theories in all areas of study is necessary to ensure the success of the educational program. The focus on critical thinking is a reflection of the times in education. Schools should teach children how to think through ideas.

The two competing ideas on the origins of life should be discussed thoroughly. There is no scientific proof for either view. Both are un-testable ideas and require a measure of blind faith to even become a theory.

It is important that issues be treated seriously and with respect, and yet with the integrity of critical thought and serious examination.

I believe that ALL textbooks should state the truth, be held accountable for mistakes and any material that has been proven wrong should be taken out of the new books.

Please add to the Standards explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy.

Barbara Smith
409 Second Street
Evans, WV 25241

Mary Baldwin

From: carmen silliman [ht_silliman@hardynet.com]
Sent: Monday, January 13, 2003 8:55 AM
To: bwest@access.k12.wv.us
Cc: barbara@bfish.org
Subject: science

Hi Brenda

Someone sent me the article on ID and teaching of Evolution in WV schools and your address. I may be a strong Democrat but I am not a believer in evolution. There is such a thing as a "soul" involved with humans and Animals do not have souls. I fought this in the San Antonio Tx Schools in 1973. I guess you were to get comments. This is the web site.

> http://lyris.nmt.edu/cgi-bin/lyris.pl?enter=ceseducks&text_mode=0&lang=e

Carmen Silliman

Moorefield

ID is preparing an assault on science curriculum in W VA, last night

> there were no scientists at the school board meeting, not a good
> sign. If you have colleagues in WVA, please notify them that they
> need to act fast to avoid losing evolution from their K-12 curriculum
> and getting intelligent design instead.

> --

> Sarah L. Pallas, Ph.D.
> Associate Professor
> Dept. of Biology
> Georgia State University
> P.O. Box 4010
> Atlanta, GA 30302
> tel 404-651-1551, fax 404-651-2509

>

> Me again:

>

> West Virginia standards at <http://wvde.state.wv.us/> and on the left
> side, under "Board of Education" click on "Board Policies". The Science
> Standards are 2520.3.

>

> Send your comments to:

>

> Ms. Brenda West
> Office of Student Services and Assessment
> Building 6, Room 722, 1900 Kanawha Boulevard, East
> Charleston, West Virginia 25305-0330
> Email: bwest@access.k12.wv.us Fax: 558-1613

>

> Here are more contacts:

>

> Howard M. Persinger, Jr., President
> Sandra M. Chapman, Vice-President
> Ronald B. Spencer, Secretary
> Delores W. Cook, Member
> Barbara N. Fish, Member
> Sheila M. Hamilton, Member
> Paul J. Morris, Member
> Dr. Michael Mullen, Ex Officio
> Chancellor, The West Virginia Higher Education Policy Commission
> Dr. David Stewart, Ex Officio

Mary Baldwin

From: Mekisner@aol.com

Sent: Tuesday, January 14, 2003 7:08 PM

To: bwest@access.k12.wv.us

Subject: RE:Proposed Science Standards

My concern is that the proposed West Virginia Standards do not reflect objectivity in teaching objectives for origins science. Instead they seek to promote an "Evolution Only" as a naturalistic world view. This is dogmatic. Please change the standards to eliminate that problem.

Origins science should seek to answer the questions: What is the origin of life? What is the origin of the diversity of life? Where do we come from? By seeking to discuss these questions with children, West Virginia has taken unavoidable impact on religious and non-religious sec rather than take sides on an issue, the standards should address the subject with strict scientific objectivity. Please change the standards to add objectives that would encourage students to investigate and critically analyze the evidence which supports both the design and naturalistic hypotheses.

Thanks for listening.

mekisner@aol.com

Mary Baldwin

From: Ruby, Steve [SRuby@wv.gov.org]
Sent: Tuesday, January 14, 2003 11:04 PM
To: bwest@access.k12.wv.us
Subject: 2520.3

Brenda,

My name is Steve Ruby; I work for Secretary Goodwin. I'm not sure if the Secretary's asked you yet, but at the Governor's request, we were wondering if you'd mind sharing with us any comments you received on policy 2520.3 during the comment period. We're trying to gauge the likelihood of any sort of public controversy over the natural selection provisions of the policy, so if you have any idea that the intelligent design folks are going to raise a fuss, I'd appreciate a heads-up. Thanks!

Best,

Steve Ruby
Special Assistant for Policy
Office of the Secretary of Education and the Arts
304.558.2440

Mary Baldwin

From: John Parks [JParks@wvutech.edu]
Sent: Wednesday, January 15, 2003 9:52 AM
To: bwest@access.k12.wv.us
Subject: Science in West Virginia

Hi Brenda! I have been given your name as a contact person in the Board office as a person to whom I could send a thought. I am a Science Professor at WV Tech and fully support the teaching of science and biology with the perspective that life has changed though time and will continue to change through time, that indeed, survival of the species is randomly based on the selection of genes that aid the survival of the species in an ever changing world. The history of this earth fully supports this view, and to even consider that "somebody" designed the system is absolutely ridiculous, and, certainly outside of our attempt to educate people. If I can be of assistance just let me know. Thank You, John Parks

Mary Baldwin

From: Dawn Warfield [warfield_dawn@hotmail.com]
Sent: Thursday, January 16, 2003 11:32 AM
To: bwest@access.k12.wv.us
Subject: Science Standards

Ms. West:

PLEASE do not replace information about evolution in our children's science textbooks with the so-called "Intelligent Design" theories advocated by nuts like the Raelians.

Dawn E. Warfield
1535 Lee Street, East
Charleston, WV 25311

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Intelligent Design network, inc.

P.O. Box 14702, Shawnee Mission, Kansas 66285-4702
(913) 268-0852; IDnet@att.net
www.IntelligentDesignnetwork.org

RECEIVED

JAN 09 2003

January 6, 2003

Brenda West
Office of Student Services and Assessment
West Virginia Department of Education
1900 Kanawha Boulevard, East
Building 6, Room 722
Charleston, WV 25305-0330

Re: Comments and Suggestions for the West Virginia SCIENCE – POLICY 2520.3
Science Content Standards and Objectives for West Virginia Schools (the
“Policy”)

Dear Ms. West,

Members of IDnet who have children enrolled in West Virginia public schools have requested our comments on proposed West Virginia SCIENCE – POLICY 2520.3 (the “Policy”), which may be found on your web site at: http://wvde.state.wv.us/policies/p2520_ne.html. This letter reflects those comments.

Intelligent Design network, inc., is a national organization focused on the objective conduct and teaching of origins science - origins science that is conducted and taught without philosophic, religious or naturalistic bias or assumption. Intelligent design is a central aspect of that focus because current public school curricula generally use a naturalistic bias or assumption that life and its diversity are not the product of any intelligent cause. Instead, students are taught that life and its diversity result only from unguided natural processes. This is not a scientific conclusion, but rather a philosophical one that is contrary to a growing amount of scientific evidence which indicates that the apparent design we see in nature may reflect actual design. Accordingly, we believe that public school use of a naturalistic assumption against design is inappropriate for pedagogical, logical, scientific and legal reasons.

A number of materials regarding design theory and the issues addressed in this letter may be found at <http://www.IntelligentDesignNetwork.org/teachingresources.htm>. For a general discussion of the scientific and legal issues we suggest you review *Teaching Origins Science in Public Schools* at <http://www.IntelligentDesignNetwork.org/legalopinion.htm>. A short and more focused discussion of the issues may be found in a memorandum that we recently posted in response to a resolution of the American Association for the Advancement of Science (AAAS) at <http://www.IntelligentDesignNetwork.org/ResponsetoAAAS.pdf>.

Summary of Suggestions

We are listing below general changes that we believe should be made to the Policy to ensure that it deals with the origin of life and the origin of the diversity of life ("origins science") in a scientifically objective manner. We believe the Board should address these substantive issues. If it accepts their basic premise, then it should direct detailed revisions that will implement them. Our comments are limited to those aspects of the Policy that deal with or impact teachings about biological origins.

Following the summary we provide an explanation for the basis of each general suggestion. At the end of each explanation we have included specific recommendations to partially implement the general suggestions. Following the end of the letter we have attached a two-page document which summarizes both the general suggestions and specific implementing recommendations.

We are also attaching your standard comment form with cross references to applicable provisions of this letter.

Generally, we believe the policy should be revised to reflect the following general concepts:

1. Revise the policy to remove any implication that humans are "living objects."
2. Revise the Standards to eliminate the naturalistic doctrine that natural objects and systems (natural phenomena, including life and its diversity), are not designed. Replace the doctrine with objectives that would encourage students to investigate and critically analyze the theories and evidence which supports both the design and naturalistic hypotheses.
3. Revise the Policy so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations.
4. Add explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophical, naturalistic or religious bias or assumption and (b) help students think critically about evolutionary theory and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy.
5. Add objectives that will require students to learn about the naturalistic assumption used in current origins science and the effect that assumption has on textbook explanations, particularly in light of the historical character of origins science.

Explanation

1. **Revise the policy to remove any implication that humans are “living objects.”**

The standards introduce students, beginning at a very early age, to the concept that all “living” things are “objects.” According to SC.1.4.1 first graders are to learn that natural objects are either “living or non-living.”

“SC.1.4.1 *classify objects as living or non-living.*”

According to Webster’s Third New International Dictionary, an object is a “discrete visible or tangible thing.” Although humans have physical characteristics, they also have non-physical elements such as consciousness, “free will,” minds and feelings. What truly defines each of us are our intangible or “invisible” non-physical attributes that account for our character, behavior, values, personality and commitments. We are what we *choose* to be. We never really conceive of ourselves as “objects.” Humans are sentient “beings.”

We recognize that you and other state officials responsible for the policy do not likely intend for the Policy to teach children that they are nothing more than material objects. However, considering the naturalistic and materialistic philosophy that undergirds the Policy, we believe that referring to living beings or entities as **objects** within the context of the Policy as it is presently written may have that *effect*. Furthermore, we believe it is inappropriate for the State to suggest to children that they are *living objects*. They are really human beings. When their bodies become nothing more than objects, they will then be classified as dead - non-living.

Implementing Recommendations. To implement this suggestion the Policy could be revised to expand the concept of “*object*” with “*phenomena*,” “*entities*” and “*human beings*.” Thus, SC 1.4.1 could be revised to read as follows:

“SC.1.4.1 *classify objects, phenomena or entities as living or non-living.*”

2. **Revise the Standards to eliminate the naturalistic doctrine that “natural objects” (natural phenomena, including life and its diversity), are not designed. Replace the doctrine with objectives that would encourage students to investigate and critically analyze the theories and evidence that supports both the design and naturalistic hypotheses.**

The Policy Seeks to Teach that Life is not Designed

The Policy appears to have as its core a naturalistic assumption that life and its diversity derive only from natural processes and not by design. Naturalism is “the doctrine that cause-and-effect laws (as of physics and chemistry) are adequate to account for all phenomena and that teleological [design] conceptions of nature are invalid” (*Webster’s Third New International Dictionary of the English Language, Unabridged*, 1993). Naturalism is a philosophy and not a proven scientific theory or fact.

The Policy promotes the philosophy of Naturalism by seeking to imbue students with a belief that natural objects (which includes living objects) are not designed. This teaching is embraced by the first and third general objectives of Standard 3, the second general objective of Standard 5, and specific objectives under Standard 4 that focus on teaching only naturalistic theories of origins.

The naturalistic view is promoted by the second general objective of Standard 5. Under this standard students are required to learn to ***"distinguish between natural and man-made objects."***

"Students *will*: demonstrate the ability to distinguish between natural and man-made objects."

Although the distinguishing characteristic between a "natural object" and a "man-made object," is not expressly explained by this "objective," the NAS source of the objective and other West Virginia objectives provide the explanation; - one is designed, while the other is not. The West Virginia Policy has been taken from the framework of Science Content Standards proposed by the National Academy of Science in its "National Science Education Standards." These may be found at: <http://www.nap.edu/readingroom/books/nses/html/6a.html>. As explained by an excerpt from the National Academy of Sciences Science Content Standard E, the difference between a natural object and a man made object is that natural objects are not designed. They just ***"occur."***

"UNDERSTANDING ABOUT SCIENCE AND TECHNOLOGY

- People have always had questions about their world. Science is one way of answering questions and explaining the ***natural world*** [as distinguished from the ***"designed world."***]

ABILITIES TO DISTINGUISH BETWEEN NATURAL OBJECTS AND OBJECTS MADE BY HUMANS

- Some ***objects occur*** in nature; others have been ***designed and made*** by people to ***solve human problems*** and enhance the quality of life.
- ***Objects*** can be categorized into two groups, ***natural*** and ***designed."***
(See <http://www.nap.edu/readingroom/books/nses/html/6c.html#csck4>)

As we have already learned under SC .1.4.1 , "objects" are either "living or non-living." Thus, by the end of the first grade, students are to learn that they are merely ***living natural objects*** that are not designed. They are to learn that they just ***"occur."*** They are merely ***"occurrences."***

Objects that have been made by humans are designed; - they have been ***"made"*** for a ***"purpose."*** This clearly implies that natural objects, like students, have not been ***"made"*** or ***"designed"*** for a ***"purpose."*** This teaching reflects the fundamental tenet of naturalism that ***"teleological [design] conceptions of nature are invalid."***

The teaching that we are not designed, is reinforced by the general objectives of proposed West Virginia Standard 3:

"Standard 3: Unifying Themes (SC.S.3)

Students will:

- demonstrate an understanding of interdependent themes present in the **natural and designed world** (e.g., systems, order and organization; evidence, models and explanation; constancy, change, and measurement; equilibrium and evolution; form and function),

- demonstrate the ability to draw conclusions about and predict changes in **natural and designed systems.**"

The teaching that we are not designed is to be mastered by the end of the first grade:

"SC.1.5.1 distinguish between natural and man-made objects."

Teaching that life is not designed is scientifically and pedagogically inappropriate.

We believe it is inappropriate for the State to teach that life is not designed for scientific, pedagogical and legal reasons.

The conclusion that life is not designed is a philosophical rather than a scientific conclusion. An extraordinary amount of scientific evidence supports a design inference. Not only do biologists acknowledge that living systems appear to be designed for a purpose, a growing body of scientific evidence suggests that the design we see in living systems is real and not just an illusion [For a brief discussion of the evidence see our memorandum to the AAAS dated December 19, 2002 at <http://www.IntelligentDesignNetwork.org/responsetoaaas.pdf>.]

Every day the scientific evidence of design becomes more compelling as we peer into the awesome complex of cellular systems and see wonders never before imagined. Dr. Gene Myers, a lead scientist on the human genome project was interviewed after his team announced the mapping of the human genome. The following is the report of the dialogue between Dr. Myers and Tom Abate, a reporter for the San Francisco Chronicle:

"Now, with the pressure off, this former University of Arizona professor waxed philosophical on the code his team had cracked.

"**'What really astounds me is the architecture of life,'** he [Dr. Myers] said. **'The system is extremely complex. It's like it was designed.'**"

"My ears perked up.

"Designed? Doesn't that imply a designer, an intelligence, something more than the fortuitous bumping together of chemicals in the primordial slime?

"Myers thought before he replied. '**There's a huge intelligence there. I don't see that as being unscientific.** Others may, but not me.'" [Tom Abate, "*Human Genome Map Has Scientists Talking About the Divine. Surprisingly Low Number of Genes Raises Big Questions*," [San Francisco Chronicle (February 19, 2001)].

As Dr. Myers alluded, the conclusion that natural objects are not designed is a philosophic rather than an evidentiary conclusion. It merely reflects a philosophical commitment to **Naturalism**. The use of this preconception by science institutions was recently acknowledged in the July 2002 issue of the *Scientific American*: "**A central tenet of modern science is methodological naturalism.**" (J. Rennie, editor). Methodological naturalism is also called *scientific materialism*. It holds that only natural explanations of phenomena are allowed in science (regardless of whether or not they are true), and that design conceptions of nature are invalid, not as an evidentiary matter, but as a philosophical preconception.

The commitment to a naturalistic world view was explained in 1997 by Professor Richard Lewontin, a geneticist, as follows:

".... We take the side of science *in spite* of the **patent absurdity of some of its constructs**, *in spite* of its failure to fulfil many of its extravagant promises of health and life, *in spite* of the tolerance of the scientific community for just-so stories, because *we have a prior commitment, a commitment to materialism*. It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that **we are forced by our *a priori* adherence to material causes** to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counterintuitive, no matter how mystifying to the uninitiated. **Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door.**" (emphasis added) [Richard Lewontin, *Billions and Billions of Demons*, (*The New York Review*, January 9, 1997, p. 31)]

Although this "**prior commitment**" may have some utility in *experimental* sciences like physics and chemistry, the **commitment** destroys objectivity in subjective *historical* sciences like biological origins, particularly where bias or preconception is not disclosed. This **commitment** permits only one answer to the religiously charged question - "**Where did we come from?**" According to this naturalistic bias, the only allowable answer to this question is that we are the result of a purely natural process, blind and unguided, and not one directed by an intelligence.

Teaching that we are merely natural objects that are not designed is the vehicle for advancing this philosophy. Teaching this philosophy while simultaneously omitting discussion of the design alternative and its supporting evidence amounts to nothing more than a form of indoctrination.

A decision to exclude objective consideration of a body of evidence relevant to the origin of life and its diversity for philosophic reasons is inconsistent with logic, the scientific method and the proposed learning objectives under the Policy. That method and those objectives are focused on the elimination of bias so that the evidence will dictate explanation rather than a preconception of what the explanation "should be."

"SC.9.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, *objectivity*, openness, *skepticism*, appreciation, diligence, *integrity*, *ethical practice*, fairness, creativity).

"SC.9.2.8 formulate and revise scientific explanations and models *using logic and evidence; recognize alternative explanations*; communicate and defend a scientific argument).

Teaching that life is not designed is Constitutionally inappropriate.

State indoctrination of only one world view about where we come from also raises a Constitutional question. In our view state sponsored censorship of design theory in pursuit of a naturalistic world view conflicts directly with the requirement of the Establishment clause of the First Amendment that government be neutral with respect to its practices that touch religion.

When a public school chooses to discuss with children the question "*Where do we come from?*" the school has chosen to engage in a discussion that unavoidably impacts religion. Metaphorically, it has leaped over the wall that separates Church from State. Any explanation to this fundamental question will positively or negatively impact religious and nonreligious beliefs. A naturalistic answer to this question negatively impacts theistic religions and supports nonreligions like atheism, agnosticism and secular humanism. A design inference supports (but does not require) theism and challenges core tenets of atheism, agnosticism and secular humanism. However, implications by themselves do not make a religion. Neither evolution nor design theory need be religious or non-religious so long as each is genuinely open to testing, criticism, falsification and replacement by a better explanation, and so long as neither demands acceptance or adherence.

The problem is that the West Virginia Policy appears to seek adherence by students in a naturalistic world view. That policy not only ignores design theory, it overtly teaches that natural objects like humans, are not designed.

The Supreme Court has held that a state practice that "touches religion" must be neutral, not only between "religion and religion" but also between "religion and nonreligion." Actual indoctrination of students in a world view that supports atheism, agnosticism and secular humanism and that denigrates theistic religions amounts to the state taking sides in a debate between "religion and nonreligion." It is the antithesis of neutrality toward religion.

In *Epperson v. Arkansas*, the Supreme Court held that it was inappropriate for a state to take sides on a religious issue by censoring one of multiple theories of origins. Importantly it held that the neutrality that is required inheres not only between differing religious viewpoints, but also between “religion and nonreligion.”

“Government in our democracy, state and nation, must be neutral in matters of religious theory, doctrine, and practice. **It may not be hostile to any religion** or to the advocacy of no-religion; and it may not aid, or foster or promote one religion or religious theory against another or even against the militant opposite. **The First Amendment mandates government neutrality** between religion and religion, and **between religion and nonreligion.**”

“As early as 1872, this Court said: ‘The law knows no heresy and is **committed to the support of no dogma, the establishment of no sect.**’”

“Judicial interposition in the operation of the public school system of the Nation raises problems requiring care and restraint. Our courts, however, have not failed to apply the First Amendment’s mandate in our educational system where essential to safeguard the fundamental values of freedom of speech and inquiry and of belief....’[t]he vigilant protection of constitutional freedoms is nowhere more vital than in the community of American schools,’ *Shelton v. Tucker*, 364 U.S. 479, 487 (1960). As this Court said in *Keishian v. Board of Regents*, **the First Amendment ‘does not tolerate laws that cast a pall of orthodoxy over the classroom.’** 385 U.S. 589, 603 (1967).”

“.....**the State may not adopt programs or practices in its public schools or colleges which ‘aid or oppose’ any religion.** *Id.* at 225. **This prohibition is absolute. It forbids alike the preference of a religious doctrine or the prohibition of theory which is deemed antagonistic to a particular dogma.**” (emphasis added)

Recent Supreme Court decisions have reiterated the need for the state to be neutral when it engages in a practice that “touches” religion. In the June 2001 case of *Good News Club v. Milford School District* the Court held that the state violated its obligation of neutrality when it censored after hours use of its facilities by religious clubs. In the 2002 case of *Zelman v. Harris* the Court found that the required neutrality was satisfied when a state program did not *take sides* between “religious and nonreligious” schools.

Contrary to *Epperson*, *Zelman* and *Good News*, the proposed Policy appears to take sides on an issue that impacts religion and nonreligion. The Policy has as its objective the

teaching of students a naturalistic world view - a view that supports agnosticism, atheism and secular humanism and that is antagonistic to theistic religions. For an in-depth discussion of the legal issues see <http://www.intelligentdesignnetwork.org/LegalOpinion.htm>

Implementing Recommendations. The obvious solution to this problem is to replace the teaching that life is not designed with teachings that seek to have students explore the scientific evidence on both sides of that issue in an objective and unbiased way. This will yield a practice that is not only consistent with logic and the scientific method, but one that is also constitutionally neutral with regard to a subject that unavoidably impacts religion and nonreligion. The following is a replacement objective that would accomplish that goal:

“SC 10.4.x.1 Understand the scientific evidence and arguments for and against the hypothesis that life and its diversity results only from unguided, natural processes.”

3. **Revise the Policy so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophical implications of those explanations.**

After teaching first graders that life is not designed, the Policy carries forward this naturalistic theme by introducing at an early age the complex Darwinian evolutionary concepts of “adaptation,” common ancestry and natural selection as basics parts of primary education. Thus, in the third grade students are to learn about biological adaptation:

“SC.3.4.3 compare physical characteristics and behaviors of living organisms and explain how they are *adapted* to a specific environment (e.g., beaks and feet in birds, seed dispersal, camouflage, different types of flowers).”

Adapt means “2: to adjust (oneself) to particular conditions or ways: bring (oneself) into harmony with a particular environment: ACCLIMATIZE (syn: adjust)” [Random House Webster’s Unabridged Dictionary (1999)]

While it is true that living systems appear to be “fit” for their environments, it is not clear that the specific characteristics that enable them to be fit have resulted via adaptation via natural processes or via design by an intelligent cause. Based on the available evidence one could logically infer in a scientifically reasonable way that in some respects life is fitted to its environments, not by adaptation, but by design.

The theme of change via natural rather than intelligent processes is carried on into the fourth grade:

“SC.4.4.5 understand that plants and animals closely resemble their parents and that some characteristics are inherited from the parents and *others result from interaction with the environment.*

This explanation holds that change results only from inheritance or environmental circumstances - natural processes. Students are not invited to consider the alternative or the evidence that supports the alternative notion that the apparent design we see in nature is not just an illusion. It is undisputed that variation within a species may result from natural selection. That is "microevolution." However, no coherent naturalistic theory has been postulated for the existence of life itself and considerable scientific controversy exists as to whether natural selection is sufficient to account for all of the diversity of life. It is inappropriate to begin to lead children to believe something that is controversial and that they are not equipped to understand.

The complexity of the ideas is even confusing to the naturalists that espouse naturalistic theories of the origin of diversity. In the NAS pamphlet on *Teaching About Evolution and the Nature of Science* a "common misconception" is explained:

"One common misconception among students is that individual organisms change their characteristics in response to the environment. In other words, students often think that the environment acts on individual organisms to generate physical characteristics that can then be passed on genetically to offspring. But selection can work only on the genetic variation that already is present in any new generation, and **genetic variation occurs randomly, not in response to the needs of a population or organism.** In this sense, as Francois Jacob has written, evolution is a "tinkerer, not an engineer."² **Evolution does not design new organisms; rather, new organisms emerge from the inherent genetic variation that occurs in organisms.**"

The conclusion that changes in biological software occur only by a random mechanism is highly controversial, and is simply a reflection of a prior **commitment** to material and natural causes only.

In the fifth grade, students are introduced to natural selection:

"SC.5.4.6 explain how the different characteristics of plants and animals help them to survive in different niches and environments including adaptations, **natural selection**, extinction."

The capacity of natural selection to explain all the diversity of life is highly controversial and has not been experimentally confirmed. It is a speculative theory based on circumstantial evidence about singular events that have occurred in the distant past that has not been tested against the evidence that supports the design hypothesis. We believe it should not be discussed until students have been provided with (a) a general science background that will enable them to understand the scientific issues that bear on the theory and (b) the evidence both for and against the theory. This fifth grade objective seems to put the cart before the horse.

The focus on change via natural processes rather than design is further emphasized in the seventh grade:

“SC.7.4.7 evaluate how the different *adaptations* and life cycles of plants and animals help them to survive in different niches and environments (e.g., inherited and *acquired adaptations*).

SC.7.4.8 analyze how changes in the environment have led to reproductive *adaptations through natural selection*.

The focus is to show that changes occur in living systems via a random natural process and not by design. Again, we think the cart is before the horse.

In the eighth grade students are introduced to a central and very controversial evolutionary thesis - that similarities in embryological development of very diverse organisms is evidence of each being derived from a common ancestor:

“SC.8.4.8 examine how patterns of human development are similar to other vertebrates.”

Textbooks typically seek to prove this concept by showing “artistic” illustrations of embryos of various vertebrates that all appear to look alike. This *similarity* is attributed to the existence of a common ancestor. In a recent book, a cell and molecular biologist points out that the illustrations have been drawn to intentional distort the true picture of embryological development [Jonathan Wells, *Icons of Evolution - Science or Myth? Why Much of What We Teach About Evolution is Wrong*, Chapter 5 (Regnery, 2000)]. In fact embryos of different vertebrates are very *dissimilar*.

The discussion continues in the tenth grade along with a discussion of fossil evidence of evolution:

Evolution and Interdependence of Organisms

SC.10.4.8 compare the embryonic development of invertebrate and vertebrate animals (e.g., ontogeny and phylogeny, diversity, taxonomy).

SC.10.4.10 recognize that fossil records provide a scientific explanation for variation in the species and common ancestors.

SC.10.4.11 relate the role of natural selection to the development, diversity and or extinction of a species.

There is no essential disagreement that the fossil record indicates significant change over time, together with a progressive increase in complexity. However, the evidentiary value of the fossil record to explain the cause of the diversity is exceedingly controversial. In many respects

the fossil record is more consistent with design theory. Darwin predicted that the fossil record would reflect gradual increases in complexity over time. Instead, the record actually reflects sudden bursts of increased complexity and long periods of stasis. This pattern significantly decreases the time available for the production of complex systems via chance mechanisms. It also is a pattern that is more consistent with the pattern of development of technology - a design process. In any event, the question is an historical question that can not be validated by experiment. It seems highly inappropriate to teach children that the fossil record, as a matter of fact, reflects a scientific explanation for the variation in species and common ancestry. They need to understand the evidence and arguments on both sides of the issue to become properly informed decision makers.

At the AB level, students are to learn the following:

AB.4.21 discuss evidence of evolution and natural selection, including examples such as peppered moth, fossil records, biogeography, molecular biology and comparative anatomy.

All of these evidences for evolution are extremely controversial from a scientific standpoint. The example of variation in peppered moths as evidence of evolution has recently been discredited as a scientific hoax. See chapter 7 of *Icons of Evolution* and the recently published book by Judith Hooper *Of Moths and Men* (Norton, 2002).

The selective focus on only natural explanations that will support the **commitment** to naturalism is indicated by this reference to research projects that omits reference to current authors that have criticized evolutionary ideas.

AB.4.23 research pioneers and current authors of evolutionary ideas.

For lists of over 200 scientists, most of whom hold doctoral degrees, that have questioned evolutionary theory and reasons why "Evolution Only" is so controversial see: ***Recent Polls and Congress Show a Demand For Objectivity in Origins Science*** at <http://www.intelligentdesignnetwork.org/Polls.PDF>, and ***Ten Reasons why Evolution Only is Scientifically Controversial*** at: <http://www.intelligentdesignnetwork.org/tenreas.PDF>.

Implementing Recommendation. In conclusion we believe the Policy should be revised so that children are not introduced to origins science until they attain an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophic implications of those explanations. When they are introduced to the subject, perhaps at the 10th grade level, they should be given all the material facts relevant to the issue of ***where do we come from?*** This will then equip them to make informed decisions about matters that may have a major impact on their lives.

This suggestion could be implemented by deleting the following objectives in grades three through eight (together with any repetitions of those objectives during those grades): SC 3.43, SC 4.45, SC 5.46, SC 7.47, SC 7.48, and SC 8.48.

4. Add explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophical, naturalistic or religious bias or assumption and (b) help students think critically about evolutionary theory and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy.

The standards contain a number of excellent objectives regarding the need to evaluate all scientific theories critically and with an open mind:

- SC.6.2.8 use *inferential reasoning* to make *logical conclusions* from collected data.
- SC.8.2.3 apply *skepticism*, careful methods, logical reasoning and creativity in investigating the observable universe.
- SC.9.2.1 model and exhibit the skills, attitudes and/or values of scientific inquiry (e.g., curiosity, logic, *objectivity*, openness, *skepticism*, appreciation, diligence, *integrity*, *ethical practice*, fairness, creativity).
- SC.9.2.8 design, conduct, evaluate and revise experiments (e.g., *identify questions and concepts that guide investigations*; design investigations; identify independent and dependent variables in experimental investigations; manipulate variables to extend experimental activities; use technology and mathematics to improve investigations and communications; formulate and revise scientific explanations and models *using logic and evidence*; *recognize alternative explanations*; communicate and defend a scientific argument).

However, students are not encouraged to use these scientific methods of critical analysis when they address evolutionary theory and origins science. Indeed, teachers that have even attempted to criticize evolutionary theory have been subjected to economic sanctions, loss of employment, reassignment and insult. Recently the ACLU filed suit against a sticker being placed on text books that simply advises students that evolutionary theory should be critically considered:

"This textbook contains material on evolution. Evolution is a theory, not a fact, regarding the origin of living things. This material should be approached with an open mind, studied carefully, and critically considered."

This censorship of criticisms of evolution and discussion of design theory merely demonstrates the *commitment to naturalism* that undergirds the teaching philosophy of national science organizations and the Policy. As a cure to the non-disclosed underlying naturalistic assumption and bias against criticisms of evolutionary theory, the Policy needs to expressly make these principles of objectivity applicable to evolutionary theory and origins science.

The need for objectivity and the elimination of bias has recently been expressed by Congress when it approved the No Child Left Behind Act and its accompanying Conference Committee Report, which states the following:

“The Conferees recognize that a quality science education should prepare students to distinguish the data and testable theories of science from religious or philosophical claims that are made in the name of science. **Where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand the full range of scientific views that exist, why such topics may generate controversy, and how scientific discoveries can profoundly affect society.**”

[No Child Left Behind Act of 2001, Conference Report to Accompany H.R. 1, page 703, (December 13, 2001, House Report No. 107-334)]

Implementing Recommendation. An objective that would satisfy this end might be phrased like the following:

SC 10.x.x.6 Understand scientific criticisms of evolutionary theory and the full range of scientific views that exist regarding origins of life and why origins science may generate controversy.

5. **Add objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science.**

The Policy reflects two critical omissions. First, it fails to require students to understand the underlying *naturalistic bias or commitment* that is actually reflected in the Policy, that is used by many evolutionary biologists to influence their investigations and explanations, and that inheres in virtually all biology textbooks. Secondly, the Policy fails to require students to understand that explanations about the origin of life and its diversity are by their very nature subjective “historical narratives” rather than facts or laws that have been scientifically confirmed by experiment.

The need to disclose the nature and effect of bias is explained by the National Academy of Sciences in its Publication *Science for All Americans On Line*:

“When faced with a claim that something is true, scientists respond by asking what evidence supports it. *But scientific evidence can be biased* in how the data are interpreted, in the recording or reporting of the data, *or even in the choice of what data to consider in the first place.*”

“Bias attributable to the investigator, the sample, the method, or the instrument may not be completely avoidable in every instance, but *scientists want to know the possible sources of bias and how bias is likely to influence evidence.* Scientists *want, and are expected,*

to be as *alert to possible bias* in their own work *as in that of other scientists*, although such objectivity is not always achieved.”
(emphasis added)

The problem here is not with undisclosed bias among a few independent investigators. It is with an undisclosed bias at the institutional level. The proposed West Virginia standards incorporate that bias by seeking to imbue students with the belief that they are merely natural objects that just occur rather than sentient humans that have been designed for a purpose.

However, contrary to the NAS guidelines, the standards contain no objectives for the disclosure of this bias to students. The failure to disclose that bias can reasonably be expected to lead students to take the naturalistic explanations at face value without knowledge that the explanations are affected by a very selective and naturalistic “*choice of what data to consider in the first place.*” Clearly, objectives are needed to show students how this naturalistic bias affects explanations about evolutionary theory.

Implementing Recommendation. An objective that could be incorporated into the standards to achieve this result would be as follows:

“SC 10.x.x.4 Understand that many explanations regarding the origin of life and the origin of the diversity of life are based in part on a naturalistic assumption that phenomena result only from natural causes and not by design. Understand the effect of this bias or assumption on the choice of data considered, the interpretation of data that is considered and the credibility of explanations that are provided.

The second omission is the failure of the standards to establish objectives for learning about the inherent subjective and speculative nature of origins science due to its historical character. Evolutionary biology, is an historical science whose explanations can not be validated by experiment. This is discussed by Dr. Ernst Mayr, a highly regarded evolutionary biologist:

“....Darwin introduced historicity into science. Evolutionary biology, in contrast with physics and chemistry, is a historical science -- the evolutionist attempts to explain events and processes that have already taken place. **Laws and experiments are inappropriate techniques for the explication of such events and processes.** Instead one constructs a historical narrative, consisting of a tentative reconstruction of the particular scenario that led to the events one is trying to explain.” (emphasis added)

According to scientists who specialize in historical sciences, the only way to test an historical hypothesis is to show that the available evidence supports one hypothesis *better* than it supports any competing hypotheses. The problem is that the prior *naturalistic commitment* to the view that systems are not designed protects evolutionary biology from testing by the competing design hypothesis. Due to the “*choice of what data to consider in the first place,*”

evolutionary theory has not been tested by that alternative explanation. This allows evolutionary theory to be incorrectly viewed as “fact” when it actually reflects nothing more than an hypothesis that has not been experimentally tested and that is supported only by a number of historical narratives constructed by human minds using selective evidence and imagination to fit within the framework of a preconceived idea that natural phenomena (including humans) have resulted only from a combination of natural law and chance and not by design.

Implementing Recommendation. To avoid this misinformation, the Policy should require students to understand how the historical character of origins science affects the inherent credibility of its explanations and why those explanations are very speculative.

An objective that might be used to reflect this goal is as follows:

SC 10.x.x.3 Differentiate between historical sciences such as evolutionary biology and experimental sciences like physics and chemistry, understand methods used by scientists to test the credibility of historical hypotheses, understand the limitations of those methods to confirm historical explanations provided and understand how *bias* and the “*choice of what data to consider in the first place,*” may affect historical explanations.

Conclusion

Standard six deals with the intersection between science in personal and social perspectives.

“Standard 6: Science in Personal and Social Perspectives .
Applying science and technological innovations to personal and social issues such as health, populations, resources and environment helps students to develop decision-making skills. As students expand their conceptual horizons, they should recognize that collective individual actions manifest as societal issues. Students must recognize that society cannot afford to deal only with symptoms; personal and societal actions must be focused on elimination of the causes of problems.”

Under this general objective, students, among other things are to learn to do the following:

SC.5.6.1 use scientific reasoning and the knowledge of science and technology to make informed personal decisions at the local and global levels.

SC.9.6.3 describe the impact of cultural, technological, and economic influences on the evolving nature of scientific thought and knowledge.

SC.9.6.5 engage in decision making activities and actions to resolve science-technology-society issues.

However, all of these decision making objectives assume that a naturalistic view of the world is correct and true. That is not the case. Naturalism is just one view of the world. Other legitimate views exist. Unless students are exposed to the alternatives they will not be adequately equipped to make the informed decisions that these objectives call for.

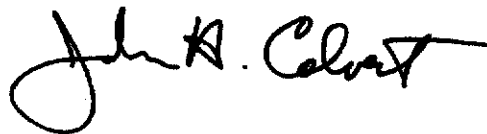
Accordingly, we urge you to revise Policy 2025.3 consistent with these suggestions.

Thank you for considering these views.

Very truly yours



William S. Harris, Ph.D.
Managing Director



John H. Calvert, J.D.
Managing Director

cc: (w/o encl)

Mr. Howard Persinger, Jr.

Ms. Sandra Chapman

Mr. Paul Morris

Mr. Ronald Spencer

Mrs. Barbara Fish

Mrs. Delores Cook

Ms. Brenda West

Ms. Sheila Hamilton

Dr. J. Michael Mullen

Mr. David Stewart

SUMMARY OF SUGGESTIONS AND IMPLEMENTING RECOMMENDATIONS

1. **Revise the policy to remove any implication that humans are “living objects.”**

Implementing Recommendations. To implement this suggestion the Policy could be revised to expand the concept of “*object*” with “*phenomena*,” “*entities*” and “*human beings*.” Thus, SC 1.4.1 could be revised to read as follows:

“SC.1.4.1 *classify objects, phenomena or entities as living or non-living.*”

2. **Revise the Standards to eliminate the naturalistic doctrine that natural objects and systems (natural phenomena, including life and its diversity), are not designed. Replace the doctrine with objectives that would encourage students to investigate and critically analyze the theories and evidence that supports both the design and naturalistic hypotheses.**

Implementing Recommendations. Replace objectives that teach that nature is not designed for teachings that seek to have students explore the scientific evidence on both sides of that issue in an objective and unbiased way. The following is a replacement objective that would accomplish that goal:

“SC 10.4.x.1 Understand the scientific evidence and arguments for and against the hypothesis that life and its diversity results only from unguided, natural processes.”

3. **Revise the Policy so that children are not introduced to origins science until they reach an age and maturity sufficient to fully comprehend the scientific bases for explanations and the philosophical implications of those explanations.**

Implementing Recommendations. Delete the following objectives in grades three through eight (together with any repetitions of those objectives during those grades): SC 3.43, SC 4.45, SC 5.46, SC 7.47, SC 7.48, and SC 8.48.

4. **Add explicit provisions that will encourage teachers to (a) discuss origins science objectively and without philosophic, naturalistic or religious bias or assumption and (b) help students think critically about evolutionary theory and understand the full range of scientific views that exist regarding origins of life and why origins science may generate controversy.**

Implementing Recommendation. An objective that would satisfy this end might be phrased like the following:

SC 10.4.x.2 Understand scientific criticisms of evolutionary theory and the full range of scientific views that exist regarding origins of life and why origins science may generate controversy.

5. Add objectives that will require students to learn about the naturalistic assumption that is used in current origins science and the effect the assumption has on textbook explanations, particularly in light of the historical character of origins science.

Implementing Recommendations. Objectives that could be incorporated into the standards to achieve this result are as follows:

- “SC 10.4.x.3 Understand that many explanations regarding the origin of life and the origin of the diversity of life are based in part on a naturalistic assumption that phenomena result only from natural causes and not by design. Understand the effect of this bias or assumption on the choice of data considered, the interpretation of data that is considered and the credibility of explanations that are provided.
- SC 10.4.x.4 Differentiate between historical sciences such as evolutionary biology and experimental sciences like physics and chemistry, understand methods used by scientists to test the credibility of historical hypotheses, understand the limitations of those methods to confirm historical explanations provided and understand how *bias* and the “*choice of what data to consider in the first place,*” may affect historical explanations.

**Policy 2520.3: Science
Content Standards and Objectives for
West Virginia Schools**

Please use this form when commenting on proposed Policy 2520.3. You may attach additional sheets if necessary.

Individual/Organization: William S. Harris, Ph. D. and John H. Calvert, J.D.,
Intelligent Design network, inc.

Title: Managing Directors

Street Address: P.O. Box 14702, **City:** Shawnee Mission **State:** Kansas, 66217

Comments/Suggestions

Explanation of Terms, Abbreviations

A glossary of scientific terms should be included in the standards.

Science Kindergarten Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 1st Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 2nd Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 3rd Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 4th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 5th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 6th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 7th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 8th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 9th Grade Objectives and Performance Descriptors

See Suggestions 1, 2 and 3 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Science 10th Grade Objectives and Performance Descriptors

See Suggestions 1, 2, 3, 4 and 5 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Advanced Biology Objectives

See Suggestions 1, 2, 3, 4 and 5 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Biology - Technical Conceptual Objectives

See Suggestions 1, 2, 3, 4 and 5 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Human Anatomy and Physiology Objectives

See Suggestions 1, 2, 3, 4 and 5 in our letter to Brenda West, dated January 6, 2003, to which this comment form is attached.

Advanced Chemistry Objectives

None. Our comments are limited to those aspects of the Policy that deal with or impact teachings about biological origins.

Chemistry-Technical Conceptual Objectives

None. Our comments are limited to those aspects of the Policy that deal with or impact teachings about biological origins.

Advanced Environmental Earth Science Objectives

None. Our comments are limited to those aspects of the Policy that deal with or impact teachings about biological origins.

Advanced Physics Objectives

None. Our comments are limited to those aspects of the Policy that deal with or impact teachings about biological origins.

Physics-Technical Conceptual Objectives

None. Our comments are limited to those aspects of the Policy that deal with or impact teachings about biological origins.

Please return comments by January 10, 2003, to:

Brenda West

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West Virginia Department of Education

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Wednesday
September 18, 2002

Institute for Creation Research

A Christ-Focused Creation Ministry

As he spake by the mouth of his holy prophets, which have been since the world began.
Luke 1:70



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EVOLUTION, CREATION, AND THE PUBLIC SCHOOLS

- **IMPACT No. 1 1973**

by **Henry M. Morris, Ph.D.**

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One of the most amazing phenomena in the history of education is that a speculative philosophy based on no true scientific evidence could have been universally adopted and taught as scientific fact, in all the public schools. This philosophy has been made the very framework of modern education and the underlying premise in all textbooks. It constitutes the present world-view of liberal intellectuals in every field.

This is the philosophy of evolution. Although widely promoted as a scientific fact, evolution has never been proved scientifically. Some writers still call it the *theory* of evolution, but even this is too generous. A scientific hypothesis should be capable of being tested in some way, to determine whether or not it is true, but evolution cannot be tested. No laboratory experiment can either confirm or falsify a process which, by its very nature, requires millions of years to accomplish significant results.

Evolution is, therefore, neither fact, theory, nor hypothesis. It is a belief—and nothing more.

When creationists propose, however, that creation be taught in the schools along with evolution, evolutionists commonly react emotionally, rather than scientifically. Their "religion" of naturalism and humanism has been in effect the established religion of the state for a hundred years, and they fear competition.

In the present world, neither evolution nor creation is taking place, so far as can be observed (and *science* is supposed to be based on observation!). Cats beget cats and fruit-flies beget fruit-flies. Life comes only from life. There is nothing new under the sun.

Neither evolution nor creation is accessible to the scientific method, since they deal with origins and history, not with presently observable and repeatable events. They can, however, be formulated as scientific *models*, or frameworks, within which to predict and correlate observed facts. Neither can be *proved*; neither can be *tested*. They can only be *compared* in terms of the relative ease with which they can explain data which exist in the real world.

There are, therefore, sound scientific and pedagogical reasons why *both* models should be taught, as objectively as possible, in public classrooms, giving arguments pro and con for each. Some students and their parents believe in creation, some in evolution, and some are undecided. If creationists desire *only* the creation model to be taught, they should send their children to private schools which do this; if evolutionists want only evolution to be taught, they should provide private schools for *that* purpose. The public schools should be neutral and

either teach both or teach neither.

This is clearly the most equitable and constitutional approach. Many people have been led to believe, however, that court decisions restricting "religious" teaching in the public schools apply to "creation" teaching and not to "evolution" teaching. Nevertheless, creationism is actually a far more effective scientific model than evolutionism, and evolution requires a far more credulous religious faith in the illogical and unproveable than does creation. An abundance of sound scientific literature is available today to document this statement, but few evolutionists have bothered to read any of it. Many of those who have read it have become creationists!

What can creationists do to help bring about a more equitable treatment of this vital issue in the public schools? How can they help their own children in the meantime? The following suggestions are in order of recommended priority. All involve effort and expense, but the stakes are high and the need is urgent.

(1) Most basic is the necessity for each concerned creationist himself to become informed on the issue and the scientific facts involved. He does not need to be a scientist to do this, but merely to read several of the scholarly creationist books that are now available. He should also study creationist literature that demonstrates the fallacious nature of the various compromising positions (eg., theistic evolution, day-age theory, gap theory, local flood theory, etc.) in order to be on solid ground in his own convictions.

(2) He should then see that his own children and young people, as well as others for whom he is concerned, have access to similar literature on their own level. He also should be aware of the teachings they are currently receiving in school and help them find answers to the problems they are encountering. He should encourage them always to be gracious and respectful to the teacher, but also to look for opportunities (in speeches, term papers, quizzes, etc.) to show that, although they understand the arguments for evolution, the creationist model can also be held and presented scientifically.

(3) If he learns of teachers who are obviously bigoted and unfair toward students of creationist convictions, it would be well for him to talk with the teacher himself, as graciously as possible, pointing out the true nature of the issue and requesting the teacher to present both points of view to the students. Under some circumstances, this might be followed up by similar talks with the principal and superintendent.

(4) Many teachers and administrators are quite willing to present both viewpoints, but have been unaware that there does exist a solid scientific case for creation, and, therefore, they don't know how to do this. There is thus a great need for teachers, room libraries, and school libraries to be supplied with sound creationist literature. Perhaps some schools, or even districts, will be willing to provide such literature themselves. If not, the other alternative is for parental associations, churches, or individuals to take on such a project as a public service. If sound creationist books are conveniently available, many teachers (not all, unfortunately, but far more than at present) would be willing to use them and to encourage their students to use them.

(5) Creationist parents, teachers, pastors, and others can join forces to sponsor meetings, seminars, teaching institutes, etc., in their localities. Qualified creationist scientists can be invited to speak at

such meetings, and if adequate publicity (especially on a person-to-person basis) is given, a real community-wide impact can be made in this way. Especially valuable, when such invitations can be arranged, are opportunities for creationist scientists to speak at meetings of scientists or educators. Also such men can be invited to speak in churches or in other large gatherings of interested laymen.

(6) Discussions can be held with officials at high levels (state education boards, district boards, superintendents, etc.) to acquaint them with the evidences supporting creation and the importance of the issue. They can be requested to inform the teachers of their state or district that the equal teaching of evolution and creation, not on a religious basis, but as scientific models, is both permitted and encouraged. Cases of unfair discrimination against creationist minorities in classrooms can be reported, and most officials at such levels are sufficiently concerned with the needs of all their constituents that, if they can first be shown there is a valid scientific case for creation and that evolution has at least as much religious character as does creation, they will quite probably favor such a request.

(7) Public response can be made (always of a scientific, rather than emotional flavor) to newspaper stories, television programs, etc., which favor evolution. Those responses may be in the form of letters-to-the-editor, protest letters to sponsors, news releases, and other means.

(8) Financial support should be provided for those organizations attempting in a systematic way to do scientific research, produce creationist textbooks and other literature, and to provide formal instruction from qualified scientists in the field of creationism. This can be done both through individual gifts and bequests and through budgeted giving by churches and other organizations.

It will be noted that no recommendation is made for political or legal pressure to *force* the teaching of creationism in the schools. Some well-meaning people have tried this, and it may serve the purpose of generating publicity for the creationist movement. In general, however, such pressures are self-defeating. "A man convinced against his will is of the same opinion still."

Force generates reaction, and this is especially true in such a sensitive and vital area as this. The hatchet job accomplished on the fundamentalists by the news media and the educational establishment following the Scopes trial in 1925 is a type of what could happen, in the unlikely event that favorable legislation or court decisions could be obtained by this route.

Reasonable persuasion is the better route. "The servant of the Lord must not strive; but be gentle unto all men, apt to teach, patient, In meekness instructing those that oppose themselves" (II Timothy 2:24,25).

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"Thou art worthy, O Lord, to receive glory and honour and power: for thou hast **created all things**, and for thy pleasure they are and were **created**." **Rev 4:11**

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IMPACT No. 69

EVOLUTION IN PUBLIC SCHOOLS AND CREATION IN STUDENTS' HOMES: WHAT CREATIONISTS CAN DO

by Wendell R. Bird, J. D., Attorney*

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A boy in a public high school enrolled in a biology course in tenth grade. His textbook taught him that life appeared and man developed through evolution, without mentioning any other theory, and his teacher told him that this was the most reasonable explanation that all scientists believed. The boy did not have firm religious convictions and had great respect for his teacher's knowledge. Through this biology course, and similar chemistry, world history, social studies, and anthropology courses, he came to believe in "theistic evolution," because he did not realize that the Bible taught anything different or that any scientists held any other viewpoint. This particular boy went on to win third place in the International Science Fair with a biology project, and to be named one of the forty top young scientists in the nation by the Westinghouse Science Talent Search, yet he never learned through all this science work of any Biblical or scientific alternative to evolution. This author is ashamed to admit, because... shows his gullibility and ignorance, that he was that boy. How widespread is this problem?

The Problem: The Evolutionary View Is Taught Exclusively in Public Schools

Nearly three million students in public high schools study biology each year. Nearly all of them use textbooks that teach only the theory of evolution and that discuss it from cover to cover. Most public school students also have classes in social studies, world history, chemistry, physics, anthropology, or sociology that teach exclusively the theory of evolution. And nearly all those students come to believe in evolution as the only scientific explanation of origins.

Belief in the general theory of evolution is totally contrary to belief in the doctrine of divine creation. The evolutionary theory teaches that matter has always existed and that the earth evolved to its present form, while Genesis says that there was a beginning and that the earth was specially created by God. Evolution claims that non-living material developed into a living organism and that this simple life developed into fish, then amphibia, then reptiles, then mammals; but the Bible says that God created life from *nothing* and that he created *all living kinds*. The public school theory asserts that man evolved from an ape-like ancestor, while the Christian doctrine is that Adam and Eve were created by God. The evolutionary theory requires that continuous natural processes have shaped the face of the earth, while Genesis teaches that a worldwide flood altered the features of the world. In teaching only evolution, public schools effectively undermine the convictions of Christian students and prejudice unbelievers against Christianity.

The origin of the world, life, and man is a vital subject to Christians. If Adam did not literally fall into sin, Christ did not need to shed His blood on the cross, and men do not need to be saved from anything (Romans 5:12, 18; I Corinthians 15:45, 49-50). If the inspired writings of Moses are disbelieved, the gospel words of Jesus Christ will be disbelieved also (John 5:46-47). Jesus Christ taught that God created Adam and Eve, and that God sent a worldwide flood to judge man (Mark 10:6; Luke 17:27). And scripture prophesies that liberal scoffers in these last days will deny the divine creation and the worldwide flood (2 Peter 3:3, 5-6). Creation is fundamental to Christianity, yet public schools are attacking that truth. What has happened to freedom of religion?

The Constitutional Protection: Religious Freedom Cannot Be Violated by Public Schools

The First Amendment of the Constitution protects free exercise of an individual's religion from government abridgment. Religious freedom is the most basic of our liberties, and expansion of government activities is bringing encroachment on this freedom.

Abridgment of this constitutional right to religious freedom occurs when a governmental program puts a burden on religious exercise and when no compelling reason justifies that burden. While this legal rule may sound complicated, it applies directly to public school instruction in evolution.

Classroom instruction that presents only evolution without an alternative theory puts a burden on religious freedom. Teaching only one theory of the origin of life and man indoctrinates creationist students in that evolutionary theory, and the Supreme Court has ruled that public schools cannot undermine religious beliefs. Exposing pupils to only hostile instruction prevents creationists from separating from "the unfruitful works of darkness," and courts have held that schools cannot violate separatist practices. Requiring answers in class discussion and on tests that are based on the evolutionary theory requires creationist students to let "corrupt communications proceed out of [their] mouths," and the Supreme Court has stated that public schools cannot require objectionable declarations of belief.

This burden on religious freedom becomes serious because students in elementary and high schools are susceptible to influence, and because they are subjected to many pressures. Coercion against religious exercise results from some courses being required for graduation, and from much course material (other than the evolution sections) being necessary for a solid education. Pressure also comes from teachers having influence over development of religious beliefs, and from classmates demanding conformity with the majority viewpoint. This classroom pressure can greatly influence religious convictions.

This serious burden on religious freedom from instruction in only evolution is not justified by any compelling reason. While government might have a compelling interest in teaching reading, writing,

arithmetic, and patriotism, it does not have a very strong interest in teaching only one theory of origins or even in teaching anything about origins. How can public schools remove this burden on religious exercise?

The Remedy: Scientific Creationism Can Be Taught Along With Evolution

Public schools can teach scientific creationism along with evolution to end their violation of religious freedom. The schools can be neutral by presenting scientific evidences for creation when they present arguments for evolution.

Scientific creationism teaches that the universe and the earth were specially created, and that life was specially created, emphasizing that complex plants and animals suddenly appear in the fossil record and that scientific experiments have not produced life. This theory maintains that original kinds of plants and animals have been stable, emphasizing that fossil gaps occur regularly between different kinds and that transitional forms between the original kinds have not been unearthed. The scientific creationist theory also proposes that the second law of thermodynamics (a general tendency toward disorder) applies to the universe and life, preventing the earth from evolving from a disordered universe, or life from evolving from non-living molecules, or complex plants and animals from evolving from simple forms. Scientific creationism also argues that a worldwide flood happened in history, providing the best explanation of the fossil record, and that creation of the earth and life did not occur billions of years ago, pointing out the questionable assumptions of radiometric dating methods while noting the alternate dating methods that give young ages for the earth and life.

Public schools either could teach scientific creationism as a unit within a course that discusses the evolutionary theory, or they could offer it at each point where the course mentions evolution. Text materials that present scientific creationism are available for teachers and students. But how does scientific creationism differ from religious doctrine?

The Criticism: Scientific Creationism Does Not Involve Religious Doctrine

The First Amendment of the Constitution not only protects freedom of religion, but also prohibits establishment of any religion. The Supreme Court has ruled that this provision prohibits public schools from being unneutral among different religions by instituting classroom prayer or Bible reading. Many Christians support the school prayer decision, because they do not believe that public schools should teach that God is the father of all men and hears prayers by non-Christian students by a classroom prayer beginning "Our Father." And many Christians support the Bible reading decision, because they do not believe that non-Christian teachers should be given the opportunity to pervert Biblical truth in classroom Bible reading.

But the Supreme Court has said, on the other hand, that the establishment clause does not prevent schools from teaching non-religious material that is consistent with religious belief, and the Court has noted that the Constitution does prevent schools from being hostile to any religion or favoring a secularistic religion.

Is instruction in scientific creationism an establishment of religion? Scientific creationism is not a religious doctrine, and unlike classroom prayer and Bible reading it can be taught in public schools. Instruction in scientific creationism involves presentation of the scientific evidence for creation rather

than use of Genesis in the classroom. For example, it discusses the evidence that man does not have an ape-like ancestor rather than the Biblical statement that God created Adam and Eve; it summarizes the scientific proof that a worldwide flood shaped this planet's geology rather than the scriptural teaching that Noah and his family survived the flood in an ark. As Dr. Henry M. Morris has said so well, "creation is as scientific as evolution and ... evolution is as religious as creation."

Scientific creationism indeed is as scientific as evolution. There are many scientists who are creationists: the Institute for Creation Research has seventeen creationists with doctorates in science on its staff and advisory board, and the Creation Research Society includes more than six hundred creationists with postgraduate degrees in science. And there are textbooks that present scientific evidences for creation: for example, *Biology: A Search for Order in Complexity* was sponsored by the Creation Research Society, and *Scientific Creationism* (Pub. Sch. Ed.) was sponsored by the Institute for Creation Research.

Evolution is indeed as religious as scientific creationism. It is true that scientific creationism is consistent with religious creationism—but the evolutionary theory is consistent with religious humanism; as in the case of the Fellowship of Religious Humanists, the supporters of the Humanist Manifesto, and Sir Julian Huxley's "religion of evolutionary humanism." And it is true that scientific creationists refer to a Creator or God—but Darwin's *Origin of Species*, the three B.S.C.S. high school biology textbooks, most other high school biology texts, and the pledge of allegiance also refer to God yet are acceptable in public schools.

Is instruction in scientific creationism a violation of academic freedom? Courts have recognized that school authorities can—and must—decide what subjects will be taught in public schools. A decision to add scientific creationism to the curriculum in the 1970's does not violate academic freedom any more than a decision to add evolution in the 1920's did. Instruction in both theories enhances academic freedom for the student, because it gives him a neutral choice among alternative theories rather than indoctrination in one theory.

Is instruction in scientific creationism the Scopes monkey trial again? No—but the present situation is the Scopes trial in reverse. Just as Tennessee in the 1920's excluded evolution and taught only creation, the states in the 1970's exclude creation and teach only evolution. As Clarence Darrow said in behalf of Mr. Scopes, it is "bigotry for public schools to teach only one theory of origins." How can parents, teachers, and students bring scientific creationism into public schools?

PLEASE NOTE:

This last question will be answered by Mr. Bird in the April issue of *Acts & Facts*. "Impact" article No. 70 will provide specific suggestions for creationists to follow in getting their own school systems to include scientific creationism in their programs.

* Wendell R. Bird is an attorney from Atlanta. He is a graduate of Yale Law School, where he was an Editor of the *Yale Law Journal*. Mr. Bird wrote an article published in the *Yale Law Journal* entitled "Freedom of Religion and Science Instruction in Public Schools," and he received the Egger Prize of Yale Law School for the excellence of its legal scholarship. Mr. Bird graduated summa cum laude from Vanderbilt University, and exempted the freshman year for the first time in Vanderbilt history. He was a finalist for the Marshall Scholarship for study in England, Vanderbilt's nominee for the Rhodes Scholarship, a participant in the Honors Program of study, and a member of Phi Beta Kappa.

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IMPACT No. 70

EVOLUTION IN PUBLIC SCHOOLS AND CREATION IN STUDENTS' HOMES: WHAT CREATIONISTS CAN DO

By Wendell R. Bird, J. D., Attorney*

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**"Vital Articles on Science/Creation" April 1979
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[NOTE: The first article ("Impact," No. 69, March) of this series, dealt with the problem of exclusive teaching of the evolutionary view in public schools, the Constitutional protection regarding religious freedom in public schools, how scientific creationism can be taught legally along with evolution in the public classroom, and a discussion of the fact that scientific creationism does not involve religious doctrine. This current article challenges creationists first to become informed concerning the legal implications of teaching scientific creationism, and then, to take individual action. The third and concluding article in this series will provide a suggested Resolution for Balanced Presentation of Evolution and Scientific Creationism.]

The Responsibility: Creationists Should Request Instruction In Scientific Creationism

Christians are commanded to be lights for a crooked and perverse nation, and are to stand against the devil with the armor of God (Philippians 2:15; Ephesians 6:11). Christians have a responsibility to ensure light and to oppose evil in the public school system, because our country is shaped powerfully by public school curricula and our tax dollars finance public education. In meeting this responsibility, creationists should take several steps.

STEP 1

First, creationists should learn the Biblical teaching about creation. Helpful books are *The Remarkable Birth of Planet Earth* and *The Twilight of Evolution*, both by Dr. Henry M. Morris. A good commentary on Genesis is *The Genesis Record*, also by Dr. Morris (all from Creation-Life Publishers, P.O. Box 15666, San Diego, Cal., 92115). A good introductory booklet is *Problems of Evolution*, by Dr. Stewart Custer (from Bob Jones Univ. Press, Greenville, S.C., 29614).

STEP 2

Next, creationists should become familiar with the scientific evidence for creation. A concise but thorough book is *Scientific Creationism* (Pub. Sch. Ed.), edited by Dr. Morris, and a good book on the fossil record is *Evolution? The Fossils Say No!* (Pub. Sch. Ed.), by Dr. Duane T. Gish (both from Creation-Life Publishers).

STEP 3

Also, creationists should understand the legal implications of public school instruction in only evolution and the implications of instruction also in scientific creationism. A comprehensive article is "Freedom of Religion and Science Instruction in Public Schools," published in the *Yale Law Journal* (Jan. 1978 issue), by the author of this paper. That article argues that instruction exclusively in evolution violates the Constitution's protection of free religious exercise, and that instruction in both evolution and scientific creationism is permitted by the Constitution's prohibition against state establishment of religion. The article can be found in most public university libraries or purchased from *Yale Law Journal* (401A Yale Station, New Haven, Conn., 06520, for \$2.50).

STEP 4

Creationists also should read the article by this author published in the *Harvard Journal of Law & Public Policy* entitled "Freedom from Establishment and Unneutrality in Public School Instruction and Religious School Regulation." That article discusses the proper construction of the establishment clause of the First Amendment, just as the *Yale Law Journal* article discusses the proper construction of the free exercise clause of that Amendment. It then shows how exclusive instruction in public school classrooms in evolution abridges the establishment clause, and how balanced presentation of both scientific creationism and evolution conforms to that clause. After June 1979, copies can be ordered from the Harvard Journal of Law & Public Policy, 233 Langdell Hall, Harvard Law School, Cambridge, Mass. 02138.

Then, creationists should get copies of scientific creationist texts to show to school authorities. A student biology textbook that presents both scientific creationism and evolution is *Biology: A Search for Order in Complexity*, edited by Dr. John N. Moore and Harold Slusher. A teacher handbook that presents scientific evidences for creation is *Scientific Creationism* (Pub. Sch. Ed.), edited by Dr. Henry M. Morris (both from Creation-Life Publishers).

STEP 5

Next, creationists should call the state department of education for information. The first subject about which to inquire is whether the state department of education makes statewide decisions about curriculum for public schools. If there is statewide curriculum authority, ask when the state board of education meets next, and ask for a copy of its powers under the law and its procedures for decision. Also ask which member citizens should contact to obtain permission to speak at the next state board of

education meeting. Then write the proper member for permission to speak. If there is no statewide curriculum authority but only individual school district authority, call the county or city department of education and ask it these same questions.

The second subject, which creationists should ask the state department of education, is whether the state has statewide adoption of an approved textbook list for public schools. If there is statewide adoption, ask whether school districts can choose among several textbooks for each subject or whether the state prescribes one textbook per subject. Then ask when biology textbooks are considered for adoption, and when physics, chemistry, social studies, anthropology, and sociology textbooks are considered (the publishers submit copies of their textbooks in the subject under consideration, and generally the state board of education or state textbook committee selects one or several of these texts for adoption). If the decision time is soon, ask what the exact name is of the decision-making body for textbooks, and ask which member citizens should contact to obtain permission to speak at the textbook commission meeting. Also ask where the texts are displayed for public examination that are submitted for adoption, and ask for a copy of the criteria by which textbooks are selected for school use. Then write the proper textbook commission member for permission to speak, and examine the texts for their treatment of the subject of origins, making a list of the author and title and page numbers that present only evolution. If there is no statewide adoption but only individual school district adoption, call the county or city department of education and ask it these same questions.

A word of caution: Creationists working to introduce creation into public schools must distinguish sharply between scientific creationism and religious creationism. Scientific creationism consists of the scientific evidences for creation, while religious creationism consists of the Biblical doctrines of creation. Scientific creationism can be taught in public schools, while religious creationism cannot under current law. Creationists approaching public schools must avoid reference in discussions, resolutions, or classroom materials, to the Bible, Adam, the fall, or Noah, except in showing that evolution is wholly contrary to religious convictions of many individuals.

STEP 6

Finally, creationists should petition the state (or district) board of education to pass a resolution to teach both the scientific evidence for creation and the scientific evidence for evolution, in any course dealing with origins. And creationists should request the state (or district) textbook commission to select only texts presenting both scientific creationism and evolution, or else to require supplements presenting scientific creationism to be attached to the inside back cover of texts presenting only evolution. The petition "Resolution for Balanced Presentation of Evolution and scientific Creationism" can be given to the board of education and the textbook commission ("Impact Series" No. 26, from Institute for Creation Research, 2716 Madison Avenue, San Diego, Cal., 92116). The booklet *Introducing Scientific Creationism into the Public Schools* provides further guidance for creationist parents, teachers, students, and pastors in approaching public school superintendents, principals, teachers, and other officials (from Creation-Life Publishers).

PLEASE NOTE:

The May issue of *Acts & Facts*, "Impact" article No. 71, will provide a sample Resolution for a balanced presentation of evolution and scientific creationism in the public school classroom, along with ample documentation. Readers are urged to become familiar with the contents of this series of articles and to take action so that creationism can be presented in the public classroom as a viable alternative to evolution.

Please remember—

We are not trying to bring the Bible or Genesis into public schools. We are not trying to exclude evolution from public schools, unless creation is also excluded.

We are asking public schools to be neutral between theories of the origin of the world, life, and man, and to give academic freedom of choice to students between these theories.

We are asking public schools to present the scientific evidences for creation along with the scientific evidences for evolution.

* Wendell R. Bird is an attorney from Atlanta. He is a graduate of Yale Law School, where he was an Editor of the *Yale Law Journal*. Mr. Bird wrote an article published in the *Yale Law Journal* entitled "Freedom of Religion and Science Instruction in Public Schools" and he received the Egger Prize of Yale Law School for the excellence of its legal scholarship. Mr. Bird graduated summa cum laude from Vanderbilt University, and exempted the freshman year for the first time in Vanderbilt history. He was a finalist for the Marshall Scholarship for study in England, Vanderbilt's nominee for the Rhodes Scholarship, a participant in the Honors Program of study, and a member of Phi Beta Kappa.

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IMPACT No. 71

RESOLUTION FOR BALANCED PRESENTATION OF EVOLUTION AND SCIENTIFIC CREATIONISM

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"Vital Articles on Science/Creation" May 1979
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EDITOR'S NOTE:

This sample "Resolution" has been prepared by attorney Wendell R. Bird, author of "Impact Series" articles 69 and 70 (*Acts & Facts*, March and April 1979) and is intended as a prepared resolution for local citizens' groups seeking to obtain a fair presentation of the creation/evolution question in the schools of their own areas. It can be modified as appropriate for local conditions.

Please note that this is a suggested **resolution**, to be adopted by boards of education, not **legislation** proposed for enactment as law. ICR has always taken the position that the route of education and persuasion on this issue is more fruitful in the long run than that of coercion. If teachers are permitted and encouraged to present both models with appropriate materials provided by their Board, we are confident that more good will actually be accomplished than in any other way.

This Board of Education adopts the following Resolution concerning balanced presentation of alternate scientific theories of origins for all public secondary schools and elementary schools in this area.

WHEREAS,

I. The underlying purposes of public education are to assist students in their search for truth, to provide academic freedom for students' differing values and beliefs, and to remain neutral toward students' diverse religious and moral convictions.

II. Attendance of those students who are at public schools is compelled by law, and school taxes from

their parents and other citizens are mandated by law.

III. The subject of the origin of the universe, earth, life, and man is treated within many public school courses, such as biology, life science, anthropology, sociology, and often also in physics, chemistry, world history, philosophy, and social studies.

IV. Only the theory of evolution is presented to students in virtually all courses that discuss the subject of origins, and no alternative theory of origins is presented.

V. The theory of evolution is not an unquestionable fact of science, because evolution cannot be experimentally observed or fully verified or logically falsified,¹ and because the theory of evolution is not accepted by some scientists.²

VI. The theory of evolution is contrary to the religious convictions or moral convictions of many students and parents, including individuals of many different religious faiths and with diverse personal beliefs.³

VII. Public school presentation of only the theory of evolution without any alternative theory of origins abridges the Constitution's protection⁴ of freedom of religious exercise for students and parents, because it undermines their religious convictions, violates their separatist practices, compels their unconscionable statements, and hinders religious training by parents.⁵

VIII. Public school presentation of only the theory of evolution without any alternative theory also violates the Constitution's protection of freedom of belief for students and parents and in doing so hinders the purpose of education by impeding their search for truth, denying them academic freedom, and restricting scientific objectivity.

IX. Public school presentation of only the theory of evolution without any alternative theory also abridges the Constitution's prohibition against establishment of religion, because it produces hostility toward many theistic religions and causes preference to religious Liberalism, Humanism, and other religious faiths.⁶

X. Presentation of only one theory rather than alternate theories of origins is not required by any compelling interest of the State.⁷

XI. Exemption of such students from a course or class presenting only the theory of evolution does not provide an adequate remedy, because any request for exemption would probably be prevented by pressure from fellow students, respect for teacher opinions, and need for other course material missed.⁸

XII. The theory of special creation is an alternative model of origins at least as satisfactory as the theory of evolution, and that theory of special creation can be presented from a strictly scientific standpoint without reference to religious doctrine (special creation from a strictly scientific standpoint is hereinafter referred to as "scientific creationism"),⁹ because many scientists accept the theory of scientific creationism,¹⁰ and because scientific evidences have been presented for the theory of scientific doctrine.¹¹

XIII. Public school presentation of both the theory of evolution and the theory of scientific creationism would not violate the Constitution's prohibition against establishment of religion,¹² because it would

involve presentation of the scientific evidences for each theory rather than any religious doctrine.

XIV. Most citizens, whether they personally believe in evolution or creation, favor balanced treatment in public schools of alternative scientific theories of origins for better guiding students in their search for truth, and favor a neutral approach toward subjects affecting the religious or moral convictions of students.¹³

XV. School districts in at least five states are currently teaching both theories of origins or are implementing instruction in both theories.¹⁴

THEREFORE, the Board of Education hereby adopts as an official Resolution the requirement that:

Public secondary and elementary schools must give balanced treatment to the theory of scientific creationism and the theory of evolution in classroom lectures as a whole in each individual course, in textbook materials as a whole for each course, in library materials as a whole for any subject, and in other educational programs, to the extent that such lectures, textbooks, library materials, or educational programs deal in any way with the subject of the origin of man, life, the earth, or the universe.

Treatment of either the theory of evolution or the theory of scientific creationism must be limited to scientific evidences and must not include religious doctrine.

This Resolution takes effect at the beginning of the next school year unless the Board of Education upon adopting this specifies otherwise.

CLARIFICATIONS

This Resolution does not require or permit instruction in any religious doctrine or materials. This Resolution does not require any instruction in the subject of origins, but simply requires instruction in both scientific theories (of evolution and scientific creationism) if public schools choose to teach either. This Resolution does not require each individual textbook or library book to give balanced treatment to the two theories, but simply requires the textbooks as a whole in a course or the library books as a whole on a topic to give balanced treatment to the theories of evolution and scientific creationism; it does not require any school books to be discarded. This Resolution does not require each individual classroom lecture in a course to give such balanced treatment, but simply requires the lectures as a whole to give balanced treatment; it permits one unit to present the theory of evolution and a separate unit to present the theory of scientific creationism.

DOCUMENTATION

¹ The theory of evolution, according to an evolutionary scientist, cannot be observed by experimentation: "The applicability of the experimental method to the study of such unique historical processes is severely restricted before all else by the time intervals involved, which far exceed the lifetime of any human experimenter." Dobzhansky, "On Methods of Evolutionary Biology and Anthropology," 45 *American Scientist* 381, 388 (1957). It cannot be verified by full proof: "Belief in evolution is thus exactly parallel to belief in special creation—both are concepts which believers know to be true but neither, up to the present, has been capable of proof." Matthews, "Foreword" to C. Darwin, *Origin of Species* at x(1971). And the theory of evolution cannot be falsified (by positing facts which, if proved true, would disprove the theory): "Our theory of

evolution has become ... one which cannot be refuted by any possible observations. It is thus 'outside of empirical science.'" Birch & Ehrlich, "Evolutionary History and Population Biology," 214 *Nature* 349, 352 (1967). Of course, the theory of scientific creationism similarly cannot be experimentally observed, fully verified, or logically falsified.

² For example, Professor G. A. Kerkut of the University of Southampton, who is not a creationist, wrote a book *Implications of Evolution* to give his scientific reasons for rejecting the general theory of evolution. Dr. Henry Morris, formerly Professor at Virginia Polytechnic Institute, who is a creationist scientist, wrote *Scientific Creationism* (Public School Edition) to give his scientific reasons for rejecting evolution and accepting creation.

³ These creationist faiths include Adventists, Churches of Christ, most Baptists, Independent Methodists, Jehovah's Witnesses and Orthodox Jews, as well as many Lutherans, Catholics, and others. These are listed in Wendell R. Bird, "Freedom of Religion and Science Instruction in Public Schools," 87 *Yale Law Journal* 515, 519-20 (1978).

⁴ The First Amendment of the U.S. Constitution bars any "law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech ..."

⁵ Wendell R. Bird, "Freedom of Religion and Science Instruction in Public Schools," 87 *Yale Law Journal* 515, 523-26, 536-38 (1978). Courts have ruled that public schools may not undermine religious convictions, in *Wisconsin v. Yoder*; may not violate separatist practices, in *State v. Whisner*; may not compel unconscionable statements, in *West Virginia v. Barnette*; and may not hinder parental religious training, in *Pierce v. Society of Sisters*.

⁶ Wendell R. Bird, "Freedom from Establishment and Unneutrality in Public School Instruction and Religious School Regulation," 1979 *Harvard Journal of Law & Public Policy* 56 (1979).

⁷ Wendell R. Bird, "Freedom of Religion and Science Instruction in Public Schools," 87 *Yale Law Journal* 515, 540-42 (1978).

⁸ *Ibid.*, at 528-36.

⁹ Several textbooks present both the theory of scientific creationism and the theory of evolution. J. Moore & H. Slusher, *Biology: A Search for Order in Complexity*, Creation-Life Publishers (student biology text); R. Bliss, *Origins: Two Models*, Creation-Life Publishers (student origins text). R. Bliss & G. Parker, *Origin of Life*, Creation-Life Publishers (student origins text). Several textbooks present the theory of scientific creationism, to supplement a text presenting only the theory of evolution. H. Morris, *Scientific Creationism* (Public School Edition), Creation-Life Publishers (teacher handbook or student supplement); D. Gish, *Evolution: The Fossils Say No!* (Public School Edition), Creation-Life Publishers (student supplement or teacher handbook); H. Morris & J. Phelps, *Science and Creation Series*, Creation-Science Research Center (student supplements, grades 1-8); H. Morris & J. Phelps, *Science and Creation: A Handbook for Teachers*, Creation-Science Research Center (teacher handbook, grades 1-8).

¹⁰ The Creation Research Society is a scientific creationist organization of more than 600 members who have postgraduate degrees in natural sciences (it sponsored the textbook *Biology: A Search for Order in Complexity*). The Institute for Creation Research is a similar organization of about 20 members who have doctorates in science; 9 teach currently at nonsectarian universities (it sponsored the textbook *Scientific Creationism*, Public School Edition).

¹¹ For example, see *Scientific Creationism* (Public School Edition) edited by Dr. Henry Morris.

¹² Wendell R. Bird, "Freedom of Religion and Science Instruction in Public Schools," *Yale Law Journal* 515, 554-64 (1978).

¹³ For example, a "Statement Affirming Openness as a Principle of Science" states that both "the evidences supporting an evolutionary point of view and the evidences supporting a creationist point of view should be given proper presentation in any classroom where the topics under discussion relate to the origin of matter and energy, the origin of the cosmos, the origin of the solar system, or the origin of life." This statement has been signed by more than 700 scientists.

¹⁴ The boards of education officially require balanced treatment of evolution and scientific creationism in Dallas, Texas; Columbus, Ohio; Kanawha County, West Virginia; Cobb County, Georgia; Racine, Wisconsin; and other areas.

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BTG No. 114b

Are Schools Teaching Evolution Well Enough?

by John D. Morris, Ph.D.

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"Vital Articles on Science/Creation" June 1998
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"For what if some did not believe? shall their unbelief make the faith of God without effect? God forbid: yea, let God be true, but every man a liar . . . " (Romans 3:3,4).

No doubt you saw them. Right around mid-April many major newspapers carried (coordinated?) articles and/or editorials deploring the supposed fact that "the teaching of evolution in schools is being squeezed out by pressure from religious conservatives and other groups" (AP, April 10, 1998). However much as I might wish it were so, I see no such national trend. Instead, most thinking people immediately recognized these articles as yet another desperate ploy to turn public opinion against Christianity in general and creation in particular.

Having thus created a "horrible" problem in the minds of the reader, the articles offered a solution—a new set of guidelines for more extensive and effective teaching of evolution prepared by the National Academy of Sciences. This book, containing every successful argument for evolution (whether or not it is true) and specific guidelines on how to deal with dissenting students and parents, is to be made available to every science teacher.

The guidelines, entitled "Teaching About Evolution and the Nature of Science," was authored by a panel of scientists and educators, including several well known for their personal crusades against creationism. Predictably, it claims that the *fact* of evolution must be foundational in every course.

But the guidelines contain a strange mixture of outdated science, extreme opinions not held by many evolutionists, and outright deception. As a sampling, it compares disbelief in evolution to disbelief in gravity, obscuring the fact that no one has ever observed gravity to be violated, but never has anyone observed real evolution to happen. Moreover, it repeats the common error that variation and adaptation are examples of evolution.

It is true that something is malfunctioning in our schools. Recent studies have placed American and Canadian students at or near the very bottom in science when compared with other developed countries, in spite of the cost per student being much higher. But is teaching more evolution the solution to this problem, or is it the cause? Fact is, the scores have gone down while evolution teaching has increased and the Christian worldview systematically removed.

It seems to me that evolution teaching has been quite effective. Decades of teaching students that they evolved from animal ancestry by purely random processes like mutation and natural selection, that there is no Creator to whom they are responsible, that there are no absolutes in morality, has brought us to this point. Can evolutionists legitimately blame the situation in today's schools, whose students murder classmates and teachers with no remorse, where premarital sex and sexually transmitted diseases are common, where suicidal thoughts plague many, on lack of *better* evolution teaching?

Evolution is not just a view of life's history, it is a worldview with a disgusting view of an animalistic past, an amoral view of the present, and a hopeless future of annihilation to contemplate.

Yes, I think evolution has been taught well enough. Now all of society must suffer the consequences.

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IMPACT No. 120

EVOLUTIONARY INDOCTRINATION AND DECISION-MAKING IN SCHOOLS

by Richard B. Bliss, Ed.D.

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In recent years, the efforts of anti-creationists to distort the motives and goals of scientific creationists have dominated the educational literature, influenced the courts and polarized the media. As an educator who has been in all phases of science education development and who has been involved in this debate from its early years, this writer feels an answer to these critics is in order.

The nature and methodology of science and science education should require an open and inquiry-oriented approach to the creation /evolution question. As with any other question in science, this question should be looked upon as an opportunity to stimulate thought through the education process, rather than becoming an obstacle to it. The study of origins has proven to be one of the most exciting questions that has confronted education in recent times. It has all the ingredients for promoting both good science and good education. In fact, the question of origins enhances critical thinking through a decision-making framework. Sadly, students today are being taught that the only way science can view the origin of life is through an evolution model that is "random, mechanistic and naturalistic." Certainly there is nothing wrong with using evolution as one model or framework within which scientific information can be correlated and integrated, but when evolutionists say that it is the *only* model and that the creation model could not also be used to correlate and integrate scientific information as well, they are no longer speaking in the context of scientific truth. Evolution fails to answer more questions than it purports to answer and the creation model certainly has much to offer as an alternative.

Anti-creation groups are distorting the potential value of both models when they call evolution the only idea available to science. Either they do not know what the data actually reveal, or else they are deliberately attempting to deceive the world's educators. Educators should know that some of the most open attacks on evolutionary dogma come from evolutionary scientists themselves, and it

is from these men that creationists take note of the religious nature of the evolutionary paradigm. Strangely, testimony from these scientists is distinctly absent from the anti-creationists writings. Examples of some of these writings by evolutionary scientists are given below.

Paul Ehrlich and L.C. Birch, biologists at Stanford and the University of Sydney, respectively, summarized the problem in Nature Magazine:

Our theory of evolution has become ... one which cannot be refuted by any possible observations. Every conceivable observation can be fitted into it. It is thus 'outside of empirical science' but not necessarily false. No one can think of ways in which to test it. Ideas, either without basis or based on a few laboratory experiments carried out in extremely simplified systems have attained currency far beyond their validity. They have become part of an evolutionary dogma accepted by most of us as part of our training.

L. Harrison Matthews, writer of the introduction to the 1971 edition of Darwin's ORIGIN OF SPECIES has this to say:

The fact of evolution is the backbone of biology and biology is thus in the peculiar position of being a science founded upon an unproved theory - is it then a science or a faith? Belief in the theory of evolution is thus exactly parallel to belief in special creation - both are concepts which believers know to be true, but neither, up to the present, has been capable of proof.

Derek V. Ager writes in "The Nature of the Fossil Record":

It must be significant that nearly all the evolutionary stories I learned as a student, from Tureman's *Ostrea/Gryphaea* to Carruther's *Zaphrentis delanovei*, have now been 'debunked'.

These men and others are helping us to gain a more accurate perspective on the subject of origins. Certainly in the light of these statements, evolution cannot be considered to be a proven fact. Even its status as a scientific theory can be challenged. Dr. Colin Patterson, senior paleontologist for the British Museum of Natural History, in a public lecture before the American Museum of Natural History in New York City, November 5, 1981, said that he posed this question to the geology staff of the Field Museum of Natural History: "Can you tell me anything you know about evolution, any one thing that is true?" He also posed this same question to the prestigious body of evolutionists at the Evolutionary Morphology Seminar at the University of Chicago. The answer he received from both groups was *silence*, until one member of the morphology group spoke up and said: "I do know one thing - it ought not to be taught in high school." Scientific creationists disagree. They think that evolution should be taught, but only when the strengths and weaknesses are discussed in comparison with the scientific merits of creation. Perhaps it is about time that we all learned that it is wrong to suppress evidence and teach only one view of origins as the evolutionists are demanding now. Policymakers and educators should realize that both models of origins are paradigms. Creation is neither less scientific nor more religious than evolution. Teachers must be allowed to realize this without being demeaned by a vocal minority of self-styled experts in the wisdom of science. Both teachers and students must have this freedom if today's schools are going to develop the decision-makers that we need. Open inquiry can solve this problem of teaching origins if proper skills of scientific inquiry are taught and utilized.

Creationists have been accused of teaching pseudo-science when they state that the planet upon which we live is probably a young planet rather than an old one; or that the second law of thermodynamics (systems tend to go from complex to simple, rather than going from simple to complex, naturally) applied to the living as well as the inanimate world. These comments and many others are carelessly given out by the anti-creationists as evidence against the creationists'

credibility; yet, the creationist has shown his willingness to consider all evidences relating to geologic ages, whether old and young. On the other hand, the fact that there are many data that seem to limit the age of the earth and universe to younger ages is never stated or even considered by evolutionists. Oil well fluid pressures; the helium inventory in the atmosphere; polonium halos in our oldest rocks; dust on the moon; the earth's magnetic decay; short-term comets, and many others give young ages for the earth and the cosmos. Creationists believe that much more research has to be done and that true scientists should not have a closed mind on this topic; the question must remain open. Evolutionists deny this and reject, out of hand, any information that gives anything but old ages. This is bad science and does not lead to objective decision making. What creationists are asking for is open and objective science that will leave room for progress and discovery. No *scientific creationist* is proposing the use of the Bible as a science text book in the public schools. However, scientific creationists believe that scientists should adhere to the principles of science as they operate in the real world of science, and young people should be taught the process skills of science and scientific inquiry by exposing them to all data, regardless of which side they seem to fall upon.

"If you let creation in, you will be teaching a literal interpretation of the Bible and all of science will collapse," the anti-creationist insists. Statements such as these are evidently meant to scare the public and educators alike, but they are totally false. The question of evolution and creation is easily resolved when professional teachers rise above their personal biases and confine themselves to teaching the 'process skills' of science and scientific inquiry. From this point on, the "decision-maker," the "critical thinker," is the student. Unfortunately, most teachers refuse to let him be a decision-maker on this issue and literally force him to think in terms of evolution only.

It is often said that the content for the science curriculum must be selected data that explain the natural world scientifically, and that it has the ability to unify, illuminate, and integrate other facts. Does the evolution model do this any better than the creation model? Not at all. Hubert P. Yockey, writing for the *Journal of Systematic Biology*, has this to say about the whole question of origins:

Since science has not the vaguest idea of how life originated on earth, whether life existed anywhere else, or whether little green men pullulate in our galaxy, it would be honest to admit this to our students, the agencies funding research, and the public.... It is new knowledge, not another clever scenario, that is needed to achieve an understanding of the origin of life.

Scientific creationists and others are proposing a two-model approach to the origin of life that will not only stimulate scientific thought among students, but in fact, capitalize on their motivation toward this subject. Creationists cannot legitimately be accused of bias or mind-programming when they merely offer their model as alternative to evolution. If evolution is so certain, then what is there to be afraid of in this matter? Some evolutionists seem to be saying, by their passionate resistance to the creation model, that they are afraid that their model won't stand up. They say that arguing with a Creator is a no-win situation. By the same token, can't the creationist say that arguing with a model that can be *made* to fit any data is also a no-win situation? Why not let the students decide in this matter?

This writer submits, then, that every teacher, every student and every parent should have the opportunity to explore both models as a framework within which they can correlate scientific information without fear of retribution of any kind.

That the search for knowledge and understanding of the physical universe and of the living things that inhabit it should be conducted under conditions of intellectual freedom, without religious, political or ideological restrictions.... That freedom of inquiry and dissemination of ideas require that those so engaged be free to search where their inquiry leads ... without political censorship and without fear of retribution in consequence of unpopularity of their conclusions. Those who

challenge existing theories must be protected from retaliatory reactions (National Academy of Sciences Resolution of April, 1976: 'An Affirmation of Freedom of Inquiry and Expression').

Clarence Darrow, in the Scopes trial of 1925, had this to say:

... let the children have their minds kept open ... close no doors to their knowledge ... shut no door to them ... let them have both evolution and creation ... the truth will win out in the end.

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We believe God has raised up ICR to spearhead Biblical Christianity's defense against the godless dogma of evolutionary humanism. Only by showing the scientific bankruptcy of evolution, while exalting Christ and the Bible, will Christians be successful in "the pulling down of strongholds; casting down imaginations, and every high thing that exalteth itself against the knowledge of God, and bringing into captivity every thought to the obedience of Christ" (II Corinthians 10:4,5).

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For in six days the Lord made the heaven and the earth, the sea, and all that in them is, and rested the seventh day... Exodus 20:11



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EVOLUTION VERSUS THE PEOPLE

- BTG No. 161 May 2002

by Henry M. Morris, Ph.D.

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"... the god of this world hath blinded the minds of them which believe not, lest the light of the glorious gospel of Christ, who is the image of God, should shine unto them" (II Corinthians 4:4).

President Bush's important Elementary and Secondary Education Bill, H.R. 1, was signed into law (P. L. 107-110) on January 8, 2002. It contained the following statement, representing the "sense" of the Congress.¹

The Conferees recognize that a quality science education should prepare students to distinguish the data and testable theories of science from religious or philosophical claims that are made in the name of science. Where topics are taught that may guarantee controversy (such as biological evolution) the curriculum should help students to understand the full range of scientific views that exist, why such topics may generate controversy, and how scientific discoveries can profoundly affect society.

The above language was intended to encourage classroom discussion of all the scientific arguments, pro and con, about evolution. It was originally offered in the form of an Amendment to the Senate Education Bill, introduced by Rick Santorum (R-Pennsylvania) following his visit to 150 schools of his state, listening to recommendations of the teachers, parents, administrators, and students of these schools.

Senator Santorum's amendment was strongly endorsed by such key Democrats as Ted Kennedy and Robert Byrd, and passed the Senate by a vote of 91-8. The bill itself passed by 87-10. It had previously passed the House. The Senate/House Conference Committee then was subjected to much negative pressure by the evolutionary establishment and finally moved the amendment in the Conference Report to a place in the "Joint Explanatory Statement." However, it left its language essentially unchanged.

Eugenie Scott, representing the evolutionary establishment, put an evolutionary "spin" on this statement, interpreting it to say that "teachers do not have to alter how they teach evolution as a result of the Education Bill."²

Most others, however, including Senator Santorum himself, understand it differently. He writes:

My amendment was included in the final version of the bill, H.R.1. Specifically, the amendment expresses the sense of the conferees

that a quality science education should prepare students to distinguish the data and testable theories of science from religious or philosophical claims that are made in the name of science.³

Among Santorum's earlier "talking points," when introducing and promoting his amendment, was the following:

My amendment simply states that it is the sense of the Senate that honest intellectual debate and the teaching of consistent scientific principles should include the evidence for and against materialism, intelligent design in biological and "scientific" education.

Thus, the bill clearly encourages teachers to include the scientific evidence *against* evolution in classes where evolution is being assumed. As Senator Santorum indicated: "National opinion surveys show . . . that Americans overwhelmingly desire to have students learn the scientific arguments against, as well as for, Darwin's theory."⁴

Massimo Pigliucci, a biologist who has actually taken part in several creation/evolution debates says in the journal *Evolution*:

As unbelievable as it may seem, poll after poll not only confirms that only about 10% of Americans believe that evolution occurs, but also that about a third of high school biology teachers rejects the theory of evolution.⁵

Evolutionists like Pigliucci find it "unbelievable" that so many Americans—even biology teachers—reject evolution! What has gone wrong, they ask.

One arrogant explanation for this situation is that most people cannot understand the nuances of evolution.

Despite the acceptance of Darwin's ideas by most thoughtful individuals, nearly half of the general population in the United States rejects them.⁶

Note the implication that people who are "thoughtful" believe in evolution. However, there are now thousands of fully **credentialed scientists**, as well as thousands of well-educated and thoughtful people in other fields who have become creationists in the past half-century.

Furthermore, most people who still believe in evolution do so because their teachers and the media repeatedly have assured them that all scientists are evolutionists, but they have little or no knowledge themselves of the actual evidence. This "problem" is all blamed on "Christian fundamentalists" who are responsible for "creating a situation that has led to a dumbing down of evolution education in U.S. science classes,"⁷ so they say.

One proposed remedy for this situation is to have universities celebrate February 12 as Darwin Day. There now exists "an international Darwin Day organization presided over by Richard Dawkins which coordinates efforts on dozens of university campuses to put some sanity back into our science education."⁸ By "sanity," Professors Pigliucci and Dawkins presumably imply more naturalism and secular humanism. Both men are atheists, and so are Eugenie Scott and most other leading evolutionists.

Another suggestion is to downplay the origin of life as an evolutionary event and

focus on just the origin of species. The origin of life itself has proved too intractable to deal with naturalistically.

For example, the contents of volume 54 (2000) of *Evolution* comprise 192 primary research articles, but not one that concerns the origins of life.⁹

In fact, practically all the articles in the journal *Evolution* deal merely with examples of variation (such as different varieties of dogs and cats), though they call it evolution. Creationists have no problem with microevolution, except for its misleading name. Of course evolutionists believe by faith that these small horizontal variations, if they continue long enough, will evolve into significant vertical changes, or macroevolution.

The creationist tactic of falsely separating micro from macroevolution has led to science teaching standards that include language about adaptation and natural selection while omitting language on common descent.¹⁰

The fact is, of course, that adaptation and natural selection are observable processes in the real world, whereas common descent of two or more distinct kinds from some different ancestral kind is not. Real evolution from one kind to another kind is based on faith, not observation.

Evolutionists often repeat their own statement of faith that evolution is a science. Michael Shermer, for example, insists that "the theory of evolution is a scientific theory, not a religious doctrine. It stands or falls on evidence alone."¹¹

If that were really so, it would have fallen long ago, because the scientific evidence (that is, observable, repeatable evidence) is altogether absent.

There are literally scores of books available today, written by knowledgeable scientists, showing that there is no valid scientific evidence for evolution. But evolutionists ignore them.

For those unwilling to read a large book, we have a small booklet, *The Scientific Case Against Evolution*, which documents from scientific evolutionary sources alone the fact that evolution did not occur in the past, does not occur in the present, and could not occur at all. Apparently they won't read this either. At least, no one has tried to refute it.

The evidence that evolutionism is religion and not science is easily understood by anyone. No wonder the polls show large numbers in favor of including creation teaching in our public schools. In effect, our Congress and the President have now officially recognized this fact, via the Santorum amendment in the new education bill.

We hope that both the many creationist biology teachers and also many open-minded evolutionary teachers will now recognize and act on this fact.

But don't count on it. As the Bible has said: "*But if our gospel be hid, it is hid to them that are lost: In whom the god of this world [that is Satan, who is very powerful, and very deceptive] hath blinded the minds of them which believe not, lest the light of the glorious gospel of Christ, who is the image of God, should shine unto them*" (II Corinthians 4:3,4).

Endnotes

1. Congressional Record-House (December 18, 2001) H 9951.
2. NCSE Resource, "Santorum Amendment Stripped from Education Bill," p. 2. The author, Dr. Eugenie Scott, is Director of the National Center for Science Education, the more or less official action center for anti-creationism.
3. Rick Santorum, form letter, February 5, 2002.
4. Rick Santorum, statement issued on December 18, 2001.
5. Massimo Pigliucci, "Defending Evolution, as Strange as it Seems" *Evolution* (vol. 56, No. 1, 2002), p. 206.
6. Arthur M. Jackson, "Celebrating Darwin Day," *The Humanist* (vol. 62, January/February 2002), p. 46.
7. Ibid.
8. Pigliucci, op. cit., p. 207. Arthur Jackson assures us that celebrating Darwin Day "has grown significantly to become an international event" (Jackson, op. cit.) p. 46.
9. Michael F. Antolin and Joan M. Herbers, "Evolution's Struggle for Existence in America's Public Schools," *Evolution* (vol. 55, December 2001), p. 2381.
10. Ibid., p. 283. Note the quixotic title of this article. Are creationists really making evolutionism struggle for its existence? They have never tried to *ban* evolution, but only allow creation in as an alternative.
11. Michael Shermer, *Why People Believe Weird Things* (New York: W. H. Freeman, 1997), p. 135.

*** Dr. Morris is Founder and President Emeritus of ICR.**

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IMPACT No. 278

BIOLOGY TEXTBOOKS WORLDVIEW DEVELOPMENT AND THE CREATION/EVOLUTION CONTROVERSY

by Steve Deckard*

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Introduction

Secondary school biology textbooks are the central tool in the instructional process of teaching biological science in the American school systems. For example, Yager reported that "over 90% of all science teachers use a textbook 95% of the time; hence the textbook becomes the course outline, the framework, the parameters for students' experience, testing, and a worldview of science" (p. 578, 1983). The purpose of this article is to: (1) document the amount and nature of evolutionary content found in secular secondary school biology textbooks, (2) discuss the importance of understanding the difference between microevolution and macroevolution, (3) establish the connection between evolutionary theory and worldview development, and (4) discuss alternatives to the secular secondary biology textbooks.

Evolutionary content of selected secular secondary biology textbooks

Swarts (1991) analyzed eight widely used U.S. secondary biology textbooks for their evolutionary content. The evolutionary content was divided into 12 "Categories of Evolutionary Content," with proportions as follows:

Biology: An Everyday Experience	Merrill	2.9%
Focus on Life Science	Merrill	7.1%
Biology: Living Systems	Merrill	7.4%
Life Science	Scott, Foresman	8.5%
BSCS: An Ecological App. (Green Version)	Kendall/Hunt	13.2%
BSCS: A Molecular App. (Blue Version)	DC Heath	13.5%
Modern Biology	Holt, Rinehart & Winston	13.9%
Biological Science: An Inquiry into		

Life (Yellow Version)

Harcourt, Brace Jovanovich 15.6%

Microevolution and Macroevolution and worldview development

Swarts use of 12 "Categories of Evolutionary Content" makes no distinction between that which is observable and that which is conjecture. But the distinction between microevolution and macroevolution is a must.[1] The connection with worldview development is noted by Silvius: Creationists who acknowledge the existence of microevolution agree with proponents of macroevolution that natural selection does cause "evolutionary change." Indeed, much of the discussion of macroevolution in modern writings is related to microevolution which is discussed accurately from a scientific standpoint, but then is used as evidence for the "great leap" of extrapolation to macroevolution. This most extensive "leap" appears when evolution is elevated to the worldview status of **evolutionism**. Evolutionism combines organic evolution, biological evolution, and societal evolution into one atheistic, naturalistic framework (Silvius, p. 341).

The implication is clear. Creationists are not opposed to teaching microevolution **but rather to the teaching of macroevolution as fact.**

Swarts showed clearly that very little content of the secular secondary biology textbooks is devoted to creationism or creation science. Most of these texts do not even mention these as an alternative. This is because the textbook authors do not consider creation science as an alternative model nor as a science. On the other hand, evolutionary theory including macroevolution is viewed as science, and the main component of a unified worldview.

Creationist content in secular secondary biology textbooks

The central role of biology textbooks makes it imperative that Christian teachers understand their content. This is true, not only for those concerned with the public school textbook content, but also those concerned with Christian schools, because secular high-school biology textbooks are used in some Christian schools.

The results of a 1995 ACSI textbook survey show that some educators in Christian schools are not overly concerned with the evolutionary content. Seventy percent of the schools use a Christian text. Most of the remaining 30% used standard secular secondary school biology texts, each evolutionary based. Two of these were analyzed by Swarts. They are: Holt and Rinehart's *Modern Biology*, and the Merrill's *Biology of Living Systems*. The *Modern Biology* text ranked second highest (in evolutionary content) among the eight U.S. texts analyzed (13.9%). The *Biology: Living Systems* ranked third from the bottom (7.4%). From a Christian creationist perspective, the use of *Modern Biology* is not acceptable. This evolutionarily based text presents evolutionary doctrine and dogma in more than one out of every eight pages read. The choice of Merrill's *Biology: Living Systems* is a bit better, but still a compromise.

Fortunately, there does seem to be a clear choice for those Christian schools which for some reason choose a secular text. This would be *Biology: An Everyday Experience* (Merrill). This text ranks the lowest (2.9%) in evolutionarily content and presents some other advantages in terms of the distribution of the evolutionary content. It is heavily concentrated with evolutionary content in two sections (based on dividing the text into ten equal sections). Eighty-nine percent of the 2.9% evolutionary content is found in the last two sections and 10.9% in the first section. This seems to indicate a lack of integration of evolutionary content within the rest of the text. This would allow the teacher to simply skip the sections which are heavily laden with evolutionary religion if so desired.

A second reason that *Biology: Living Systems* is a better choice deals with its lack of emphasis on human evolution, which is not addressed. This leaves out the destructive religion which teaches

that man evolved from animals.

As a comparison, *Modern Biology* has evolutionary content in every tenth section except the ninth and has 51.6% in a key area. Clearly the teacher would not have a choice in regards to skipping certain sections. In the *Modern Biology* main narrative, the idea of evolutionary theory as the main unifying theme of biology is taken to heart. The percentile breakdown indicates the integration of evolutionary content throughout the main narrative.

Creationist content of Christian secondary and college-level biology textbooks

Currently available Christian based biology textbooks at the secondary level are not fully creationist. This may be due to the fact that a number of Christians do not believe that the doctrine of creationism is truth or that it is relevant. According to Gary North, the reason—at least in part—deals with the fact that: Christians have not been shown clearly and decisively that Darwinism is a total worldview, and that by accepting any aspect of this worldview, Christians compromise and weaken the presentation of the Christian worldview, as well as risk disobeying God. They have not been shown how evolutionism spreads like cancer from the geology or biology textbook to every area of personal ethics and public policy. Worse, they have not been shown why and how six-day creationism leads to a fundamentally unique worldview that encompasses things other than academic topics like historical geology and biology. To win the battle with Darwinism, which is above all a comprehensive worldview justifying comprehensive power, six-day creationists must believe that the stakes are far larger than mere laboratory experiments or one-evening debates. Creation scientists must demonstrate to Christians that six-day creationism really makes a difference in every area of life.

According to North, six-day creationism should be the foundation for the modern-day Christian worldview. Even though many Christian thinkers have sounded the call for a renewed vigor and stance on six-day creationism, the current non-secular (Christian) textbooks do not fully support such a view.

There is, however, a good introductory *college-level* textbook written by John Silvius. Professor Silvius starts with the right foundation including an introductory chapter regarding the issue of belief system and the importance of the creationist perspective in the development of such a worldview. Dr. Silvius then proceeds to integrate within the text the concepts necessary to show the ties with creationism and true science as it would be practiced under a correct understanding of a creationist-based worldview.

The importance of worldview in biology curriculum development

Because of the lack of solid creationist-based biological textbooks at the secondary level, much work in the area of curriculum development needs to be done. From this author's perspective, the ICR tenets of Scientific and Biblical Creationism should serve as the starting point and unifying theme of biology textbooks and the development of biological science materials.[2] Use of the ICR tenets:

1. Assists the curriculum developer in combating the tenets of false science and worldview of the National Association of Biology Teachers and other evolutionary groups.
2. Allows for the development of a broad-scoped curriculum allowing the curriculum developer to show how science affects all areas of the life endeavor.
3. Assists the creationist curriculum developer in showing clearly and decisively that the creationist worldview is a total and logically satisfying worldview.
4. Allows the developer to integrate a creationist worldview throughout the text materials in response to textbooks such as *Modern Biology*.
5. Would focus the content within a microevolution framework.

6. Would focus the content on a correct view of the nature of man. Man would be viewed as a created being in fully human form right from the start.

Discussion and conclusions

The evidence is in and the battle lines are drawn. It is past time for the Christian community to make the choice to defend the Biblical creation-based worldview. Because biology textbooks communicate a particular worldview, it is difficult to imagine how the use of evolutionarily based texts in a Christian school can be defended. The informed Christian must understand this and the implications of choosing a particular textbook.

There are alternatives to the secular texts, but these alternatives are not complete in their presentation of a creationist worldview. Much needs to be done in preparing textbooks and other biological science materials that present our children with a correct perspective of God's world.

Footnotes

1. Microevolution may be defined as: genetic change within limits (Silvius, p. 339), whereas macroevolution may be defined as the general theory of evolution which allegedly occurs with no limits to biological change. The latter appears to be Swarts' definition of choice. There is no evidence for macroevolution while on the other hand, there exists abundant evidence for microevolution, or (better) variation within limits.
2. See "The Tenets of Creationism," *Impact* article #85 by Dr. Henry Morris.

References

- ACSI, "1995 Textbook Survey," (pp. 212-213). Association of Christian Schools International, P.O. Box 35097, Colorado Springs, CO 80935-3509.
- Deckard, Steve, "Developing a Creationist Worldview" (In Press *CRSQ*).
- Deckard, S.W. et al. (1995). "Methodology for Analysis of Science Teaching Materials From a Creationist Worldview." *CRSQ*, vol. 32.
- North, G. (1988). *Is the World Running Down? Crisis in the Christian Worldview*. Institute for Christian Economics, Tyler Texas (pp. xiv-xv).
- Silvius, J. (1994). *Biology Principles and Perspectives*. Kendall Hunt, Dubuque, Iowa.
- Swarts, F. (1991). Topic and inquiry analysis of the evolutionary content in secondary school biology textbooks. DIA #9214038. UMI Dissertation Services, Ann Arbor, MI.
- Yager, R.E. (1983). The importance of terminology in teaching K-12 science. *Journal of Research in Science Teaching*, 20, 577-588.

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IMPACT No. 282

SHOULD EVOLUTION BE IMMUNE FROM CRITICAL ANALYSIS IN THE SCIENCE CLASSROOM?

by David Buckna and Denis Laidlaw *

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This fall it was back to class for millions of students enrolled in schools, colleges, and universities throughout Canada and the United States. For those taking science courses such as biology, anthropology, and earth science, it's quite evident that evolution is the reigning paradigm in science today. University of Calgary biology professor Gordon Pritchard's statement on evolution is a good example of this mode of thinking: "... evolution currently provides the best explanation for the diversity of life on earth, including humans" (Calgary Herald, August 3, 1995, p. A5).

Michigan State physiology professor Robert S. Root-Bernstein wrote regarding his introductory course on evolution: "I encourage [students] to be skeptical—as long as their skepticism is based on logic and evidence. . . . Questions are what drives science, not answers. . . . Take nothing for granted, I counsel my students: that is what makes a scientist" ("Darwin's Rib," in *Discover*, September 1995, pp. 38-41).

Taking a cue from professor Root-Bernstein that "questions are what drives science, not answers," what follows is a partial list of questions that could be used to critically examine and evaluate evolutionary theory.

These questions would make good classroom discussions, initiated by either teacher or student, or good student research assignments.

1. Microsoft programmers utilized complex codes to create the Windows 95 software. The genetic code, which is more sophisticated, controls the physical processes of life and is accompanied by elaborate transmission and duplication systems. How does evolution, using

natural processes and chance, solve the problem of complex information sequencing without intelligence?

2. Evolutionists believe the Cambrian explosion of new life began about 525–550 million years ago. Stephen Jay Gould writes: "... an elegant study, published in 1993, clearly restricts this period of phyletic flowering to a mere five million years." (*Scientific American*, October 1994, p. 89.) What is the approximate number of beneficial mutations which must have occurred per year during this 5-million-year period, given that billions x billions of information bits would have to be encoded? What percentage of mutations in multicellular organisms have been recognized as beneficial? List any you find.
3. Within the field of biogenesis studies, there are a number of models which posit that the early, prebiotic earth must have had a reducing atmosphere (without oxygen or ozone). How could life begin to evolve without ozone to protect the earliest life forms from harmful UV radiation?
4. Both "left-handed" and "right-handed" amino acids occur naturally. Life forms contain proteins consisting principally of "left-handed" amino acids. Assuming a simple protein molecule of 172 amino acids, what is the mathematical probability that all 172 amino acids would be "left-handed"?
5. Megatons of amino acids would be required to reach the necessary concentrations for protein synthesis in a vast primordial ocean. Puddles and ponds have a limited duration. Does evolution address this problem?
6. Molecular biologist Michael Denton (Senior Research Fellow, University of Otago in New Zealand) in his book, *Evolution: A Theory in Crisis*, states there is not a trace of evidence on the molecular level for the traditional evolutionary series. Other molecular biologists agree/disagree with his conclusion. Why?
7. How does evolution explain the emergence and development of sexual reproduction given that both male and female physiology would have to mutate simultaneously?
8. True or False? Life appears abruptly and in complex forms in the fossil record and gaps appear systematically between various living kinds.
9. Document from the fossil record the transitional forms leading up to the first fish, from their assumed invertebrate ancestors.
10. Jellyfish consist entirely of soft body tissues. How do evolutionists explain the existence of jellyfish fossils, in view of their argument that soft body tissues of missing intermediate forms did not fossilize?
11. The coelacanth fish was thought to be extinct for 70 million years, until one was caught off the coast of Madagascar in 1938. How do evolutionary biologists evaluate the discovery?
12. Describe one undisputed example of a creature that was transitional between fish and amphibian.
13. There are innumerable evolutionary enigmas, such as eyes, bat radar, and pterodactyl wings. In each case, all the component parts would have to evolve simultaneously in order to function properly. Discuss three other structures which defy evolutionary explanation.
14. Describe one insect that was transitional between a non-flying insect and a flying insect.
15. During the Industrial Revolution, dark-colored peppered moths appeared in larger numbers during environmental changes. Did a new species emerge, or did it already preexist? Is this macroevolution?
16. "Bird-like" dinosaurs such as *Struthiomimus* were "lizard-hipped," while dinosaurs such as the low-slung, four-legged *Ankylosaurus* were "bird-hipped." How do paleontologists who believe dinosaurs evolved into birds, account for these characteristics?
17. Is it possible to document from the fossil record the series of transitional forms that led up to any dinosaur species?
18. (a) Were the feathers of *Archaeopteryx* identical to modern flying birds? (b) Are there any undisputed true birds in the fossil record that had teeth? (c) *Archaeopteryx* had claws on its wings. Name three modern birds that have claws on their wings (either in the juvenile stage or as an adult).

19. Evolution teaches that mammals evolved from reptiles. All mammals have three bones in the ear (and the Organ of Corti) and a single bone on each side of the lower jaw. All reptiles have a single bone in the ear and on average six bones on each side of the lower jaw. Speculate how intermediate forms could have managed to hear and chew, while the necessary restructuring was taking place and the Organ of Corti was being developed.
20. Has any creature been identified as a direct ancestor of primates? Has any creature been identified as the common ancestor of man and apes? Explain your answers.
21. Evolutionist Dr. Charles Oxnard (Professor of Anatomy and Human Biology, University of Western Australia) completed the most sophisticated computer analysis of australopithecine fossils ever undertaken, and concluded that they have nothing to do with the ancestry of man whatsoever and are simply an extinct form of ape (see Oxnard's *The Order of Man*, Yale University Press, 1984). How have paleoanthropologists responded to his conclusions?
22. Stern and Susman write in the *American Journal of Physical Anthropology* 60:279-313 (1983) that the hands and feet of *Australopithecus afarensis* are not at all like human hands and feet; rather, they have the long, curved fingers and toes typical of arboreal primates. How, then, do some insist that the footprints Mary Leakey uncovered in strata (dated at 3.5 million years old) in Laetoli were made by *Australopithecus afarensis*, though these prints are indistinguishable from modern man? (Tuttle, *Natural History*, 64)
23. Nebraska Man (based solely on a fossil tooth) became a significant image in America during the time of the Scopes trial (1925); later, scientists discovered the tooth came from a pig. A report in *Nature* (August 17, 1995) states that analysis of an incomplete shin bone from a creature dubbed *Australopithecus anamensis* suggests it walked upright "between 3.9 and 4.2 million years ago." How should we treat discoveries which have not yet faced the rigors of scientific validation?
24. In 1982, Dr. Lyall Watson stated: "The fossils that decorate our family tree are so scarce that there are still more scientists than specimens. The remarkable fact is that all the physical evidence we have for human evolution can still be placed, with room to spare, inside a single coffin!" (*Science Digest*, vol. 90, May '82, p. 44.) Is Watson's statement still valid today?
25. If coal formation was a slow, vertical accumulation of sediments over vast ages (a) why are fossil trees sometimes found upside down in coal seams? (b) why are marine fossils such as tubeworms, sponges, and corals often found in coal beds?
26. Oil and gas, trapped within permeable sedimentary rock, remains at high pressure. If trapped for millions of years, why wouldn't these pressures have dissipated?
27. Does the retrograde motion of Venus, Uranus, and Pluto support or contradict the theory of solar system formation?
28. On March 25, 1996, Comet Hyakutake (classified as a short-period comet) made its closest swing by Earth, at a distance of about nine million miles. According to English astronomer Raymond A. Lyttleton and others, what's the maximum lifetime for a short-period comet?
29. The Oort Cloud was first theorized by Dutch astronomer Jan Oort in 1950 to account for the existence of short period comets. Since 1950, has any portion of the postulated Oort Cloud ever been directly observed?
30. Are new stars forming today? Are new planets which circle faraway stars beyond the solar system actually being discovered?
31. If the universe is billions of years old, orbital mechanics require that spiral galaxies and galaxy clusters should have blurred or spun apart long ago. How do Big Bang advocates explain their present shape? Is there any direct evidence for the "missing mass" of the universe (Cold Dark Matter)?
32. In his book, *Darwin's Black Box: The Biochemical Challenge to Evolution*, Dr. Michael Behe defines an "irreducibly complex" system as a single system composed of several interacting parts that contribute to the basic function, and where removal of any one part causes the system to effectively cease functioning. Give an example of a system (living or non-living) that could be considered "irreducibly complex," and explain why.
33. In his 1981 address to the geology staff at the Field Museum of Natural History in Chicago,

Dr. Colin Patterson (Senior Paleontologist, British Museum of Natural History) asked: "Can you tell me anything you KNOW about evolution? Any one thing? Any one thing that is true?" The answer he got was silence. Can you state any one thing about evolution you know to be true? How do you know it is true?

To avoid the charge that evolution is presented to students as fact rather than theory, school boards may wish to consider the following *Origins of Life* policy:

As no theory in science is immune from critical examination and evaluation, and recognizing that evolutionary theory is the only approved theory of origins that can be taught in the [province/state] science curriculum: whenever evolutionary theory is taught, students and teachers are encouraged to discuss the scientific information that supports and questions evolution and its underlying assumptions, in order to promote the development of critical thinking skills. This discussion would include only the scientific evidence/information for and against evolutionary theory, as it seeks to explain the origin of the universe and the diversity of life on our planet.

If science is a search for truth, no scientific theory should be allowed to freeze into dogma, immune from critical examination and evaluation.

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As he spake by the mouth of his holy prophets, which have been since the world began.
Luke 1:70

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Evolution is Religion-Not Science **by Henry M. Morris, Ph.D.***

The writer has documented in two recent Impact articles ^{1, 2} from admissions by evolutionists that the idea of particles-to-people evolution does not meet the criteria of a scientific theory. There are no evolutionary transitions that have ever been observed, either during human history or in the fossil record of the past; and the universal law of entropy seems to make it impossible on any significant scale.

Evolutionists claim that evolution is a scientific fact, but they almost always lose scientific debates with creationist scientists. Accordingly, most evolutionists now decline opportunities for scientific debates, preferring instead to make unilateral attacks on creationists.

Scientists should refuse formal debates because they do more harm than good, but scientists still need to counter the creationist message.³

The question is, just *why* do they need to counter the creationist message? Why are they so adamantly committed to anti-creationism?

The fact is that evolutionists believe in evolution because they *want* to. It is their desire at all costs to explain the origin of everything without a Creator. Evolutionism is thus intrinsically an atheistic religion. Some may prefer to call it humanism, and New Age evolutionists may place it in the context of some form of pantheism, but they all amount to the same thing. Whether atheism or humanism (or even pantheism), the purpose is to eliminate a personal God from any active role in the origin of the universe and all its components, including man.

The core of the humanistic philosophy is naturalism—the proposition that the natural world proceeds according to its own internal dynamics, without divine or supernatural control or guidance, and that we human beings are creations of that process. It is instructive to recall that the philosophers of the early humanistic movement debated as to which term more adequately described their position:

humanism or naturalism. The two concepts are complementary and inseparable.⁴

Since both naturalism and humanism exclude God from science or any other active function in the creation or maintenance of life and the universe in general, it is very obvious that their position is nothing but atheism. And atheism, no less than theism, is a religion! Even doctrinaire-atheistic evolutionist Richard Dawkins admits that atheism cannot be proven to be true.

Of course we can't prove that there isn't a God.⁵

Therefore, they must *believe* it, and that makes it a religion. The atheistic nature of evolution is not only admitted, but insisted upon, by most of the leaders of evolutionary thought. Ernst Mayr, for example, says that:

Darwinism rejects all supernatural phenomena and causations.⁶

A professor in the Department of Biology at Kansas State University says:

Even if all the data point to an intelligent designer, such a hypothesis is excluded from science because it is not naturalistic.⁷

It is well known in the scientific world today that such influential evolutionists as Stephen Jay Gould and Edward Wilson of Harvard, Richard Dawkins of England, William Provine of Cornell, and numerous other evolutionary spokesmen are dogmatic atheists. Eminent scientific philosopher and ardent Darwinian atheist Michael Ruse has even acknowledged that evolution *is* their *religion*!

Evolution is promoted by its practitioners as more than mere science. Evolution is promulgated as an ideology, a secular religion—a full-fledged alternative to Christianity, with meaning and morality. . . . Evolution is a religion. This was true of evolution in the beginning, and it is true of evolution still today.⁸

Another way of saying "religion" is "worldview," the whole of reality. The evolutionary worldview applies not only to the evolution of life, but even to that of the entire universe. In the realm of cosmic evolution, our naturalistic scientists depart even further from experimental science than life scientists do, manufacturing a variety of evolutionary cosmologies from esoteric mathematics and metaphysical speculation. Socialist Jeremy Rifkin has commented on this remarkable game.

Cosmologies are made up of small snippets of physical reality that have been remodeled by society into vast cosmic deceptions.⁹

They *must* believe in evolution, therefore, in spite of all the evidence, not because of it. And speaking of deceptions, note the following remarkable statement.

We take the side of science in spite of the patent absurdity of some of its constructs, . . . in spite of the tolerance of the scientific community for unsubstantiated commitment to materialism. . . . we are forced by our *a priori* adherence to material causes to create an apparatus of investigation and set of concepts that produce material explanations, no matter how counterintuitive, no matter how mystifying to the uninitiated. Moreover, that materialism is

absolute, for we cannot allow a Divine Foot in the door.¹⁰

The author of this frank statement is Richard Lewontin of Harvard. Since evolution is not a laboratory science, there is no way to test its validity, so all sorts of justso stories are contrived to adorn the textbooks. But that doesn't make them true! An evolutionist reviewing a recent book by another (but more critical) evolutionist, says:

We cannot identify ancestors or "missing links," and we cannot devise testable theories to explain how particular episodes of evolution came about. Gee is adamant that all the popular stories about how the first amphibians conquered the dry land, how the birds developed wings and feathers for flying, how the dinosaurs went extinct, and how humans evolved from apes are just products of our imagination, driven by prejudices and preconceptions.¹¹

A fascinatingly honest admission by a physicist indicates the passionate commitment of establishment scientists to naturalism. Speaking of the trust students naturally place in their highly educated college professors, he says:

And I use that trust to effectively brainwash them. . . . our teaching methods are primarily those of propaganda. We appeal—without demonstration—to evidence that supports our position. We only introduce arguments and evidence that supports the currently accepted theories and omit or gloss over any evidence to the contrary.¹²

Creationist students in scientific courses taught by evolutionist professors can testify to the frustrating reality of that statement. Evolution is, indeed, the pseudoscientific basis of religious atheism, as Ruse pointed out. Will Provine at Cornell University is another scientist who frankly acknowledges this.

As the creationists claim, belief in modern evolution makes atheists of people. One can have a religious view that is compatible with evolution only if the religious view is indistinguishable from atheism.¹³

Once again we emphasize that evolution is *not* science, evolutionists' tirades notwithstanding. It is a philosophical worldview, nothing more. Another prominent evolutionist comments as follows:

(Evolution) must, they feel, explain everything. . . . A theory that explains everything might just as well be discarded since it has no real explanatory value. Of course, the other thing about evolution is that anything can be said because very little can be disproved. Experimental evidence is minimal.¹⁴

Even *that* statement is too generous. Actual experimental evidence demonstrating true evolution (that is, macroevolution) is not "minimal." It is nonexistent!

The concept of evolution as a form of religion is not new. In my book, *The Long War Against God*,¹⁵ I documented the fact that some form of evolution has been the pseudo-rationale behind every anti-creationist religion since the very beginning of history. This includes all the ancient ethnic religions, as well as such modern world religions as Buddhism, Hinduism, and others, as well as the "liberal" movements in even the creationist religions (Christianity, Judaism,

Islam).

As far as the twentieth century is concerned, the leading evolutionist is generally considered to be Sir Julian Huxley, primary architect of modern neo-Darwinism. Huxley called evolution a "religion without revelation" and wrote a book with that title (2nd edition, 1957). In a later book, he said:

Evolution . . . is the most powerful and the most comprehensive idea that has ever arisen on earth.¹⁶

Later in the book he argued passionately that we must change "our pattern of religious thought from a God-centered to an evolution-centered pattern."¹⁷ Then he went on to say that: "the God hypothesis . . . is becoming an intellectual and moral burden on our thought." Therefore, he concluded that "we must construct something to take its place."¹⁸

That something, of course, is the religion of evolutionary humanism, and that is what the leaders of evolutionary humanism are trying to do today.

In closing this summary of the scientific case against evolution (and, therefore, for creation), the reader is reminded again that all quotations in the article are from doctrinaire evolutionists. No Bible references are included, and no statements by creationists. The evolutionists themselves, to all intents and purposes, have shown that evolutionism is not science, but religious faith in atheism.

References

1. Morris, Henry M., "The Scientific Case Against Evolution—Part I," (Impact #330, December 2000), pp. i-iv.
2. Morris, Henry M., "The Scientific Case Against Evolution—Part II," (Impact #331, February 2001), pp. i-iv.
3. Scott, Eugenie, "Fighting Talk," *New Scientist* (vol. 166, April 22, 2000), p.47. Dr. Scott is director of the anti-creationist organization euphemistically named The National Center for Science Education.
4. Ericson, Edward L., "Reclaiming the Higher Ground," *The Humanist* (vol. 60, September/October 2000), p. 30.
5. Dawkins, Richard, replying to a critique of his faith in the liberal journal, *Science and Christian Belief* (vol. 7, 1994), p. 47.
6. Mayr, Ernst, "Darwin's Influence on Modern Thought," *Scientific American* (vol. 283, July 2000), p. 83.
7. Todd, Scott C., "A View from Kansas on the Evolution Debates," *Nature* (vol. 401, September 30, 1999), p. 423.
8. Ruse, Michael, "Saving Darwinism from the Darwinians," *National Post* (May 13, 2000), p. B-3.
9. Rifkin, Jeremy, "Reinventing Nature," *The Humanist* (vol. 58, March/April 1998), p. 24.

10. Lewontin, Richard, Review of *The Demon-Haunted World*, by Carl Sagan. In *New York Review of Books*, January 9, 1997.
11. Bowler, Peter J., Review of *In Search of Deep Time* by Henry Gee (Free Press, 1999), *American Scientist* (vol. 88, March/April 2000), p. 169.
12. Singham, Mark, "Teaching and Propaganda," *Physics Today* (vol. 53, June 2000), p. 54.
13. Provine, Will, "No Free Will," in *Catching Up with the Vision*, Ed. by Margaret W. Rossiter (Chicago: University of Chicago Press, 1999), p. S123.
14. Appleyard, Bryan, "You Asked for It," *New Scientist* (vol. 166, April 22, 2000), p. 45.
15. Morris, Henry M., *The Long War Against God* (Grand Rapids, Michigan: Baker Book House, 1989), 344 pp.
16. Huxley, Julian, *Essays of a Humanist* (New York: Harper and Row, 1964), p. 125.
17. Ibid., p. 222.
18. Ibid.

***Dr. Morris is founder and President Emeritus of ICR.**

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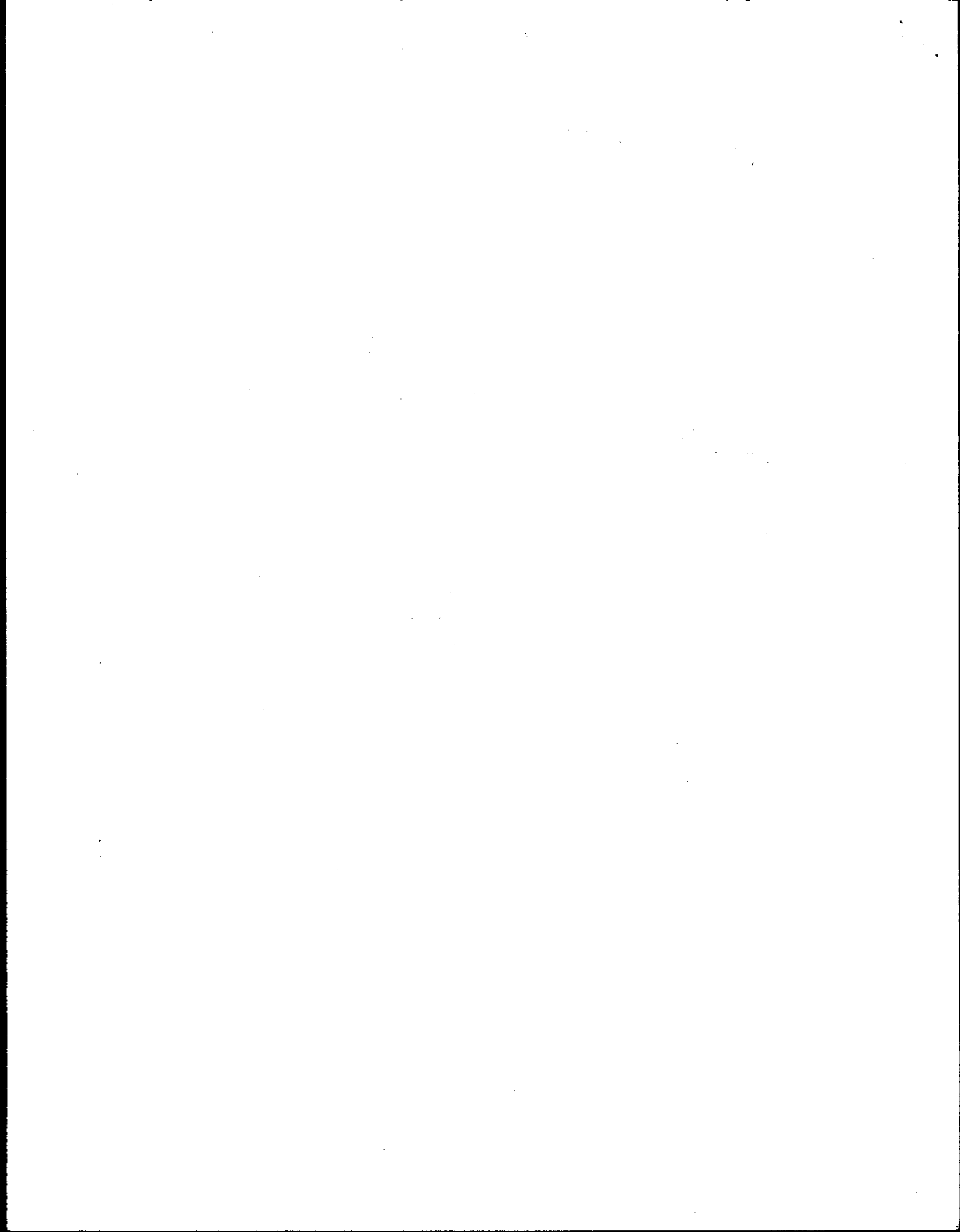
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Teaching Creation and Evolution in Public Schools

Solid research reveals American beliefs

by Jerry Bergman

Originally published as: *The attitude of various populations toward teaching Creation and evolution in public schools in: Creation Ex Nihilo Technical Journal 13(2):118–123, 1999*

Fifty studies were reviewed that surveyed opinions on teaching origins in public schools. The vast majority found about 90 % of the public desired that both creation and evolution or creation only be taught in the public schools. About 90 % of Americans consider themselves creationists of some form, and about half believe that God created humans in their present form within the past 10,000 years. In America, about 15 % of high school teachers teach both evolution and creation, and close to 20% of high school science teachers and about 10,000 scientists (including more than 4,000 life scientists) reject both macroevolution and theistic evolution. Although the vast majority of Americans desire both creation and evolution taught in school, the evolutionary naturalism worldview dominates, revealing a major disparity between the population and the ruling élite.

Introduction

Humans have, since their beginning, sought to understand how life began. Because the subject of origins deals with events that happened in the past, much speculation is involved, and the question of origins is an emotional issue intimately connected with personal belief structure. As evolution gained acceptance among scientists in the late 1800s, opposition to teaching it in public schools surfaced, and evolution is still not universally taught in American public schools.¹ Relatively few schools taught evolution, and many colleges did not include the subject in their curriculum, until after the 1930s.² Currently, evolutionary naturalism is the most widely taught view of origins in the West, and for the past half-century, evolutionists have strenuously opposed teaching competing theories of origins in public schools.

Creation-evolution surveys show most Americans are creationists

Scores of polls have now been completed by various organizations to assess both the public's opinions regarding creation and evolution and the advisability of teaching both views in the public schools. The first recent national scientific public opinion poll on teaching origins was completed in 1972 by George Gallup, a respected polling corporation with years of experience perfecting its methods. The poll asked a representative sample of 1,518 adults if they agreed with the statement:

'God created Adam and Eve, which was the start of human life.' Presumably, this question would separate those who conclude Adam and Eve were distinct creations from those who believe that humans evolved from a 'lower' life form by natural selection acting on mutations.

Of the total sample, 91 % were creationists of some form, and 44 % (25 % of them college graduates) agreed with the statement that *'God created man pretty much in his present form ... within the past 10,000 years.'*³ Fully 81 % of those who labelled themselves Evangelicals believed that humans descended from Adam and Eve, compared with 58 % of the non-Evangelical Protestants (Table 1, below). The lowest percent of agreement was among Roman Catholics (only 47 % agreed). Gallup found that close to 50 % of the population rejected both atheistic and theistic evolution, at least of humans.

Table 1. *Percent who agreed with: 'God created Adam and Eve, which was the start of human life' grouped by age, education and religion.*

Age	38 % (18–29)	51 % (30–49)	58 % (50 and older)	
Education	33 % (college)	55 % (High School)	66 % (Grade School)	
Religion	50 % (General Public)	81 % (Evangelicals)	47 % (Roman Catholic)	58 % (Protestants)

Gallup also found that agreement with creationism was inversely related to both education and age — the more educated and the younger the respondent, the *less* likely they were to believe that God created the first humans. The likely reason is that younger persons are better educated and more influenced by new secular ideas in the society around them. Only 33 % of college graduates agreed with the creation worldview compared with 66 % of grade school graduates. In a 1993 follow-up, Gallup found 82 % believe in some form of creationism, a drop of 10 %, and fully 47 % believe God created man pretty much in his present form within the past 10,000 years.⁴ A similar 1986 University of Texas study found that fully 60 % of students (N = 1,000) believe that *'Adam and Eve were created by God as the first two people.'*⁵

Secular humanists' poll finds most Americans are creationists

A more focused poll was completed by Research Associates under the direction of Professor Gerald Goldhaber of the State University of New York in Buffalo. Commissioned by the atheistic organization *Council for Secular Humanism*, the poll found 90.7 % of Americans identified with a specific religion. A large majority (83.8 %) was either Protestant (55.2 %) or Catholic (28.6 %). The sampling frame consisted of 1,512 randomly selected U.S. households, and the sampling error was ± 2.3 % at the 95 % confidence level.⁶ Education was found to be influential only at the extremes, i.e., those with a high school education or less were more likely to believe in *'a personal God who can answer prayer'* (93.9 %), but of respondents with a graduate or professional degree,

only 80.2 % agreed. Fully 91.2 % of all people expressed a belief in God, and 6.1 % claim they once did *not* believe in God but do so now.

This humanist survey that was designed to assess evolution beliefs found that the creationist position that rejects evolution is the *most* dominant position on origins in America. Fully 46.4 % disagreed with the statement that '*evolution is the best possible explanation of human existence.*' Education was negatively related to belief in creationism — fully 69.4 % of those with high school education or less did not believe that evolution was the best possible explanation for life, as did 46 % of those with graduate or professional degrees. The majority of all persons sampled (52.7 %) disagreed with the theistic evolution world view, and 19.1 % of all people surveyed stated they believed that God created the cosmos from 5 to 10 thousand years ago (13.2 % of professionals agreed with this position). Also, 44.5 % with a high school education or less believe the Bible is the '*Word of God*' and fully 63.3 % of the college graduates believe the Bible is '*the inspired word of God,*' but only 14.8 % who have graduate or professional degrees agreed with this statement.

Table 2. Results of several surveys on teaching origins.

I want taught?	Midwestern Survey I	Midwestern Survey II		Portland Survey Cook 1983 ³⁷	New Mexico Santillanes 1996 ³⁸		ABC News ³⁶ Associated Press 1981
	%	#	%	%	#	%	
Creation and Evolution	68	719	72.6	70.0	1214	73	76
Creation Only	16	125	12.6	23.0	160	10	10
Evolution Only	5	53	5.0	6.5	128	19	8
No opinion	11	92	9.0	-	96	8	6
Total Creation	84	844	85.3	93.5	1374	83	86
Total	100	989	100.0	100	1598	100	

The Creation center surveys

In 1976 the ICR Midwest Center completed a 'random phone survey' in five states and asked which view of origins they preferred taught in public schools.⁷ The same group also contacted a representative sample in two California school districts and found 89 % (N = 1,346) in Del Norte

and 84 % (N = 92,000) in Cupertino preferred that *both* creation and evolution be taught in the public schools. A second ICR Midwest Center sample of 989 persons is broken down in Table 2 (above), survey II.

In summary, the surveys completed consistently show that most Americans support the teaching of Creation in the public schools and only a minority accepts Darwinism. Most people — up to 90 % — hold some form of creationism.

Creation surveys of college students and creationism

One longitudinal study indicates that acceptance of creation may be growing among some college students. A survey of Mormon students at Brigham Young University (BYU) found that in 1935 36 % (N = 1159) of the students agreed with the statement '*Man's creation did not involve biological evolution,*' compared with 81 % (N = 1056) in 1973.⁸ In 1935 5 % compared with 27 % in 1973 agreed with the statement, '*The world's creation did not take millions of years.*' Students also claimed they became *more* conservative on religion as they progressed through BYU. Conversely, Hunsberger found little change in religiousness as students progressed through a secular college.⁹ The type and religious orientation of the college is of major importance in how students develop religiously.

Spencer found that 34 % of his sample of 149 Wichita State University students labelled themselves creationists, 61 % theistic evolutionists, and only 3 % atheistic evolutionists.¹⁰ Fully 47 % believed that the Genesis account of Noah, the Ark, and the Great flood is true, and 72 % believed that the Biblical account of Adam and Eve is true (50 % listed it as *certainly true* and 22 % as *probably true*). Spencer also found much inconsistency in the students' answers, indicating many students have not studied the topic or thought about it extensively. In another survey Fuerst administered a questionnaire to 2,387 students in ten different science courses at Ohio State University, Columbus, Ohio. He concluded that Biology students:

*'showed a surprisingly low level of acceptance for the theory of evolution, and by an 80 % to 20 % rate favoured the concept of equal time for competing theories of origins.'*¹¹

Another survey of nearly 2,400 science students at Ohio State University found 47 % did not believe Darwin's theory and fully 80 % felt that if Darwin's theory of evolution is taught in public schools, other views including special creation should also be taught.¹² Also, 58 % did not believe that teaching creationism in school amounted to teaching religion, and 41 % concluded that Darwinism did not have a valid scientific foundation.

These surveys are a few of those completed, all which find that a large percent of college students also hold to the some form of creationism.^{13,14,15}

Surveys of teachers and scientists

It is usually assumed that although the public favours teaching both theories, teachers favour teaching only evolution. Eve and Harold concluded that surveys consistently indicate that '*about one-fifth to one-third of science teachers actually teach creationism in their classes ...*'¹⁶ Zimmerman found that, although 19.1 % of Ohio science teachers did *not* believe in evolution, fully 87.7 % taught it in their biology classes.¹⁷ This means almost 20 % of Ohio science teachers were creationists but only 15.25 % taught creationism. A replication of this study by Tatina found evolution was a standard topic in 72.7 % of high school biology courses, creation in 16.3 %, and

both evolution and creation were frequently part of introductory biology classes.¹⁸

Surveys of scientists found 5 % believe that '*humans were created in their current form less than 10,000 years ago.*'^{19,20} This means 10,000 of the 213,000 scientists working in academic and basic research were creationists, including 4,200 life scientists. A 1988 survey by *Industrial Chemistry* magazine found of 519 respondents, 23 % rejected the belief that humans evolved from simple chemical elements. Consequently, according to this survey almost 50,000 scientists are old or young-age creationists.

A survey by Bland of degreed biology professors, many with years of teaching experience in accredited Bible colleges, found 81 % (N = 38) taught both creation and evolution and only 17 % (N = 8) taught evolution alone.²¹ Of this sample, 44 % (N = 21) taught theistic evolution, 49 % (N = 23) did not, 74 % (N = 35) used creation as an integrating theme in science, and only 24 % (N = 11) used evolution as an integrating theme.

In another survey, Harold and Eve found that fully 25 % of biology teachers believed that God created humans in their present form about 10,000 years ago.²² They also concluded that students in eastern schools were *most* likely to accept evolution, and those in southern schools *least* likely to accept the theory (Table 3).

Table 3. *The question: 'God created humanity pretty much in its present form in the last 10,000 years or so.'* (N = 90).

	Agree (%)	Disagree (%)	Not sure (%)
Texas Students	28	42	31
California students	19	59	23
Connecticut students	19	56	25
High School biology teachers	25	64	11

Note: Because of rounding off, not all percentages add up to exactly 100%.

Troost found 54 % (173 out of 320) of Indiana secondary school biology teachers believed evolution was theory, not fact, and 43 % (N=163) that evolution should be presented in public schools as one of several alternative theories of origins.²³ Troost found fully 73 % of the teachers were creationists of some sort (many were theistic evolutionists), and 72 % rated themselves as '*very religious*'. The survey also found that, contrary to Troost's expectations, the religious teachers put as much emphasis on evolution as their non-religious colleagues.

In a survey of 125 teachers (56 Christian school teachers and 69 public school teachers in 31 states), Ramsey found that 93 % of Christian school teachers and 29 % of public teachers used the

two-model approach; 92 % of Christian school teachers and 18 % of public teachers believe the Bible creation account over evolution; 98 % of Christian school teachers and 18 % public teachers believe humans were specially created; and 74 % of Christian school teachers compared with 17 % of public teachers believe evolution is atheistic.²⁴

About half of all teachers support teaching creationism

The major concern of teachers is not *if* creation is taught, but *how* it is taught. One survey involving 23 items mailed in 1988 to each of the 200 high schools in South Dakota found that creationism was presented in a favourable light in 9.5 % of the biology courses, and all but one of the teachers who presented it favourably believe that creationism has a scientific basis.²⁵ While 80.6 % of the teachers indicated that textbooks covered evolution satisfactorily, 51.4 % stated they were dissatisfied with the textbook coverage of creationism. Over half (59.6 %) felt that teaching creationism in the classroom did *not* mean teaching religion because creationism could be taught from a non-sectarian standpoint. In a measure of the teacher's knowledge about evolution, Tatina found only 7.1 % chose what the question's author believed was the correct evolution answer. Furthermore he found that,

*'teachers who teach only evolution, as well as those who include a unit on creationism, were all equally likely to answer this question correctly as those who did not teach a unit on evolution.'*²⁶

Fully 34.3 % of the teachers felt that creationism was scientifically valid, and ironically, attitudes on the validity of evolution were *'independent of whether evolution or creationism is taught.'*

Table 4. *Percent of teachers who believe that creation should be taught in public schools.*

Percent	Year	Place	Survey
30%	1983	Georgia	Eglin ³⁹
32%	1983	Georgia	Bunkner ⁴⁰
39%	1984	South Dakota	Tatina ⁴¹
44%	1985	Kentucky	Ellis ⁴²
45%	1986	USA	Affannato ⁴³
23%	1997	Ft Wayne, IN	Caylor ⁴⁴

A 1994 survey by Overman and Deckard of a large group of science teachers randomly selected from the National Association of Science Teachers membership found that, of 313 usable surveys, fully 39 % disagreed with the statement *'evolution is a scientific fact'* and 5 % agreed that the Genesis account about Adam, Noah and the Tower of Babel are historically true.²⁷ A total of 79 % agreed that an eternal creator supernaturally made the physical universe, and fully 43 % reject macroevolution.

Blank and Andersen surveyed 218 persons in a teacher training program in a large Midwestern university (see Table 5 below).²⁸ Specifically, four classes (one secondary science methods and four elementary science methods classes) were polled during the 1995–1996 academic year. The students surveyed were *all* in pre-service training programs, and for brevity, are here labelled only secondary and elementary teachers. Hodgson and Hodgson surveyed a total of 1,372 students in 10 life science courses at Central Michigan University.

In the Blank and Anderson survey, 21 % of the secondary science teachers and 57 % of the elementary teachers stated they did not believe Darwin's theory of evolution was true. Hodgson and Hodgson found 38 % of students at Central Michigan University, and Fuerst found 33 % of students at Ohio State University, did not accept Darwin's theory of evolution. Blank and Anderson found 88 % of the elementary and 60 % of the secondary science teachers felt that non-Darwin views should be given equal time in class. In the Ohio State University sample, 80 % felt other views besides Darwin's should be given equal time in the classroom, and 81 % of the Central Michigan University sample held this position. Further 71 % of the elementary teachers and 47 % of the secondary science teachers did *not* view creationism as religion. Fully 58 % of the Ohio State University sample and 61 % of the Central Michigan University sample did not view creationism as religion. In addition, 64 % of the elementary and 45 % the secondary science teachers felt that the current textbooks should be changed so that they also present creationism. This compares with 62 % of the Ohio State University sample and 60 % of the Central Michigan University sample.^{29,30}

Table 5. Summary of three studies into beliefs and academic experience of teachers in training. Data given as %.

		Blank/Andersen ⁴⁵		Hodgson/Hodgson	Fuerst Study
		Elementary	Secondary	Central Michigan University ⁴⁶	Ohio State University ⁴⁷
1	Darwinism is not true	57	21	33	30
2	Non-Darwinian/creation views should be taught	88	63	81	80
3	Creation should not be excluded from schools	71	47	60	58
4	Textbooks should teach creationism	64	45	60	62
5	Most scientists don't believe modern theory of evolution?	29	12	21	25

6	Evolution does not have a valid science foundation	54	16	40	41
7	Evolution can lead to decay of society	61	12	24	22
8	Had a course in biology in college	30	89	59	N/A
9	Have taken or are now taking geology in college?	31	63	18	N/A
10	Was taught about evolution in high school	70	67	73	73

Blank and Anderson argued that many adults accept creationism partly because a large number of teachers accept this worldview. The authors then discussed the ethics of teacher training programs that deliberately try to change students' beliefs by use of more intensive indoctrination programs. This research shows that a surprisingly high percent of teachers hold the creationist world view, and most surveys find about half believe creationism should be taught in the public schools.

The research shows most Americans are creationists

Some of the terms used in these surveys (e.g. atheistic evolution, theistic evolution, and theistic creation trichotomy) may not have been clear to many respondents. Specifically, some respondents may not have understood the difference between the creationist and theistic evolutionist positions. Ideally, more than three categories should be used, including acceptance of micro- (and macro-) evolution. This research raises the important question: Why does so much opposition exist in the US courts and among scientists to teaching both theories of origins when, according to all extant surveys, the majority of not only parents but also often teachers are in favour of the two-model approach? Also, if most parents and teachers support this approach, why does a single model dominate in public schools?

My surveys found that the majority of students were exposed only to evolutionary naturalism in their biology classes, and when creationism was mentioned it was often ridiculed. Evolution dominates partly because it is the only position discussed in most textbooks. The reason often given is the belief that separation of Church and State requires a one-sided presentation of evolution, yet fully 72 % of the 578 lawyers that returned a survey believed the First Amendment did *not* prohibit the teaching creationism in US public schools.²¹ In the rare instances where creation is mentioned, it is usually to argue against it. A two-model position is much more effective from both an educational and pedagogical standpoint because teaching by contrasts helps

to understanding the source of knowledge and aids in comprehending information.³²

The findings of this study support the contention that young people are less religious than the older generation partly because younger people spend more time in school, and education adversely influences both religious values and creation beliefs. This relationship would be expected considering the fact that textbooks, lectures and the secular school social environment are all often biased against theism and religious values.³³ Secular schools are consequently often successful in demolishing or reducing the strength of students' theistic beliefs. Some argue that intelligence and education cause one to reject creationist beliefs because these factors help one to learn the 'truth' about these topics, a questionable conclusion because schools are admittedly indoctrination institutions. This one-sided indoctrination violates the Supreme Court rulings that argue that the schools must not proselytize for religion, but also must not be antagonistic against theism and religious beliefs. The problem was summarized by Reapsome:

*'A college education doesn't do much for one's religious faith; in fact, Americans with only a grade school education are more consistently religious in belief and practice than those who have been to college. Those who have completed high school fall somewhere in between. This fact places the churches in a critical bind. For many years, Christians were taunted with charges of ignorance and obscurantism. Faith was said to be for the ignorant and pastors were accused of ducking tough intellectual questions. Church kids by the thousands went off to a college and promptly lost whatever faith they had. ... The country's religion in the future, perhaps even more than in the past, will be determined to a significant extent by what happens in its colleges and universities.'*³⁴

This problem is even true of many denominational colleges, most which are now almost totally secularized. In one study of a Methodist college, Hites found acceptance of religious values *declined* as students progressed through college.³⁵ Unfortunately, a great deal of intolerance exists on this emotional issue which is bound up with a person's basic beliefs about life's purpose and questions of right and wrong. Ideally, each view should be accurately and appropriately presented, and other theories such as exobiology theory should at least be discussed. Investigations on indoctrination by secular universities is warranted, because it is inconsistent for the public to be forced to support an institution which openly proselytizes for a belief structure that contravenes their most cherished values. If the secular schools are to be truly neutral, efforts to remove this anti-religious bias should be expended.

References

1. Nelkin, D., *Science Textbook Controversies and Politics of Equal Time*, The MIT Press, Cambridge, 1977. [Return to text.](#)
2. Laba, E. and Gross, E., Evolution slighted in high school biology, *Clearing House* 24:396–399, 1950. [Return to text.](#)
3. Milner, R., *The Encyclopedia of Evolution*, Facts on File, New York, NY, p.100, 1990. [Return to text.](#)
4. Gallup, G. (ed.), *1993 Gallup Poll Monthly*, September 1990, p. 28. [Return to text.](#)

5. Milner, Ref. 3, p. 100. [Return to text.](#)
6. Kurtz, P., Religious Belief in America: A New Pole, *Free Inquiry* 16(3): 40, 1996. [Return to text.](#)
7. Mackinney, B., Chicago, IL, letter to author dated February 7, 1977. [Return to text.](#)
8. Christensen, H.T. and Cannon, K.L., The fundamentalist emphasis at Brigham Young University: 1935–1973, *Journal for the Scientific Study of Religion* 17(1):55, 1978. [Return to text.](#)
9. Hunsberger, B., Stability and change during college. *Journal for the Scientific Study of Religion* 17(2):163, 1978. [Return to text.](#)
10. Spencer, W., *Origins Survey Report*, Wichita State University, Wichita, KS, 1988. [Return to text.](#)
11. Fuerst, P., University student understanding of evolutionary biology's place in the creation/evolution controversy, *Ohio Journal of Science* 84(5):218, 1984. [Return to text.](#)
12. Holland, E., Creation Science: A survey of student attitudes, *Ohio State University Quest* 7 (3):1, 1985. [Return to text.](#)
13. Bergman, J., *Teaching About the Creation-Evolution Controversy*, Phi Delta Kappa, Educational Foundation, Bloomington, Indiana, 1979. [Return to text.](#)
14. Bergman, J., Public opinions regarding creation and evolution, *Origins* 7(1): 42–44, 1980. [Return to text.](#)
15. Bergman, J., The attitudes of college students in teacher education programs toward the teaching of evolution and creation, *NACM Newsletter No. 22*, Monograph, 1981. [Return to text.](#)
16. Eve, R. and Harold F., *The Creationist Movement in Modern American*, Twayre Pub., Boston, MA, p.166, 1991. [Return to text.](#)
17. Zimmerman, M., The evolution-creation controversy: Opinions of Ohio High School biology teachers, *Ohio Journal of Science* 87(4):115–125, 1987. [Return to text.](#)
18. Tatina, R., South Dakota High School biology teachers and the teaching of evolution, *American Biology Teacher* 51(5):275–280, 1989. [Return to text.](#)
19. Stewart, W. (ed.), *Science and Engineering Indicators — 1987*. U.S. Government Printing Office, Washington, D.C., 1987. [Return to text.](#)
20. Madigan, T. (ed.), Faith steady among scientists — or is it? *Free Inquiry* 17(3):6–7, 1997. [Return to text.](#)
21. Bland, A., *Biology Topics in Introduction Science Courses in Accredited Bible Colleges*. Ed.D. Thesis, East Texas State University, 1984. [Return to text.](#)

22. Eve and Harold, Ref. 16, p. 33. [Return to text.](#)
23. Troost, C.J., *An Analysis of factors influencing the teaching of evolution in the secondary schools of Indiana*, Ed.D. Thesis, Indiana University, 1966. [Return to text.](#)
24. Cornell University, 1983, quoted by Morris, H., *That Their Words May Be Used Against Them*, Master Books, Green Forrest, AR, p. 384, 1997. [Return to text.](#)
25. Tatina, Ref. 18, p. 276. [Return to text.](#)
26. Tatina, Ref. 18, p. 277. [Return to text.](#)
27. Overman, R. and Deckard S., Origins beliefs among NSTA members, *Impact* 292:1, 1997. [Return to text.](#)
28. Blank, L. and Andersen, H., Teaching evolution: coming to a classroom near you? *National Center for Science Education Reports* 17(3):10-13, 1997. [Return to text.](#)
29. Fuerst, Ref. 11. [Return to text.](#)
30. Hodgson, R. and Hodgson, S.P., A survey on university students understanding of the place of evolutionary biology in the creation/evolution controversy, *Creation-Evolution* 34(1):29-37, 1994. [Return to text.](#)
31. Reidinger, P., Creationism and the First Amendment, *ABA Journal* 1:35, 1987. [Return to text.](#)
32. Bergman, Ref. 13. [Return to text.](#)
33. Vitz, P., *Censorship: Evidence of Bias in our Children's Textbooks*, Servant Books, Ann Arbor, MI., 1986. [Return to text.](#)
34. Reapsome, J., Religious values: Reflection of age and education, *Christianity Today* May 2, p. 23-25, 1980. [Return to text.](#)
35. Hites, R.W., Change in religious attitudes during four years of college, *Journal of Social Psychology* 66:56, 1965. [Return to text.](#)
36. Associated Press., 76 % for parallel teaching of creation theories, *The San Diego Union* Nov. 18, p. A15, 1981. [Return to text.](#)
37. Cook, T., *Creation Evolution Battles*, Citizens for Public Education, Portland Oregon, 1983. [Return to text.](#)
38. Santillanes, V., Leeway for creationism in class nets support: Poll: Many support inclusion of creationism, *Albuquerque Journal*, Sept. 13, pp. A1, A2, 1996. [Return to text.](#)
39. Eglin, P.G., *Creationism versus Evolution: A Study of the opinions of Georgia Teachers*, Ph.D. dissertation, Georgia State University, 1983. [Return to text.](#)

40. Buckner, E., *Professional and Political Socialization: High School Science Teacher Attitudes on Curriculum Decisions, in the Context of the 'Scientific' Creationism Campaign*, Ph.D. dissertation, Georgia State University, Ann Arbor, MI: University of Microfilms International, 1983. [Return to text.](#)
41. Tatina, Ref. 18. [Return to text.](#)
42. Ellis, W. Creationism in Kentucky: The response of high school biology teachers, In: *Science and Creationism*, Ed. by Hanson, R.W., Macmillan, New York, pp. 72-91, 1986. [Return to text.](#)
43. Affannato, F., *A Survey of Biology Teachers' Opinions about the Teaching of Evolutionary Theory and/or the Creation Model in the United States in Public and Private Schools*, Ph.D. dissertation, University of Iowa, 1986. [Return to text.](#)
44. Caylor, B. Creation or evolution? *The News Sentinel*, Jan 2, pp. 1A, 5A-6A, 1997. [Return to text.](#)
45. Blank, and Andersen Ref. 28. [Return to text.](#)
46. Hodgson and Hodgson, Ref. 30, pp. 29-37. [Return to text.](#)
47. Fuerst, Ref. 11. [Return to text.](#)

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Honest science 'left behind' in US education bill

by [Mike Matthews](#), AiG-US

January 7, 2002

After months of debate, the US Congress has finally passed a massive education bill, promising that 'no child will be left behind.'¹ A jubilant President Bush plans to sign the bill tomorrow, January 8, in Hamilton, Ohio—AiG's own backdoor.² But one small item is missing from the bill. Gone is a 'controversial' amendment—passed earlier by the Senate—suggesting that students should be told why 'biological evolution ... **generates so much continuing controversy.**'

Originally, the Senate didn't think its amendment was so controversial. The amendment passed on 14 June 2001 by a lopsided 91-8 majority. Even the politically liberal stalwart Senator Edward M. Kennedy of Massachusetts defended it: 'We want children to be able to speak and examine various scientific theories on the basis of all of the information that is available to them so they can talk about different concepts and do it intelligently.'³

When news of the amendment spread, however, evolutionists in scientific and educational organizations rose up in bitter opposition. Their effort succeeded in influencing Congress. The final version of the bill, passed on 18 December 2001, says not one word about evolution or the controversy surrounding it.

Why so much controversy over one sentence?

What was so offensive about this short amendment, proposed by Senator Rick Santorum of Pennsylvania? He simply dared to suggest that evolution is controversial! Here is the original amendment, in full:

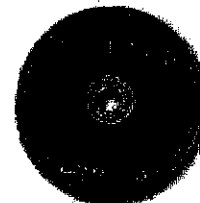
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Dr. Jonathan Sarfati

Refuting Evolution is a general critique of the most up-to-date arguments for evolution to challenge educators, students, and parents.



'It is the sense of the Senate that (1) good science education should prepare students to distinguish the data or testable theories of science from philosophical or religious claims that are made in the name of science; and

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'(2) where biological evolution is taught, the curriculum should help students to understand why this subject generates so much continuing controversy, and should prepare the students to be informed participants in public discussions regarding the subject.'

Protests by the evolutionist establishment

Outraged by the Senate vote in June, several leading evolutionists launched a counteroffensive to kill the amendment once it got to a combined House-Senate conference committee. 'We'll do our letter writing to senators. We'd like to see it die in conference committee,'⁴ said Wayne Carley, executive director of the evolutionist National Association of Biology Teachers (NABT).⁵ Eighty scientific and educational organizations, ranging from the American Geological Institute to the National Science Teachers Association, sent a joint letter to the committee asking it to delete the amendment.⁶

The campaign worked, especially after the education bill dropped out of the media spotlight in the wake of September 11 and the Afghanistan war. The joint conference committee deleted the amendment from the final bill, and inserted a watered-down version in the 'conference report'⁷ that it sent back to the House and Senate (a report explaining what was deleted and inserted in the final version of the bill). The comments below are *not* part of the law, and they have no binding authority:

'The Conferees recognize that a quality science education should prepare students to distinguish the data and testable theories of science from religious or philosophical claims that are made in the name of science. Where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand the full range of scientific views that exist, why such topics may generate controversy, and how scientific discoveries can profoundly affect society.'⁸

What does it all mean for the teachers of science?

The National Center for Science Education (NCSE) crowed about its successful campaign: 'The good news for teachers is that they will not have to teach evolution any differently as a result of the new legislation.'⁹

The NCSE even distorted the meaning of the conference committee's report, claiming that the committee was discouraging the teaching of creation science. The NCSE reported:

'More good news is that the obscure two-sentence distillation of the Santorum amendment reflects the conference committee's wish to keep "religious and philosophical claims that are made in the name of science" out of the science classroom, a position that NCSE has always supported. Creation science, intelligent design theory, and philosophical materialism qualify as "religious or philosophical claims that are made in the name of science" and thus teachers are discouraged from presenting them.'¹⁰

Oddly enough, the Discovery Institute—a leading center for the advancement of ‘intelligent design’—pushed for the amendment and yet considered the new education bill a victory, too. ‘The new bill represents a substantial victory for scientific critics of Darwin’s theory and for all who would like science instruction to exercise thoroughness and fairness in teaching about contemporary science controversies,’ says Bruce Chapman, president of Discovery Institute.¹¹

It seems odd that two archenemies—the Discovery Institute and the NCSE—should approve of the same bill. As so often happens in politics, the same vague political document can be read to support two opposing views.

The real need

The key issue is that the law on education reform utterly *ignores* one of the most important issues facing the United States today—the direct conflict between humanism/Darwin’s theory of evolution and the authority of God’s Word/Creation.

The future leaders of the United States are being taught a falsehood in their schools, one that undermines the Scripture and faith in the Savior. The US Congress has failed to take a stand on this critical moral/social issue that is undermining America.

Far from living up to its title as the ‘No Child Left Behind Act,’ the new education bill has left every public-school child behind, totally in the dark about (a) the *science* that contradicts the weak theory of evolution and (b) the way in which the evidence can be interpreted to speak for creation—often more comfortably, naturally and directly. Evolutionary leaders in science and education are seemingly not willing to let their scientific interpretations be the subject of questioning discussion. Instead, they have resorted to strong-arm politics, fearful that students might be exposed to the ‘dangerous’ idea that evolution is controversial! (Which might make people take note of the reasons and logic behind the controversy.)

Interestingly, we have only just received a thoughtful e-mail from Tony R., an evolutionist who says he appreciates our Web site for its ‘thoughtful contemplation’ as opposed to being ‘screaming fanatics.’ Tony indicates that he is in favor of schools teaching, in addition to evolution, the ‘various creationist theories.’ While we don’t support compulsion to teach the creation position (imagine how unbelievers would distort our position), it would be good if Christian teachers had the legislative freedom and encouragement to present critiques of evolution and discuss alternatives.

The more you help us get out the information that supports the authority of God’s Word in these areas, the more that it will break through in all sorts of areas—despite the best efforts of the evolutionists to stifle such discussion.

-
1. The new education bill—the biggest overhaul of US education policy since the 1960s—was a hallmark of George W. Bush’s presidential election campaign. It requires students in grades 3 through 8 to take annual tests in mathematics and reading, administered by the states. Schools that fail to meet proficiency standards can get federal aid, but eventually the states are supposed to impose sanctions on the failing schools, including changes in staff, curriculum or even conversion to ‘charter’ schools. The final version of the education bill did *not* include vouchers that students could use

- to help defray the cost of attending private or Christian schools.
2. AiG is located in Northern Kentucky, in a tri-state area that includes Ohio and Indiana. Just a few miles north of us is Cincinnati and Hamilton, Ohio.
3. 'Senate bill tackles evolution debate,' WashingtonPost.com, 18 June 2001.
4. A conference committee is a joint committee comprised of members of both parts of the US Congress—the Senate and House of Representatives—where senators and representatives attempt to settle differences between their versions of a bill. The amendment in question was added to the Senate version of the education bill that was originally passed in the House.
5. Ref. 1.
6. 'Joint letter on evolution sent to congress,' www.agiweb.org, August 2001.
7. The original Senate amendment was 'watered down' in two senses. First, the Senate identified 'biological evolution' specifically as the sole controversy about which students should be 'informed.' But the conference report simply makes biological evolution an example of a controversial topic in science.
The Senate amendment was watered down in a second sense. Originally, it said the science curriculum 'should prepare the students to be informed participants in public discussions regarding the subject.' But the conference report says, 'The curriculum should help students understand *the full range of scientific views that exist* [italics added].' Evolutionists find this wording acceptable because they do not believe that belief in creation is scientific, and so they believe this language excludes 'scientific creationism' from the classroom.
8. 'H.R. 1—"No Child Left Behind Act of 2001": Joint Explanatory Statement of the Committee of Conference,' Title I, Part A, item 78, edworkforce.house.gov.
9. 'Santorum amendment stripped from education bill,' www.ncseweb.org, 21 December 2001.
10. Ref. 6.
11. Chapman, B. 'Congress Gives Victory to Scientific Critics of Darwin,' www.discovery.org, 21 December 2001.

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Federal Challenges to the Teaching of Evolution (1-22-02)

The final version of H.R. 1, the "No Child Left Behind" education bill, which was signed into law on January 8, 2002 does not contain any mention of evolution. A "Sense of the Senate" resolution added to the Senate version by Sen. Rick Santorum (R-PA) was removed during negotiations between the House and Senate. A modified version of the resolution was added to the explanatory language accompanying the final bill rather than the bill itself. Both in its original and modified form, the Santorum resolution labeled biological evolution as a controversial theory. The original amendment stated, "It is the sense of the Senate that 1) good science education should prepare students to distinguish the data or testable theories of science from philosophical or religious claims that are made in the name of science; 2) where biological evolution is taught, the curriculum should help students to understand why the subject generates so much continuing controversy, and should prepare the students to be informed participants in public discussions regarding the subject." The language was crafted by a leading intelligent design proponent to appear innocuous but to provide a potent propaganda tool for evolution opponents in their efforts at the state and local level. And indeed the Santorum resolution already has been invoked in several states. For more on state actions relating to the teaching of evolution, see [AGI's state update](#).

Most Recent Action

In December 2001, the House-Senate conferees removed the Santorum resolution from their final version of H.R. 1, which was subsequently passed by both the House and Senate and sent to the president for his signature. A watered-down version was placed in the conference committee's explanatory report that accompanied the bill. Report language has no force of law. The report language states the importance of separating the science curriculum and "religious and philosophical claims that are made in the name of science." It cites biological evolution as the example for controversial theories rather than as the only controversial theory. In its entirety: "The conferees recognize that a quality science education should prepare students to distinguish the data and testable theories of science from religious or philosophical claims that are made in the name of science. Where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand the full range of scientific views that exist, why such topics may generate controversy, and how scientific discoveries can profoundly affect society." Although the language will not appear in the final bill, its incorporation in the conference committee's report will be welcomed by evolution opponents. Indeed, in press releases and presentations to school boards, evolution opponents have repeatedly failed to distinguish between the report and the bill, stating that the bill itself contained Santorum's language. For more on the significance of eliminating the Santorum resolution from the final bill, see a discussion by the [National Center for Science Education](#). (01/22/02)

Background

A day before the Senate completed six weeks of debate on its version of the comprehensive education bill, S.1 (later folded into H.R.1), Sen. Rick Santorum (R-PA) introduced a two-sentence amendment drafted by evolution opponents. The amendment, presented in the form of a non-binding "Sense of the

Senate" resolution, defines "good science education" and encourages teaching the "controversy" surrounding biological evolution. Amidst a flurry of other amendments, the Senate voted 91-8 in favor of the provision on its way to passing the entire bill by the same margin. Earlier, a group of conservative representatives had stripped a science testing provision out of the House counterpart bill in part because of concerns that the tests would include evolution-related questions. For more on the introduction and passage of the Santorum resolution, see [AGI's June 19, 2001 special update](#). A column in the September 2001 issue of *Geotimes*, entitled "[Monkey Business](#)", provides additional analysis and discussion of this issue.

In August 2001, responding to the congressional discord on the teaching of evolution, the leaders of 96 scientific and educational organizations endorsed a [letter](#) urging the House-Senate conference committee chairmen for H.R.1 to remove the Santorum resolution. A number of additional organizations signed on to the letter after it was first sent to Capitol Hill on August 22nd with 82 signatures. AGI and 15 of its member societies are among the organizations represented, which also include the National Science Teachers Association and the Association of American Universities. See the [AGI's August 23, 2001 special update](#) for the text of the letter. At the time the letter was sent, congressional staff were meeting daily to hammer out a compromise on House-passed and Senate-passed versions of H.R.1, a massive overhaul of federal elementary and secondary education programs. The conference was to have been completed when senators and representatives returned to Washington after Labor Day, but largely due to the events of September 11th, they did not finish until December. President Bush repeatedly urged Congress to present him with a bill. An article in the Sep. 13 *Washington Post* noted the Santorum resolution as one of several "social" issues dividing conferees.

Although the evolution debate has historically taken place at the state and local level, evolution opponents began a concerted campaign in 2000 to involve Congress and federalize the issue. On May 10, 2000, supporters of intelligent design theory brought their message to Capitol Hill in a series of events for Members of Congress and their staff. A three-hour briefing focused on the scientific evidence for the origin and development of life and the universe as the work of an intelligent designer. The speakers presented their version of the scientific debate between Darwinian evolutionary theory and intelligent design theory. Speakers also addressed the social, moral, and political consequences of Darwinism. Sponsored by the Discovery Institute, the briefing was hosted by the chairman of the House Subcommittee on the Constitution, and co-sponsors included Rep. Thomas Petri (R-WI), then expected to be the next chairman of the House Education and the Workforce Committee (he subsequently was named the committee's vice-chair). The briefing took place as the 106th Congress was debating legislation to overhaul federal K-12 education programs: the precursor to H.R.1 in the following 107th Congress. That briefing is described in [AGI's May 11, 2000 special update](#) and in a subsequent column, entitled "[Creationists Open a New Front](#)", that appeared in the July 2000 issue of *Geotimes*.

A month after the briefing, on June 14, 2000, Rep. Mark Souder (R-IN) gave a speech on the floor of the House responding to a letter he had received from professors at Baylor University criticizing him for sponsoring the May 10th Capitol Hill briefing on intelligent design creationism. He acknowledged University of California Berkeley law professor Phillip Johnson and others for drafting his response. His speech, including the Baylor letter, can be found in the [Congressional Record](#).

More information on the background of this controversy is located on the [State Challenges of Teaching Evolution](#) page.

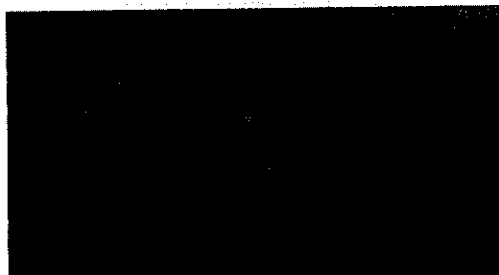
Sources: American Geophysical Union, Library of Congress, National Center for Science Education, National Science Teachers Association, The Washington Post.

Discovery Institute News

1402 3rd Ave - Suite 400 - Seattle, WA 98101 - (206) 292-0401 x107

Santorum Language on Evolution Revised Amendment, Congressional Statements

**By: Senator Rick
Santorum / Congressman Thomas
Petri / 107th Congress
Congressional Record
January 31, 2002**



Congressional Conferees Language on Controversies Such as Evolution (Revised "Santorum Amendment"):

2001-107th Congress-1st Session-House of Representatives Report-107 334 *No Child Left Behind Act of 2001 Conference Report* to accompany H.R. 1

The Conferees recognize that a quality science education should prepare students to distinguish the data and testable theories of science from religious or philosophical claims that are made in the name of science. Where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand the full range of scientific views that exist, why such topics may generate controversy, and how scientific discoveries can profoundly affect society.

Statement by Senator Santorum Upon the Passage of the Education Act 2001:

Congressional Record: December 18, 2001 (Senate)
Page S13365-S13422

Mr. SANTORUM. Mr. President, I am very gratified that the House and Senate conferees included in the conference report of the elementary and secondary education bill the language of a resolution I introduced during the earlier Senate debate. That resolution concerned the teaching of controversies in science. It was adopted 91-8 by the Senate. By passing it we were showing our desire that students studying controversial issues in science, such as biological evolution, should be allowed to learn about competing scientific interpretations of evidence. As a result of our vote today that position is about to become a position of the Congress as a whole.

When the Senate bill was first under discussion in this body, I referenced an excellent Utah Law Review article, Volume 2000, Number 1, by David K. DeWolf, Stephen C. Meyer and Mark Edward DeForrest. The authors demonstrate that teachers have a constitutional right to teach, and students to learn, about scientific controversies, so long as the discussion is about science, not religion or philosophy. As the education bill report language makes clear, it is not proper in the science classrooms of our public schools to teach either religion or philosophy. But also, it says, just because some think that contending scientific theories may have

implications for religion or philosophy, that is no reason to ignore or trivialize the scientific issues embodied in those theories. After all, there are enormous religious and philosophical questions implied by much of what science does, especially these days. Thus, it is entirely appropriate that the scientific evidence behind them is examined in science classrooms. Efforts to shut down scientific debates, as such, only serve to thwart the true purposes of education, science and law. There is a question here of academic freedom, freedom to learn, as well as to teach. The debate over origins is an excellent example. Just as has happened in other subjects in the history of science, a number of scholars are now raising scientific challenges to the usual Darwinian account of the origins of life. Some scholars have proposed such alternative theories as intelligent design. In the Utah law review article the authors state, ". . . The time has come for school boards to resist threats of litigation from those who would censor teachers, who teach the scientific controversy over origins, and to defend their efforts to expand student access to evidence and information about this timely and compelling controversy."

The public supports the position we are taking today. For instance, national opinion surveys show that Americans overwhelmingly desire to have students learn the scientific arguments against, as well as for, Darwin's theory. A recent Zogby International poll shows the preference on this as 71 percent to 15 percent, with 14 percent undecided. The goal is academic excellence, not dogmatism. It is most timely, and gratifying, that Congress is acknowledging and supporting this objective.

Speech of Honorable Thomas E. Petri of Wisconsin in the House of Representatives.

Thursday, December 13, 2001

Page E2330

Additionally, this conference report makes a strong statement that, where Darwinian evolutionary theory or other controversial scientific topics are taught, students should be exposed to multiple viewpoints. Too often, students are taught only one theory where evolution is concerned, and this language gives support to those at the local and state level who uphold the value of intellectual freedom in the teaching of science. This statement is especially important to make now because H.R.1 requires all students eventually to be tested in science on a regular basis as a condition of aid.

News stories are not archived please do not link to this page.



Discovery Institute is a non-profit, non-partisan, public policy think tank headquartered in Seattle and dealing with national and international affairs. For more information, browse Discovery's Web site at:
<http://www.discovery.org>.

United States Senate

WASHINGTON, DC 20510-3804

202-224-6324

March 20, 2002

Mr. John Morris
Institute for Creation Research
10946 Woodside Avenue North
Santee, California 92071-2833

Dear Mr. Morris:

Thank you for contacting me regarding the reauthorization of the Elementary and Secondary Education Act. I appreciate hearing from you and having the benefit of your views.

As you may know, on December 18, the Senate passed H.R. 1, the Elementary and Secondary Education Act reauthorization bill, by a vote of 87 to 10. (The House previously passed the bill on December 18 by a vote of 381 to 41, and it is now cleared for President Bush's signature. I supported the passage of this legislation, which establishes federal policy, programs, and funding with respect to elementary and secondary education for seven years. Major themes embodied in this comprehensive education reform include accountability, flexibility and expanded parental options.

H.R. 1 will enhance accountability by tying federal aid to achievement, requiring annual student testing in reading and mathematics of all students in grades 3 through 8, and some participation in the National Assessment of Educational Programs (NAEP) biannual testing in grades 4 and 8. Schools failing to achieve adequate yearly progress will receive assistance from the federal government. In addition, parents, voters and taxpayers will be provided with data, including annual report cards on school performance and statewide results. Accountability is crucial to true education reform in our nation's schools, and this bill will put our children first by requiring accountability and ensuring that our children are learning the necessary skills to succeed.

This legislation also provides unprecedented flexibility for all 50 states and every local district in the use of federal funds, in conjunction with performance measures to strengthen accountability. Funds in accounts for teacher quality, technology innovation programs and safe and drug-free schools will be transferable depending on where the state and local community believes it can derive the most benefit from those dollars. I agree that we must provide local communities with the resources and flexibility needed to restore order and improve the quality of education in their schools. I believe families and local communities form the foundation of elementary and secondary education. Geographic boundaries determine which public school a child will attend, and most operating revenue for public schools is derived from local sources. Magnet schools draw from a wider vicinity but still remain dependent on local support. In my view, Congress and the federal government should have a minimal role in managing local education. Primary control of public school curriculum and administration must be maintained by local interests--elected school boards, parents, municipal governments, and other leadership in the community. With this in mind, I believe that innovation and partnerships with the private sector

should be encouraged, good teachers should be adequately compensated for their efforts, and local school districts should be provided with regulatory and financial relief.

Other important initiatives in this legislation that give parents increased options include public school choice, supplemental services and charter schools. Parents with a child in a failing school will be allowed to send their child to another, better-performing public or charter school immediately after a school is identified as failing and have the transportation costs paid for. H.R. 1 does not allow parents to access private schools but does allow them to get their child out of a failing public school and move them to a public school where they can get adequate education. In addition, for the first time, parents whose child is trapped in a failing school will be able to take a portion of the money available under Title 1 for their child and use it to get the child private tutorial support. This support can come from public institutions, private providers or faith-based educators. A new expansion of charter schools has been created by this bill as well, with increased opportunities for the creation and success of these schools.

Additional issues of importance including school prayer, the Boy Scouts and protections for personal and family beliefs are contained in the measure. Federal funds will be denied to any local school district that prevents participation in constitutionally-protected school prayer or to any public school that discriminates against or denies equal access to any group affiliated with the Boy Scouts of America. Provisions that protect personal beliefs specify that tests, including statewide assessments, cannot evaluate or assess any personal or family beliefs and attitudes or publicly disclose personally identifiable information.

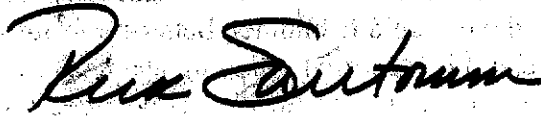
H.R. 1 is a definite improvement over existing educational policy and begins to focus our educational priorities on what is in the best interest of our children. The final measure will reauthorize a total of 45 federal education programs, including the Safe and Drug Free Schools and Communities Act, the Javits Gifted and Talented Students Education, the National Writing Project, the Elementary School Counseling Demonstration Act and the Inexpensive Book Distribution Program. I am pleased that this bill has also focused additional resources on priorities such as special education, as we continue to work toward fulfilling the federal government's commitment to IDEA (Individuals with Disabilities Education Act) and free up additional resources for local educational needs (GREAT IDEA).

Since being elected to the Senate, I have visited over 150 schools in Pennsylvania, and have listened to the concerns and advice of teachers, administrators, parents and students about what works best in our schools. I look forward to monitoring the results of this education reform with the Administration and my colleagues in Congress, as we strive to improve the educational system and give all of our children the opportunity they deserve.

It is important to ensure that the federal government's commitment to IDEA is fully met, and that the federal government's commitment to the National Writing Project is fully met. I am pleased that this bill has also focused additional resources on priorities such as special education, as we continue to work toward fulfilling the federal government's commitment to IDEA (Individuals with Disabilities Education Act) and free up additional resources for local educational needs (GREAT IDEA).

Thank you for your input. If I may be of further assistance with this or any other matter, please feel free to call on me again.

Sincerely,

A handwritten signature in black ink, appearing to read "Rick Santorum". The signature is fluid and cursive, with the first name "Rick" and last name "Santorum" clearly distinguishable.

Rick Santorum
United States Senate

RJS/els

There is no other information available at this time. The information is being provided for your information only.

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For information
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Sep 19
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Education Week

American Education's Newspaper of Record

March 27, 2002

Negotiators Retain Heart of Ed. Dept. Proposals

By Lynn Olson
Education Week

Vienna, Va.

A negotiating committee reached consensus last week on proposed federal rules for state standards and assessment systems under the revised Elementary and Secondary Education Act.



While the committee spent 4½, often intense days in a suburban Washington hotel polishing and clarifying the draft language initially presented by the Department of Education, it made few substantial changes.

The proposed regulations, which will be published in the *Federal Register* for additional public comment, would set a high bar for states that plan to use a mixture of state and local tests, or of criterion-referenced and norm-referenced tests, to measure student performance against state standards.

Even so, Minnie Pearce, a parent representative from Detroit, seriously considered withholding her support of a key section of the draft rules because of concerns that the resulting testing systems would not provide parents with clear information. She withdrew her objection after Joseph F. Johnson, the department's director of compensatory education programs, made it clear that state assessment plans would have to be approved by the federal Education Department.

"He gave me some insight," Ms. Pearce said last week, "but it still didn't brighten up my day."

Ms. Pearce, along with 21 other educators and parents from around the country, joined by two Education Department officials, spent parts of two weeks here in what is called "negotiated rulemaking."

The "No Child Left Behind" Act of 2001, the measure President Bush signed in January reauthorizing the ESEA, required the formal process for the bedrock subject of standards and assessment. The department, however, will have the final say on those rules, and does not have to bring in negotiators as it crafts the myriad other regulations and guidelines to put flesh on the bones of the new education law.

Before that occurs, however, a federal district court in Washington may likewise have

something to say. Four groups sued the Education Department just as the negotiating process was about to begin, arguing that the agency had failed to follow the law's requirement that the committee's membership include "an equitable balance" between educators and their clients: parents and students. If the plaintiffs ultimately prevail, the department may have to convene a new committee. ("Groups Challenge Makeup of Rulemaking Panel." March 20, 2002.)

The department's draft rules, in effect the committee's blueprint, had drawn criticism from some quarters, including members of Congress. Critics said the rules would grant states too much flexibility in putting together their assessment systems, flexibility that state officials by and large welcomed.

In fact, last week six Democratic senators who helped craft the law criticized some elements of the draft regulations. "Of greatest concern," they wrote in a March 20 letter to Secretary Rod Paige, "is the department's proposal to allow a patchwork of state and local assessments."

They said this approach would make it "virtually impossible" to compare student achievement across districts. The signatories were Sens. Jeff Bingaman of New Mexico, Edward M. Kennedy of Massachusetts, Christopher J. Dodd of Connecticut, John Edwards of North Carolina, Hillary Rodham Clinton of New York, and Joseph I. Lieberman of Connecticut.

Language added by the committee to the department's proposed rules would require that state assessment systems "be designed to provide a coherent system across grades and subjects." That wording is intended, in part, to put the burden on states to prove that a mixture of tests could yield valid and useful information.

The negotiators also agreed that if states use a mixture of state and local tests to measure state academic standards, they must show that all of the local tests are "equivalent to one another and to state assessments, where they exist, in their content coverage, difficulty, and quality."

The two testing experts who served as advisers to the committee admitted it would be difficult for states to achieve statistical "equivalency" across tests, particularly if states are using a range of pre-existing assessments. "That would be a rather significant challenge," said Thomas Fisher, the state testing director in Florida.

"The more tests there are, the more difficult it will be to do all this," agreed David Francis, a psychometrician from the University of Houston.

The Democratic senators also said they are worried about provisions in the draft regulations that would allow the use of norm-referenced tests, which are designed primarily to measure how students perform compared with a nationally representative sample of peers. Under the rules as blessed by the panel, norm-referenced tests must be modified to reflect the state's academic-content standards. The senators said they appreciated that caveat, but still had concerns.

"[W]e worry that [this]... will lead to a step backward, rather than forward, with respect to the quality of state assessments," they wrote.

The committee members spent much of their time hammering out requirements for including all students in a state's testing system, among them homeless students, students with disabilities, and those with limited fluency in English.

One of the biggest issues was whether states would be permitted to test special-needs students using "off grade" or "out of level" testing. That means, for example, that an 8th grade special education student might take a test designed to measure 5th grade content standards because the student was working at that grade level.

Charlotte Harris, a senior director of program development for the Boston public schools, wanted the draft regulations to clarify that states had that option, at least for some students. But Education Department officials did not want to provide a loophole that would permit states or districts to test large numbers of students against anything less than grade-level standards.

The draft rules approved by the negotiating committee specify that states must provide "appropriate accommodations" for special-needs students and that those accommodations must measure a student's achievement "relative to the state's academic content and achievement standards for the grade in which the student is enrolled."

States would also have to provide one or more "alternate assessments" for students with disabilities who couldn't participate in all or part of the state assessments, even with accommodations. Although the committee did not define what those alternative tests could look like, the language leaves open the possibility that off-grade testing might be permitted as one form of alternative assessment for at least some students.

Continuing Concerns

Ms. Harris said she was pleased with the compromise. "We got what we needed," she said.

But Susan B. Neuman, the assistant secretary for elementary and secondary education and a participant in the negotiations, said she was dissatisfied with the compromise because of continued concerns that states and districts would identify a disproportionate number of students as needing out-of-level testing to avoid strict accountability.

She said the department would address those concerns through the proposed regulations for "adequate yearly progress," rules that will clarify how states determine the amount of improvement schools and districts must make each year.

Under the revised ESEA, students from schools that fail to make such progress for several years will be allowed a menu of supplemental services and public school choice.

At best, Ms. Neuman suggested, off-grade testing might be appropriate for the fewer than 2 percent of students who have profound disabilities. "It will be clarified in [the "adequate yearly progress" rules] to eliminate any potential loopholes," she said.

The rules as they emerged from the committee's deliberations also would clarify that states must provide appropriate accommodations for all students with disabilities, including those identified under the Individuals with Disabilities in Education Act and those covered under Section 504 of the Rehabilitation Act of 1973.

But the regulations would stipulate that only those identified under the IDEA should be counted as "disabled" when states break down test results to compare the achievement of students with disabilities and that of all other students, as required in the ESEA. That's because students covered under Section 504, those with disabilities such as attention deficit hyperactivity disorder who typically require only special help from a regular teacher, do not have individualized education plans and do not receive special education services.

Similarly, the rules would specify that states must include homeless children in their testing, reporting, and accountability systems. But the states would not report the performance of homeless students as a separate subgroup. Rather, the states would include each of those students in whichever subgroup was appropriate.

On the Web

The Education Department provides assorted resources on the implementation of the reauthorized Elementary and Secondary Education Act.

PHOTOS: Moderator Christopher T. Cross, front, leads a panel of educators and parents as they discuss standards and assessment rules.
—James W. Prichard/Education Week

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May 14, 2002

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Eugenie C. Scott, Ph.D.
 Executive Director
 National Center for Science Education, Inc.
 420 40th Street, Suite 2
 Oakland, CA 94609-2509

Dear Dr. Scott:

Thank you for contacting me to share the concerns of the National Center for Science Education, Inc. regarding the report language accompanying H.R. 1, now titled, the No Child Left Behind Act of 2001 (NCLB). I am writing to express my views on the compromise language on science education that was agreed to by the conferees.

As you are now aware, NCLB calls for states to implement annual assessments in the subjects of reading and math during grades 3 through 8. The law also requires states to measure the proficiency of all students in science starting with the 2007-2008 school year. To address the importance of these newly required assessments in the area of science education, the conference committee included a compromise version of the Santorum Amendment in report language:

The Conferees recognize that a quality science education should prepare students to distinguish the data and testable theories of science from religious or philosophical claims that are made in the name of science. Where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand the full range of scientific views that exists, why such topics may generate controversy, and how scientific discoveries profoundly affect society.

Quality assessments involve the application of critical thinking skills, and perhaps this is nowhere more important than in science education. Teachers often encourage critical thinking through the introduction of controversial issues. While

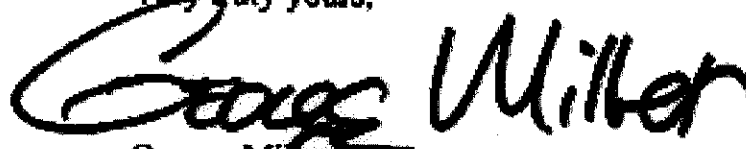
2 Eugenie C. Scott, Ph.D.
May 10, 2002

the subject of evolution was used as an example of a controversial issue in the report language, neither the teaching of evolution nor any other specific topic is mandated in NCLB or the conference report. The law restricts the federal endorsement of curriculum, and the report language should not be construed to promote specific topics within subject areas. Congress recognizes that the teaching of the "full range of scientific views" should be encouraged, and such decisions are best left to the scientific community, rather than legislators.

The purpose of the No Child Left Behind Act is to ensure that all children receive a quality education with reading, math and science as its foundation. The report language correctly describes science as a subject of "data and testable theories", different from "religious or philosophical claims." It is critical that the effort to narrow the achievement gap not be burdened with ideology regardless of subject matter. The language is profoundly clear that "science" should be at the center of a quality science education.

Your interest in upholding academic excellence in science is appreciated. If I can be of further assistance, please do not hesitate to contact me.

Very truly yours,

A handwritten signature in black ink that reads "George Miller". The signature is fluid and cursive, with the first name "George" written in a larger, more prominent script than the last name "Miller".

George Miller
Ranking Democrat

Susquehanna Valley Center for Public Policy

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Behind the Headlines Newsfax Standards Under Siege

July 5, 2001

By Charles E. Greenawalt II, Ph.D., Senior Fellow

The U.S. Congress has approved a Bush Administration education initiative that incorporated the concept of establishing standards. Ever since the 1983 publication of *A Nation At Risk*, standards have come under increasing scrutiny and have created controversy between their champions and their opponents. Under President Bush's legislation, they will take a more central role in attempting to strengthen our educational system and improve its accountability.

Nonetheless, the concept of "standards" means different things to different people. There are really three types of standards: are content standards, performance standards, and opportunity-to-learn standards. Content standards, sometimes called curriculum standards, are what the teachers are supposed to teach and the students to learn. They should provide clear and specific descriptions of the skills and knowledge that is being taught to the students. An outline containing the content standards of each school district or state should be readily available to all students and parents so that the school's expectations are well understood. Finally, content standards should be measurable, so that students can demonstrate their mastery of the knowledge or skills. Content standards should be readily understood by teachers, parents, students, and local resident of the area.

Performance standards define degrees of mastery or levels of attainment. They answer the question of "How good is good enough?" Performance standards describe what kind of performance represents inadequate, acceptable, or outstanding accomplishment. Opportunity-to-learn standards define the availability of programs, staff, and other resources that schools, districts, and states provide so that students are able to meet challenging content and performance standards. Obviously, these three types of standards are interrelated. Content standards without performance standards are meaningless. Opportunity-to-learn standards can not stand without the other two types of standards.

Some countries, such as France, Great Britain, and Japan have a national curriculum that describes content standards. Other countries, such as Canada, Germany, and the U.S., rely on states or provinces to define content standards. In the United States, some school districts and states have curriculum guidelines that contain clear content standards; however, most do not. Many states have curriculum documents that list broad, diffuse objectives or behavioral outcomes or some lofty goal, but these are rhetorical statements rather than content standards because no one is sure how to measure them or what they mean. Nations that establish national standards do so to ensure equality of education as well as higher

student achievement. They make explicit what they expect children to learn to ensure that all children have access to the same educational opportunities.

During his campaign for the Presidency and as Governor of Texas, George Bush has consistently underscored his belief in the need for standards and for using these standards and their accompanying expectations to raise the level of student performance. Here in the Commonwealth, Governor Ridge has made the establishment of strong academic standards for our public schools as one of the crowning accomplishments of his tenure as Governor. He was able to move Pennsylvania and its schools away from the poorly designed social engineering of Outcome Based Education back to a clear emphasis on academics with a new program to gradually create and phase in academic standards and expectations for Pennsylvania students.

Many in the "education establishment" originally resisted these standards, and some still do. Moving past the status quo for any organization or system is difficult, and Pennsylvania schools were no different. Furthermore, the education establishment has generally over the years attempted to resist accountability. We insist that our children be accountable for their work in a school, but we had not historically insisted on a comparable level of accountability from their schools! During the evaluations of our school systems and their standards that will follow our recently completed school year, it is useful to bear in mind the advantages of standards. A list of these that has been presented by Diane Ravitch is presented below for your consideration.

1. Standards can improve achievement by clearly defining what is to be taught and what kind of performance is expected.
2. Standards at the national, state, and local levels are necessary for equality of opportunity.
3. National standards provide a valuable coordinating function.
4. Standards and assessments provide consumer protection by supplying accurate information to students and parents.
5. Standards and assessments serve as an important signaling device to students, parents, teachers, employers, and colleges.

While this is far from a comprehensive list of the advantages of standards and assessment, it serves as a reminder to all of us of the important role that they have played in recent years in reforming and improving our struggling primary and secondary schools systems. We must not lose sight of that fact. Indeed, during the next year the final version of the Commonwealth's science standards will be set. This can finally only help both our schools and our students.

General questions or comments: The Susquehanna Valley Center for Public Policy
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Equal time for creation in Cobb County?

by Michael Matthews, AiG-US

26 August 2002

A fight has been brewing for months about the proper teaching of evolution in Cobb County, the second-largest school district in Georgia, USA. On Wednesday, a parent filed suit in federal court to remove a new textbook disclaimer, which says evolution is 'not a fact.' Then on Thursday night, the school board voted unanimously to consider a new policy that claims 'discussion of disputed views of academic subjects is a necessary element of providing a balanced education, including the study of the origin of the species.'^[1]

What would the new policy mean?

The Cobb County school board will spend the next 30 days reviewing the proposed policy, which an attorney drew up at the board's request. The new policy is the latest attempt by the board to resolve questions that arose last March, when parents signed a petition complaining about the board's approval of nearly \$8 million in new curriculum that pushes 'Darwinism, unchallenged.'

Public school teachers in Georgia—a populous state located in the conservative 'Bible Belt' of the Southern United States—have long expressed confusion about what they can teach in class. The school board in Cobb County had asked its attorney to draft a constitutional policy that would clarify what teachers could say. If the policy hopes to meet this criterion, however, it cannot *mandate* the teaching of creation as science (deemed unconstitutional by the US Supreme Court in 1987), but the courts have not yet clarified what school boards can *allow*.

Evolution disclaimer challenged in court

The American Civil Liberties Union (ACLU) had already filed suit in US district court on 21 August, hoping to force the school board to remove the disclaimers from the county's textbooks. It has vowed to fight the new policy as well.

The textbook disclaimer simply says,

'This textbook contains material on evolution. Evolution is a theory, not a fact, regarding the origin of living things. This material should be approached with an open mind, studied carefully, and critically considered.'

The ACLU called the disclaimer a 'fundamentalist Christian expression' that unconstitutionally foists religion on students in public schools. 'It singles out evolution from all the scientific theories out there,' complained Jeffrey Salman, the parent who brought the lawsuit. 'Why single out evolution? It has to be coming from a religious basis, and that violates the separation of church and state.' [2]

Cobb County's disclaimer imitates the one adopted by the neighboring State of Alabama in 1996.

'In our opinion' ...

It's hard to understand how such an innocuous disclaimer could arouse such a harsh backlash—unless we remember that the root issue is a conflict of worldviews. Most scientists are avowed evolutionists who base their life's work on a materialistic worldview that excludes God, and they feel threatened by anyone who questions the 'fact' of their worldview. The following excerpt by an associate professor of biology at Georgia State University summarizes their worries:

'... Contrary to what Cobb's textbook disclaimer says, evolution is an observable process, a fact of life. It refers to changes in gene frequencies between generations of animals or plants. It occurs every day and has been demonstrated in many species. And it has its down side: Most laypeople are familiar with the rapid evolution of bacterial resistance to antibiotics, or the evolution of resistance to DDT in mosquitoes.

So where is the theory part? Darwin's theory of evolution by natural selection is a nearly universally accepted scientific explanation for *how*, not *whether*, evolution occurred in the past and how it is occurring in the present.' [3]

Evolutionists keep repeating the same old logical fallacies. They say that evolution occurs 'all the time,' meaning that we see 'change' within species, but then they say that this proves 'evolution in the past,' meaning the rise of completely *new* creatures from simpler ancestors. These are *not* the same thing. Creationists also believe in natural selection and speciation—they merely help to explain how populations change, but true molecules-to-man evolution would involve the appearance of completely new genetic information, which evolutionists have never been able to demonstrate (see Q&A: [Information theory](#)).

Is evolution a factual explanation of the origin of living things? Hardly. It is something that evolutionary scientists choose to *believe*—in spite of the factual, eyewitness report that God gives us in the Bible. For people to want to squelch *any* hint of open-minded, critical debate about the merits of their belief-system demonstrates a fanatical religious commitment to evolutionism.

Although we oppose evolution, *Answers in Genesis* does not believe that the government should compel teachers to teach creation. (It would be counterproductive to make an atheist

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When Two Worldviews Collide

Institute for Creation Research



A worldview at war with God! Evolution insists that life evolved by random chance. There is no God and no Designer of life to set moral absolutes. Parents, educators, and church leaders must awaken to the struggle Christians, especially students, face living in today's society dominated by the evolution worldview. We all need to go "Back to Genesis!" Featuring John D. Morris, Ph.D.

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teach creation, anyway!) However, it seems reasonable that state and local officials should take steps to protect the *liberty* of individual teachers and students who wish to discuss the problems with evolution and offer alternative explanations.

[1] Taylor, M., Cobb board to clarify how origin of life can be taught, *Atlanta Journal-Constitution*, 23 August 2002

<<http://www.accessatlanta.com/ajc/metro/0802/23evolution.html>>.

[2] Fox News Network, ACLU sues over evolution disclaimers in textbooks,

<<http://www.foxnews.com/story/0,2933,61065,00.html>>, 22 August 2002.

[3] Sarah Pallas gave the 'evolution' viewpoint in a debate with Dr Philip Johnson on 'The origin of life' in the *Atlanta Journal-Constitution*, 14 April 2002,

<<http://www.accessatlanta.com/ajc/opinion/0402/0414origin.html>>.

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Fri, August 23, 2002

Georgia school district adopts a creation policy Teaching on origin of life to be balanced, board says

THE NEW YORK TIMES

ATLANTA

Amid angry debate among parents, Georgia's second-biggest school district adopted a policy last night that would require teachers to give a "balanced education" about the origin of life, giving equal weight to evolution and biblical interpretations.

The district, Cobb County, had already come under attack this summer for attaching disclaimers to all science textbooks, saying that evolution "is a theory, not a fact," and should be "approached with an open mind, studied carefully, and critically considered." On Wednesday, a parent and the Georgia chapter of the American Civil Liberties Union filed suit, demanding that the disclaimers be removed, and vowed yesterday to amend the suit to ask the court to reverse the policy adopted last night.

Members of the Cobb County Board of Education said they were not restricting the teaching of evolution or encouraging the teaching of creationism, but that the policy was simply a reflection of the district's philosophy of teaching a wide and objective range of ideas, particularly in discussing "disputed views of academic subjects, including the origin of species."

After the vote, board member Gordon O'Neill lead his colleagues in prayer: "Heavenly father, we ask that you provide to all of us a clear understanding of our fellow man and an acceptance of a diversity of thinking, amen."

Many parents speaking before a standing-room-only crowd at the board's meeting last night said that the policy was a back door to allow teaching religion in schools. They asked board members not to adopt the policy, saying that it would dilute the quality of science education and make Cobb County graduates the laughingstock of college admissions offices.

"The loud voices of the extremist few have drowned out the voice of the moderate majority," said Adele Marticke, who has a child in middle school and another in elementary school.

Paula Jackson, a parent of an elementary-school student, said, "It's deception and indoctrination."

But others urged the board to open up the classroom to religious points of



view.

"To deny there is a God is to stand on a building and deny there is a building," said Russell Brock, who described himself as an insurance salesman and a minister.

Rick Burgess, another parent, said: "Evolution is strictly a theory, and we don't think it should be taught as fact. It's fine if you don't teach creationism but you ought to be able to open up discussion of it."

The fight over how to teach the origin of life has erupted in several angry spurts ever since a Tennessee court upheld John Scopes' right to teach evolution in 1925.

The state school board in Kansas reinstated the teaching of evolution last year, after striking it from the science curriculum two years earlier. Still, conservatives on the Kansas board have promised to raise the issue again, and a candidate for the Kansas board who opposes the teaching of evolution won a recent primary by a wide margin.

In Ohio, the state board of education is considering a science curriculum that would teach "intelligent design," which accepts some evolutionary notions about how species develop, but which has as a premise that God or a God-like creator must have been in charge of the grand plan.

Discussing the Cobb County policy informally over the past few weeks, board members have said it was responding to community demand to teach a broader range of views in science classes.

About 2,000 parents had signed petitions objecting to the board's purchase of new science textbooks in the spring, because the books taught evolution. The parents asked the schools to give equal time to creationism, and several school-board members then asked the district's lawyers to write a policy that would allow discussion of other theories beyond evolution but not violate the constitutional doctrine of separation between church and state. The board's lawyers said the policy was not unconstitutional because it does not promote any religious view as right or wrong.

But parents said that the disclaimer and talk of balance and objectivity were simply code words for promoting creationism.

"That's what science promotes, is critical thinking, why do we need a disclaimer?" said Jeffrey Selman, who is suing the school district. "It's the back door into pushing religion in schools."

The policy adopted last night states that evolution "remains an area of intense interest, research, and discussion among scholars," and so should be handled with objectivity.

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Monkeys out of evolutionists

It's back-to-school time. That means school supplies, clothes, packing lunches and the annual battle over what can be taught.

The Cobb County, Ga., School Board voted unanimously Aug. 22 to consider a pluralistic approach to the origin of the human race, rather than the mandated theory of evolution. The board will review a proposal which says the district "believes that discussion of disputed views of academic subjects is a necessary element of providing a balanced education, including the study of the origin of the species."

Immediately, pro-evolution forces jumped from their trees and started behaving as if someone had stolen their bananas. Apparently, academic freedom is for other subjects. Godzilla forbid! (This is the closest one may get to mentioning "God" in such a discussion, lest the ACLU intervene, which it has threatened to do in Cobb County, should the school board commit academic freedom. God may be mentioned if His Name modifies "damn." The First Amendment's free speech clause protects such an utterance, we are told by the ACLU. The same First Amendment, according to their twisted logic, allegedly prohibits speaking well of God.)

What do evolutionists fear? If scientific evidence for creation is academically unsound and outrageously untrue, why not present the evidence and allow students to decide which view makes more sense? At the very least, presenting both sides would allow them to better understand the two views. Pro-evolution forces say (and they are saying it again in Cobb County) that no "reputable scientist" believes in the creation model. That is demonstrably untrue. No less a pro-evolution source than Science Digest noted in 1979 that, "scientists who utterly reject Evolution may be one of our fastest-growing controversial minorities... Many of the scientists supporting this position hold impressive credentials in science." (Larry Hatfield, "Educators Against Darwin.")

In the last 30 years, there's been a wave of

books by scientists who do not hold to a Christian-apologetic view on the origins of humanity but who have examined the underpinnings of evolutionary theory and found them to be increasingly suspect. Those who claim no "reputable scientist" holds to a creation model of the universe must want to strip credentials from such giants as Johann Kepler (1571-1630), the founder of physical astronomy. Kepler wrote, "Since we astronomers are priests of the highest God in regard to the book of nature, it befits us to be thoughtful, not of the glory of our minds, but rather, above all else, of the glory of God."

Werner Von Braun (1912-1977), the father of space science, wrote: "...the vast mysteries of the universe should only confirm our belief in the certainty of its Creator. I find it as difficult to understand a scientist who does not acknowledge the presence of a superior rationality behind the existence of the universe as it is to comprehend a theologian who would deny the advances of science."

Who would argue that these and many other scientists were ignorant about science because they believed in God? Contemporary evolutionists who do so are practicing intellectual slander. Anything involving God, or His works, they believe, is to be censored because humankind must only study ideas it comes up with apart from any other influence. Such thinking led to the Holocaust, communism and a host of other evils conjured up by the deceitful and wicked mind of uncontrolled Man.

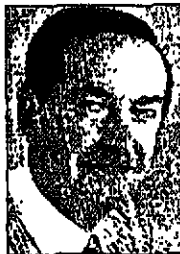
There are only two models for the origin of humans: evolution and creation. If creation occurred, it did so just once and there will be no "second acts." If evolution occurs, it does so too slowly to be observed.

Why are believers in one model -- evolution -- seeking to impose their faith on those who hold that there is scientific evidence which supports the other model? It's because they fear they will lose their influence and academic power base after a free and open debate. They are like political dictators who oppose democracy, fearing it will rob them of power.

The parallel views should be taught in Cobb County, Ga., and everywhere else, and let the most persuasive evidence win.

Cal Thomas' column is distributed by Tribune Media Services.

CAL THOMAS





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Does Creationism Deserve to be Taught Along with Evolution in the Public Schools?

By Jay Sekulow
Chief Counsel, American Center for Law and Justice

The debate over the origins of life is as old as life itself. In 1925, biology instructor John Scopes was prosecuted for teaching evolution. Now, it's creation science that is in the legal crosshairs. The issue is back in the news - this time an Atlanta-area school district debates whether teachers can discuss the concept of creationism along with evolution.

The Supreme Court has been very clear about this issue. While the Supreme Court has said that the teaching of creation science cannot be required in public schools, it is also very clear that creation science need not be shut out and removed from the discussion of the origins of life in public schools.

In the case of *Edwards v. Aguillard* the Supreme Court in 1987 stated that "teaching a variety of scientific theories about the origins of humankind to school children might be validly done with the clear secular intent of enhancing the effectiveness of science instruction." The court also indicated that there should be no constitutional crisis created with including creation science so long as it is done with the "intent of enhancing the effectiveness of science instruction" and, provided it is not taught to the exclusion of evolution.

That's where the focus needs to be in our educational system today. This is not about replacing evolution with creationism in the public school. But, what's wrong with making sure that other origins of life theories are presented, too?

The debate of how to handle the issue of creation science in our public schools is getting a lot of attention across the country with activity taking place recently in many states including Georgia, Kansas, Pennsylvania, Indiana, Washington, Ohio, Colorado, and Alabama.

And, much of the debate often centers on whether school districts should be permitted to include a sticker in science textbooks - a message that merely acknowledges the fact that evolution is not the only theory when it comes to the origins of life. In the Georgia school district currently grappling with this issue, school officials approved a sticker for textbooks that said evolution is a theory, not fact and stated that evolution should be "approached with an open mind, studied carefully and critically considered." A sound and reasonable approach. But - in Georgia - as well as many other states - critics abound and groups like the ACLU threaten legal action to make sure that creation science gets squashed like a bug or insect.

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The fact is that that creationism does deserve to be taught along with evolution in the public schools - as long as it is done in a manner that does not promote a religious purpose and is done in a way that will enhance the educational process.

Why do the defenders of evolution feel so threatened by other theories like creationism and intelligent design, which teaches that a force greater than man created life?

Students should be permitted to examine all sides of an issue - and that includes the origins of life. Don't put up road blocks to knowledge. And, don't make the mistake of thinking this is about teaching religion. The fact is that information is knowledge and there is nothing wrong or unconstitutional with presenting students with alternatives - especially when studying the origins of life.

Jay Sekulow is Chief Counsel of the American Center for Law and Justice, an international public interest law firm specializing in constitutional law. The ACLJ is based in Virginia Beach, VA and its web site address is www.aclj.org.

Discovery Institute News

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Evolution Backers, Critics Claim Victory in Science Standards

By: Catherine Candisky
Cleveland Plain Dealer
December 11, 2002

Original article

Students are to be taught biological evolution under curriculum guidelines adopted yesterday by the State Board of Education, but it will be left to local school officials to decide how much they learn about opposing concepts such as intelligent design.

After a yearlong debate that drew international attention, the state board unanimously adopted grade-by-grade science standards after inserting a disclaimer that the standards do not "mandate the teaching or testing of intelligent design."

Board member Joseph D. Roman of Fairview Park said the clarification was necessary because of erroneous claims that the standards would require instruction of the controversial alternative to Darwinian theory.

"The Board of Education has made a clear statement against pseudoscience," said Patricia Princehouse, a philosophy professor at Case Western Reserve University and director of a pro-evolution group, Ohio Citizens for Science.

"This is a huge victory for science and a huge victory for the kids of Ohio."

Supporters of intelligent design -- the concept that certain life-forms are too complex to be explained by evolution and some unknown intelligence must have played a role -- claimed victory as well. They applauded the school board for adopting standards that require 9th- and 10th-graders to be taught "how scientists continue to investigate and critically analyze aspects of evolutionary theory."

The provision, they argue, ensures that students will learn about the continuing debate surrounding life on Earth.

Although seemingly insignificant to many, the provision was characterized as a setback for evolutionists by an intelligent-design backer.

"Any small victory over the Darwinian juggernaut helps the public to see that scientific dissent from this stifling orthodoxy is legitimate and widespread," said Phillip E. Johnson, a law professor at the University of California at Berkeley. His 1991 critique of evolution, *Darwin*

New curriculum guidelines adopted yesterday by the State Board of Education require that students to be taught about biological evolution as well as criticisms of that theory. But the board also inserted language stipulating that the new standards do not require the teaching of the concept that the world was created by an intelligent designer. The sentences added are in italics:

- Describe how scientists continue to investigate and critically analyze aspects of evolutionary theory. (The intent

on *Trial*, helped launch the intelligent-design movement.

The board's directive "permits but doesn't mandate the teaching of intelligent design . . . so it gives teachers the chance to teach the controversy," said Robert Lattimer, a Hudson chemist and spokesman for Science Excellence for All Ohioans. He was among a handful of intelligent-design proponents on the 41-member team that drafted the standards.

"Students should be able to hear both sides of the story."

Calling the standards historic, **Stephen C. Meyer** of the **Discovery Institute** in Seattle said, "Ohio has become the first state to require students to learn about scientific criticisms of Darwinian evolution as well as scientific evidence supporting the theory.

"This policy will help remedy the selective presentation of evidence made by most biology textbooks today."

Another supporter of intelligent design, U.S. Sen. Rick Santorum, R-Pa., applauded Ohio's new science standards.

"Today's vote by the Ohio State Board of Education, which mandates critical analysis of evolution, is exactly the kind of decision anticipated by Congress last year when we adopted the No Child Left Behind education act," he said.

"The decision is particularly significant because Ohio was the first state since the passage of the new education act to debate the treatment of evolution within its science standards."

School districts won't be forced to follow the standards. However, they will be the basis for new standardized student tests -- including a 10th-grade graduation exam -- so teachers who ignore them will risk putting their students at a disadvantage.

State law required the board to adopt standards for science and social studies by Dec. 31. The board unanimously passed the social-studies standards without debate yesterday.

Martha Wise, a board member from Avon, said she had planned to oppose the science standards because she feared that they created a back door for the teaching of creationism. Inclusion of the disclaimer, she said, won her vote.

"It's really too bad that we have to use the words intelligent design in the standards, but what we are saying is we don't want to teach or test intelligent design," she said.

Board members supporting intelligent design agreed the standards had been

of this indicator does not mandate the teaching or testing of intelligent design.)

- Describe a foundation of biological evolution as the change in gene frequency of a population over time. Explain the historical and current scientific developments, mechanisms and processes of biological evolution. Describe how scientists continue to investigate and critically analyze aspects of evolutionary theory. (The intent of this benchmark does not mandate the teaching or testing of intelligent design.)

Source: Ohio Department of Education

misinterpreted. But even without the mandate for intelligent design, the standards, they said, are a step in the right direction.

Michael Cochran, a board member from Columbus and intelligent-design proponent, said the standards call for a critique of evolution.

"We're not mandating it, but if a teacher or local board wants to explore alternatives to evolution, they can," he said. "What we have long objected to is the indoctrination of evolution. There is a controversy and students ought to hear about it."

Ohio State anthropologist Jeffrey McKee, also a member of Ohio Citizens for Science, said he opposed singling out evolution for a critique, adding that all scientific theories are subject to analysis.

The disclaimer "satisfies my concerns but it doesn't mean the intelligent-design community will go away. They can still go to local school boards and make their case," McKee said.

"This process has been a real wake-up call."

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Institute for Creation Research

"Thou art worthy, O Lord, to receive glory and honour and power: for thou hast **created all things**, and for thy pleasure they are and were **created**." **Rev 4:11**

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BTG No. 107b

Does Science Conflict With the Bible?

by John D. Morris, Ph.D.

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"Nevertheless death reigned from Adam to Moses, even over them that had not sinned after the similitude of Adam's transgression, who is the figure of Him that was to come" (Romans 5:14).

How often have you tried to witness to someone only to be rebuffed by an inappropriate view of science as having disproved the Bible? "Evolution is true, the earth is billions of years old. Science has proved it. Thus the Bible can't be taken at face value. How could all those scientists be wrong?"

We must all ask this question, for if science has disproved Genesis, we have no confidence that John 3:16 is correct. "If I have told you 'earthly things, and ye believe not, how shall ye believe, if I tell you of heavenly things?" (John 3:12).

Indeed, there are some Biblical teachings and doctrines which seem to conflict with majority scientific thought. For instance: Genesis 1:1 vs. the Big Bang; the order of creation vs. the order of evolutionary appearance; the Biblical curse on all creation vs. the evolutionary development of complexity; young Earth vs. old Earth; Adam's sin brought death vs. extinction brought man; the global flood vs. evolutionary uniformitarianism; etc. In each of these cases, the Biblical teaching can be supported but individual scientific observations are hard to accommodate.

We must keep in mind, however, the difference between scientific observations and opinions of scientists, especially in historical arenas. Both evolution and creation rely on "unobserved" events—non-repeatable singularities. Both are views of history outside the realm of observational science. Through careful study, scientists may discern how the human liver works, but this knowledge is far different from knowing how the liver originated.

To make matters worse, scientists often operate from a strictly naturalistic perspective, excluding supernatural creation from the range of possibilities. Surely Christians must not follow this perspective.

We must also remember that majority scientific opinion changes. For instance, the standard Big Bang fizzles more and more with each new discovery. Now is not the time to cite weight of scientific opinion as the reason to distort or disbelieve Scripture.

On the other hand, Scripture doesn't change. Our understanding of it may be enhanced by scientific discoveries, but by definition, it speaks truth without error.

How should a Christian respond? As ICR's physics department chairman Dr. Larry Vardiman writes in a recent paper, "When a conflict becomes evident between an apparent interpretation of the Bible and an apparent finding of science, it is not necessary to force a final determination to be made immediately without further investigation. It is possible that a misinterpretation of either or both of the statements of Scripture or the evidence from science have occurred. Since of the two, Scripture speaks with greater clarity, until a satisfactory resolution can be made about the conflict, I will proceed with confidence in my interpretation of Scripture. Resolution may not occur in my lifetime."

This is a wonderful time to be a Bible-believing Christian/creationist. The scientific evidence, rightly interpreted, overwhelmingly supports the straight-forward reading of Scripture. Even in those areas of seeming conflict, research continually sheds new light, increasing our confidence in Scripture.

I call on my Christian "semi-creationist" brothers, those who hold to the Big Bang, or the old Earth or theistic evolution, to join the ranks of those who are trying to solve the remaining conflicts from a God-honoring, Bible-upholding perspective. For in the end, Scripture will stand. Rightly observed and interpreted there can be no conflict between science and Scripture.

These "BTG" articles were converted to HTML, for Web use, from the original formatted desktop article. Comments regarding typographical errors in the above material are appreciated. Don Barberor ICR Systems Administrator, Fax: (619) 448-3469

All ICR staff members adhere to a Statement of Faith in the form of two documents: "Tenets of Scientific Creationism," and "Tenets of Biblical Creationism." (see Impact No. 85)

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We believe God has raised up ICR to spearhead Biblical Christianity's defense against the godless dogma of evolutionary humanism. Only by showing the scientific bankruptcy of evolution, while exalting Christ and the Bible, will Christians be successful in "the pulling down of strongholds; casting down imaginations, and every high thing that exalteth itself against the knowledge of God, and bringing into captivity every thought to the obedience of Christ" (II Corinthians 10:4,5).

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"Thou art worthy, O Lord, to receive glory and honour and power: for thou hast created all things, and for thy pleasure they are and were created." Rev 4:11

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FAITH UNDER FIRE Taking Creation Back to School

WHAT CAN TEACHERS DO?



[Faith Under Fire](#)



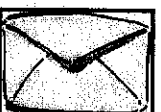
[What can students do?](#)



[What can parents do?](#)



[Why is this so important?](#)



[The student packet](#)

Is creation really all that important, even when you teach subjects other than sciences?

■ [Mr. Bill Jack](#)

The issue of creation vs. evolution is crucial in every subject. You see, how you answer the question of origins will effect everything else you do. It determines how you view history, the author's perspective in literature and how you look at yourself. If students are taught that they are nothing more than products of random chance evolutionary processes, then both their moral foundation and how they view themselves is destroyed.

As a Christian teacher, how can you not teach the truth?

■ [Mr. Bill Jack](#)

Christian students are being taught two totally different beliefs. At church, they are being taught that God is the Creator, the one true authority and that the Bible is the actual Word of God given to us. In the classroom students are being taught that they are products of random chance, that they are nothing more than an animal in the evolutionary chain. As a result students are becoming schizophrenic Christians - they are taught to love God with all of their heart, strength and mind, but yet in school they are taught to defy God and all of His Truth.

As a Christian teacher, can you teach creation science in the classroom?

[IMPACT ARTICLE 196](#)



What are
your legal
rights?



Where to
find help



About the
speakers

Yes, as a science teacher it is important to maintain the integrity of science. Here are some guidelines:

1. Realize that many school administrators, school board members, and teachers are closet creationist. In their hearts they believe in a Creator and many want to support such views but feel their hands are tied. Your task is to show that both evolution and scientific creationism should be presented in the classroom.
2. Provide solid secular information on scientific creationism such as *What is Creation Science?* (published by the Institute for Creation Research, P.O. Box 2667, El Cajon CA 92021).
3. Document the legality of teaching scientific creationism. In 1987, the U.S. Supreme Court ruled in *Edwards v. Aguillard* (Case No. 85-1513) that in Louisiana law demanding a "balance" of evolution and creationism be taught, had an unconstitutional purpose of advancing a religious opinion. However, the Court also clarified that: Teaching a variety of scientific theories about the origins of humankind to school children might be validly done with the clear secular intent of enhancing the effectiveness of science instruction (p. 14) (previously cited).
The Supreme Court noted that teachers "already possess" the flexibility to supplement the present science curriculum with the presentation of theories, besides evolution, about the origin of life (p. 8), and are "free to teach any and all facets of this subject" of "all scientific theories about the origins of humankind" (p. 9).
This is clearly a "green light" for scientific creationism to be taught, *even* though its teaching cannot be mandated, and even though it prohibits the teaching of Biblical Creationism.
4. Sponsor a lecture series at a local public school library or auditorium (not a church) on scientific creationism. Invite teachers, administrators, and school board members. Organize the local churches to support this event.

A great resource to have for learning how to teach creation science

in your public school to the book *Teaching Creation Science in the Public Schools*, by Duane T. Gish. In this book Dr. Gish explains in detail the scientific, pedagogical, and legal foundation for teaching the scientific evidence for creation in public schools, or for more information on how to teach creation science in the public schools, click [here](#) to visit our [Help and Resource](#) page.

We are all called to be ministers, and as a teacher you have a very unique ministry. You were put into the classroom, by God, to help guide your students and point them to the Truth - God's Truth. God has given you the gift of teaching for that purpose, to point to Him as God and Creator.

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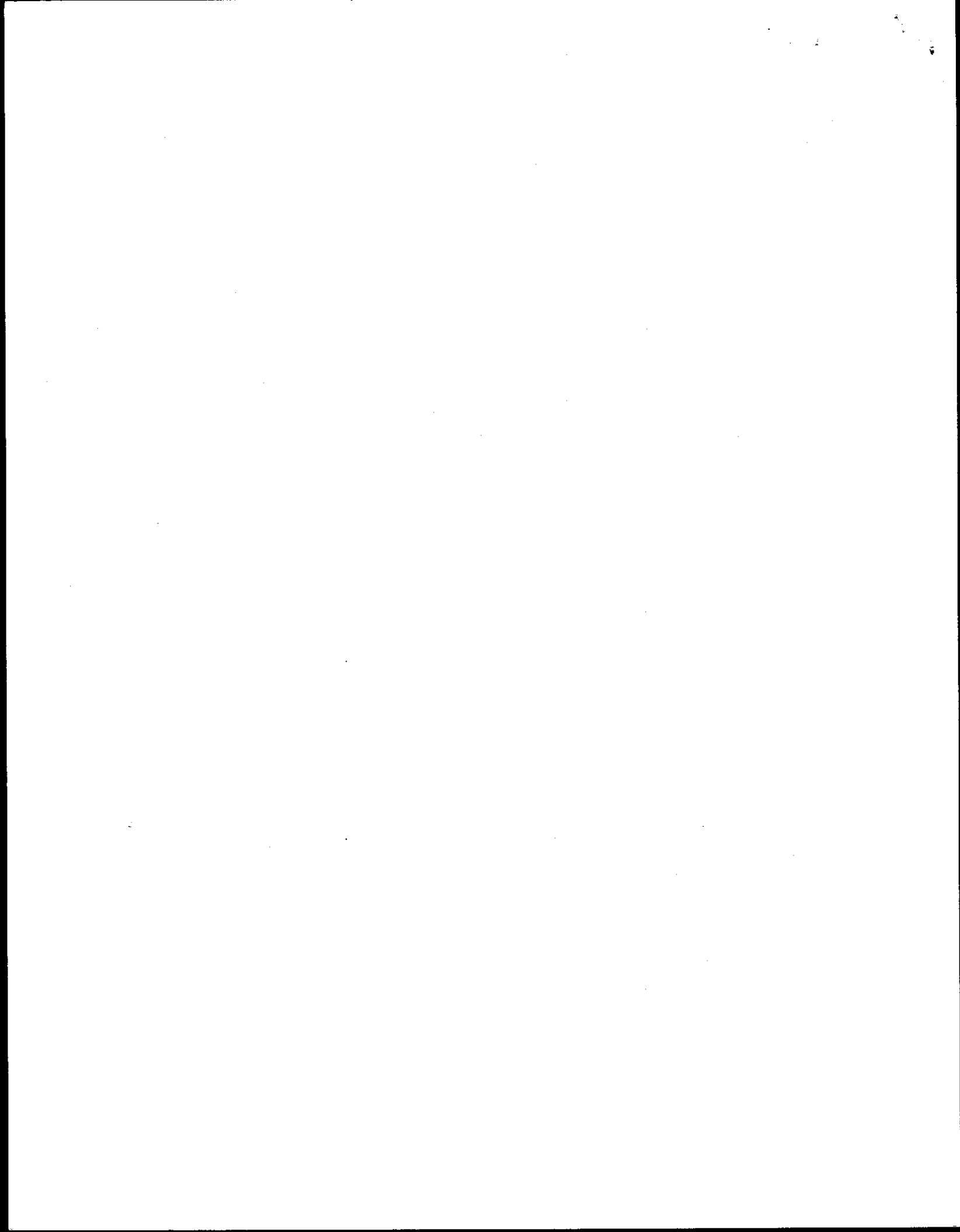
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"Thou art worthy, O Lord, to receive glory and honour and power: for thou hast **created all things**, and for thy pleasure they are and were **created**." **Rev 4:11**

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IMPACT No. 279

TEACHING THE BIBLE IN PUBLIC SCHOOLS?

by Dr. Robert L. Simonds *

Institute for Creation Research, PO Box 2667, El Cajon, CA 92021
Voice: (619) 448-0900 FAX: (619) 448-3469

"Vital Articles on Science/Creation" September 1996
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Perish the thought! What about "Separation of Church and State"? What about pushing off the Christian religion on innocent public-school children? What about offending non-believers who reject God, the Bible, and any form of religious morals? Why should a Christian minority (?) interest be given a preeminent place in a public school? Besides, isn't it against the First Amendment of our Constitution to promote religion in any government entity (a school)? Hasn't the Supreme Court ruled against such a sectarian proposal?

Those are all legitimate questions to ask! They are very serious, concerned, and thoughtful questions that public school curriculum leaders, superintendents, and school board members must know the answers to.

Also, it should be known why such a course is necessary or even helpful. What purpose? What desired outcomes could be realistically expected? Who would object and who would be sued? Can we control the content or the teacher? All good questions! All fair questions that must have honest, fair answers. And they all apply to every other course now being taught.

The very first question a superintendent or a wise board member asks is: "Is it legal? Will it stand up in court? Has the U.S. Supreme Court given us reliable guidelines to go by?" The truth of the matter is, the Supreme Court has given administrators and school boards some very clear guidelines to judge such sticky religious issues.

The proposed mention of religion, along with the use of the Bible, has been strongly misunderstood when applied to public schools. The Supreme Court has ruled that teaching about religion and using the Bible in the classroom may both exist in any curriculum if they are not a part of religious worship, but are integrated as a part of the offerings within a secular program.

The Supreme Court clearly affirmed this position in *Stone vs. Graham*, when it stated that "the Bible may constitutionally be used in an appropriate study of history, civilization, ethics, comparative religion, or the like."^[1]

As one possessing a Masters degree in history, I can tell you that no qualified historian would dispute the simple fact that the Bible is not only a great documented history book of man's beginnings, right up to the modern era, but it is the **ONLY** documented ancient history account available to mankind on much of that long 4,000 year period B.C. (before Christ). The Bible is not only "appropriate," but necessary for students to have a complete historical picture of mankind.

Through much misinformation given to our schools from sincere but often misguided anti-religious organizations, children have been denied the "right-to-learn," the "right-to-know," and the "right-to-be" all they could become. This unchecked censorship of legitimate knowledge has now become a national issue, being brought out in the open for the first time.

President Clinton has clearly seen the religious freedom issue and its growing importance to his re-election. By particularly addressing religion in our schools, he has touched a nerve in society. Numerous polls over many years have shown the overwhelming public preference in allowing prayer, the teaching of the science of creation, and the Bible as literature in our public schools. The teaching of the Bible, as "history, civilization, ethics, comparative religion, or the like," has now been supported by numerous legal foundations and not just the Supreme Court.

Thirty legislators, congressmen, and attorneys have formed the **National Council on Bible Curriculum In Public Schools** to see that reliable information and legal support of the schools' absolute right to teach the Bible as an elective curriculum in all public schools is available to all schools.

The Supreme Court further stated in *Abington vs. Schempp* that:

It certainly may be said that the Bible is worthy of study for its literary and historic qualities. Nothing we have said here indicates that such study of the Bible or of religion, when presented objectively as a part of a secular (public school) program of education, may not be effected consistently with the First Amendment.^[2]

In the Supreme Court case of *Nyquist*, the court outlines clearly "that the First Amendment does not forbid all mention of religion in public schools; it is the advancement or inhibition of religion that is prohibited."^[3] In its ruling on the *McGowan* case, the Supreme Court said, "Government involvement in an activity of unquestionable religious origin does not contravene the Establishment Clause if its present purpose and effect is secular."^[4]

The Supreme Court ruled also, in *Schempp*, that "one's education is not complete without a study of comparative religion or the history of religion and its relationship to the advancement of civilization."^[5] This is as close to a mandate on religion and Bible teaching in our public schools as a means of a "complete" education, as the court may ever go. When approached from a historical context, the Bible and religion are **inseparable** from the history of man and government, as the court has clearly stated on several occasions.

The ACLU and others argue that there are those who are hostile to any religion in public schools and therefore the Bible as history and literature should be excluded (censored). But whether the course on Bible Literature is included **or not, some** will be offended. It is the school's duty to do what is right.

The *Florey* decision stated that it "would literally be impossible to develop a public-school curriculum that did not in some way affect the religious or non-religious sensibilities of some of the

students or their parents."[6]

Since the Bible and religion are extremely valuable components of the study of our history and the development of civilization, they offer much toward attaining a comprehensive, world-class education.

The objectives of a "Bible Literature" class are:

- To equip students with literary forms and symbols in the Bible that are constantly referred to in art,
- music, and literature.
- To give the student understanding of the influence of the Bible on history, law, community, and cultural life.
- To give insight into the founding fathers' worldviews taken from the Bible promoting human rights, women's rights, social justice, etc.
- To provide knowledge of Middle-Eastern history (Jewish-Arab), conflicts, geography, and religions.
- To teach students how to learn, and use, multiple and complex reference skills.

Enforce the importance of religion in world and national history, without teaching or imposing any doctrinal belief.

These objectives will provide constitutional conformity. When the Bible was erroneously removed from our classrooms by school boards or administrators, it was done so with biased information received from many bigoted anti-religious hate groups that have lost almost every case when they reached the Supreme Court. Those misperceptions adopted by otherwise good school people have cost our schools the support and confidence of the public.

Patrick Henry said, *"The Bible is a book worth more than all other books that were ever printed."* Thomas Jefferson was the first President of the Washington D.C. school board which adopted the Bible as a primary reader.

Students have been denied their constitutional rights long enough. And they have not been given all the facts of history and of the influence of the Bible. Most do not know that the Bible has been the number one best-seller each year since the invention of the Gutenberg printing press in 1456. Last year, the Bible outsold its nearest modern rival by more than five times.

No one could rightly claim to be educated today, or to be a true intellectual, who has never read this powerful and exciting book that has transformed innumerable lives, influenced kings and presidents, and guided entire nations. To what can we compare it?

Such vast amounts of writing and art contain Biblical allusions that ignorance of the Bible cripples any meaningful study of literature or the arts.

Even the Dictionary of Cultural Literacy states that, "The Bible, the holy book of Judaism and Christianity, is the most widely-known book in the English speaking world.... No one in the English speaking world can be considered **literate** without a basic knowledge of the Bible" (page 1). Could this censorship of the Bible from our schools be the reason for the growing illiteracy in America, threatening our means of communication?

Our U.S. laws are all based upon our constitution which is a direct pattern of the Old English Law, which unashamedly proclaims its entire jurisprudence system to be based upon the Bible and the Ten Commandments.

Our children are held, **by law**, to all our U.S. laws, derived from the Bible, yet denied the knowledge of the source of our own constitution and national jurisprudence controlling all of society's laws. Parents, the public, and lawmakers are now demanding a reversal in the five-decade-long slide into crime, disrespect for the law and the resulting moral and spiritual decadence. Exposure to the Bible has an almost magical influence against crime and the moral/ethical slide of our youth and our nation.

Many believe that because of the loss of influence of the Bible, our society and our culture of liberty and freedom is collapsing before our eyes. Yet, our schools continue to side with the very forces that have brought us down. This must change for peace and support for our public schools ever to be regained.

The American Association of School Administrators (AASA) outline "**Recommendations for Teaching About Religions**," fully supports the Supreme Court rulings in their (AASA) seven recommendations.

For support of the idea behind this paper, please obtain a copy of "**FINDING COMMON GROUND—A First Amendment Guide to Religion and Public Education**," by Charles C. Haynes, Ph.D., Editor. You can write to The Freedom Forum First Amendment Center at Vanderbilt University, 1207 18th Avenue South, Nashville, TN 37212—or call (600) 321-9588. (Signators: AASA, ASCD, ACLU, NAE, CLS, NSBA, CEE, NEA and others.)

For Bible curriculum meeting all U.S. Supreme Court requirements and a two-semester elective course covering: semester one—Old Testament, history, eastern geography, culture and the influence of the Torah (first five books of the Old Testament) on world history; semester two—introduction to the New Testament, politics, history, culture of Roman times; Christ, the Christian origins and their impact on all western culture, as it affects today's world. Write to: Elizabeth Ridenour, President; National Council on Bible Curriculum in Public Schools, P.O. Box 9743, Greensboro, NC 27429; (336) 272-3799.

End Notes

- [1] U.S. Supreme Court: *Stone vs. Graham*, 449 U.S. 39, 42 (1980).
- [2] U.S. Supreme Court: *School District of Abington Township vs. Schempp*, 374 U.S. 225 (1963).
- [3] *Committee for Public Education vs. Nyquist*, 413 U.S. 756, 788 (1973).
- [4] *McGowan vs. Maryland*, 366 U.S. 420, 444-446 (1961).
- [5] *Schempp*, op. cit.
- [6] *Florey vs. Sioux Falls School District*, 619 F. 2d 1311, 1314 (8th circuit, 1980). Circuit Court decision and language was reviewed by the U.S. Supreme Court and allowed to stand as constitutional.

* Dr. Simonds is President of Citizens for Excellence in Education and has been a public school teacher, principal, professor, and administrator for over thirty-five years. His address is CEE, P.O. Box 3200, Costa Mesa, CA 92628; (714) 251-9333.

This "Impact" was converted to HTML, for Web use, from the original formatted desktop article. Comments regarding typographical errors in the above material are appreciated. **Webmaster**, ICR Systems Administrator Fax: (619) 448-3469

All ICR staff members adhere to a Statement of Faith in the form of two documents: "Tenets of Scientific Creationism," and "Tenets of Biblical Creationism." (see Impact No. 85)

**Institute
for Creation Research**

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Fax

To: Ms. Brenda West From: JCH - Arund
Fax: 304-558-1613 Date: 12/12/02
Phone: _____ CC: _____
Re: Science Standards 4 H.R. #1 Pages: 32

☐ Urgent ☐ Please call upon receipt ☐ For review ☐ Reply requested

• Comments:

1. Santorum letter
2. "Federal Challenges to the Teaching of Evolution" (1-22-02)
3. Discovery Institute News Re: Ohio
4. Public School (Let's Roll) Science Standards Packet Summary
5. 1st Amendment URL's
6. Cobb County, Georgia, decision
7. The American Center for Law and Justice's "Does Creationism Deserve to be Taught Along with Evolution in Public Schools?"
8. The Christian Law Association's "On Legal Issues Involved in the Teaching of Evolution and Creationism in America's Public Schools"
9. "What Should Public School Kids be Taught About Evolution and Creation?"
10. "Public Schools: Christians Have Rights"

RICK SANTORUM
PENNSYLVANIA

United States Senate

WASHINGTON, DC 20510-3804

202-224-6324

March 20, 2002

COMMITTEES:
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Mr. John Morris
Institute for Creation Research
10946 Woodside Avenue North
Santee, California 92071-2833

Dear Mr. Morris,

Thank you for contacting me regarding the reauthorization of the Elementary and Secondary Education Act. I appreciate hearing from you and having the benefit of your views.

As you may know, on December 18, the Senate passed H.R. 1, the Elementary and Secondary Education Act reauthorization bill, by a vote of 87 to 10. The House previously passed the bill on December 13 by a vote of 381 to 41, and it is now cleared for President Bush's signature. I supported the passage of this legislation, which establishes federal policy, programs, and funding with respect to elementary and secondary education, for seven years. Major themes embodied in this comprehensive education reform include accountability, flexibility and expanded parental options.

H.R. 1 will enhance accountability by tying federal aid to achievement, requiring annual student testing in reading and mathematics of all students in grades 3 through 8, and some participation in the National Assessment of Educational Programs (NAEP) biannual testing in grades 4 and 8. Schools failing to achieve adequate yearly progress will receive assistance from the federal government. In addition, parents, voters and taxpayers will be provided with data, including annual report cards on school performance and statewide results. Accountability is crucial to true education reform in our nation's schools, and this bill will put our children first by requiring accountability and ensuring that our children are learning the necessary skills to succeed.

This legislation also provides unprecedented flexibility for all 50 states and every local district in the use of federal funds, in conjunction with performance measures to strengthen accountability. Funds in accounts for teacher quality, technology innovation programs and safe and drug-free schools will be transferable depending on where the state and local community believes it can derive the most benefit from those dollars. I agree that we must provide local communities with the resources and flexibility needed to restore order and improve the quality of education in their schools. I believe families and local communities form the foundation of elementary and secondary education. Geographic boundaries determine which public school a child will attend, and most operating revenue for public schools is derived from local sources. Magnet schools draw from a wider vicinity but still remain dependent on local support. In my view, Congress and the federal government should have a minimal role in managing local education. Primary control of public school curriculum and administration must be maintained by local interests--elected school boards, parents, municipal governments, and other leadership in the community. With this in mind, I believe that innovation and partnerships with the private sector

should be encouraged, good teachers should be adequately compensated for their efforts, and local school districts should be provided with regulatory and financial relief.

Other important initiatives in this legislation that give parents increased options include public school choice, supplemental services and charter schools. Parents with a child in a failing school will be allowed to send their child to another, better-performing public or charter school immediately after a school is identified as failing and have the transportation costs paid for. H.R. 1 does not allow parents to access private schools but does allow them to get their child out of a failing public school and move them to a public school where they can get adequate education. In addition, for the first time, parents whose child is trapped in a failing school will be able to take a portion of the money available under Title 1 for their child and use it to get the child private tutorial support. This support can come from public institutions, private providers or faith-based educators. A new expansion of charter schools has been created by this bill as well, with increased opportunities for the creation and success of these schools.

Additional issues of importance including school prayer, the Boy Scouts and protections for personal and family beliefs are contained in the measure. Federal funds will be denied to any local school district that prevents participation in constitutionally-protected school prayer or to any public school that discriminates against or denies equal access to any group affiliated with the Boy Scouts of America. Provisions that protect personal beliefs specify that tests, including statewide assessments, cannot evaluate or assess any personal or family beliefs and attitudes or publicly disclose personally identifiable information.

H.R. 1 is a definite improvement over existing educational policy and begins to focus our educational priorities on what is in the best interest of our children. The final measure will reauthorize a total of 45 federal education programs, including the Safe and Drug Free Schools and Communities Act, the Javits Gifted and Talented Students Education, the National Writing Project, the Elementary School Counseling Demonstration Act and the Inexpensive Book Distribution Program. I am pleased that this bill has also focused additional resources on priorities such as special education, as we continue to work toward fulfilling the federal government's commitment to IDEA (Individuals with Disabilities Education Act) and free up additional resources for local educational needs (GREATT IDEA).

Since being elected to the Senate, I have visited over 150 schools in Pennsylvania, and have listened to the concerns and advice of teachers, administrators, parents and students about what works best in our schools. I look forward to monitoring the results of this education reform with the Administration and my colleagues in Congress, as we strive to improve the educational system and give all of our children the opportunity they deserve.

Thank you for your input. If I may be of further assistance with this or any other matter, please feel free to call on me again.

Sincerely,

A handwritten signature in black ink, appearing to read "Rick Santorum". The signature is fluid and cursive, with the first name "Rick" and last name "Santorum" clearly distinguishable.

Rick Santorum
United States Senate

RJS\els



Most Recent Action Challenges in the States Background Resources

Federal Challenges to the Teaching of Evolution (1-22-02)

The final version of H.R. 1, the "No Child Left Behind" education bill, which was signed into law on January 8, 2002 does not contain any mention of evolution. A "Sense of the Senate" resolution added to the Senate version by Sen. Rick Santorum (R-PA) was removed during negotiations between the House and Senate. A modified version of the resolution was added to the explanatory language accompanying the final bill rather than the bill itself. Both in its original and modified form, the Santorum resolution labeled biological evolution as a controversial theory. The original amendment stated, "It is the sense of the Senate that 1) good science education should prepare students to distinguish the data or testable theories of science from philosophical or religious claims that are made in the name of science; 2) where biological evolution is taught, the curriculum should help students to understand why the subject generates so much continuing controversy, and should prepare the students to be informed participants in public discussions regarding the subject." The language was crafted by a leading intelligent design proponent to appear innocuous but to provide a potent propaganda tool for evolution opponents in their efforts at the state and local level. And indeed the Santorum resolution already has been invoked in several states. For more on state actions relating to the teaching of evolution, see [AGI's state update](#).

Most Recent Action

In December 2001, the House-Senate conferees removed the Santorum resolution from their final version of H.R. 1, which was subsequently passed by both the House and Senate and sent to the president for his signature. A watered-down version was placed in the conference committee's explanatory report that accompanied the bill. Report language has no force of law. The report language states the importance of separating the science curriculum and "religious and philosophical claims that are made in the name of science." It cites biological evolution as the example for controversial theories rather than as the only controversial theory. In its entirety: "The conferees recognize that a quality science education should prepare students to distinguish the data and testable theories of science from religious or philosophical claims that are made in the name of science. Where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand the full range of scientific views that exist, why such topics may generate controversy, and how scientific discoveries can profoundly affect society." Although the language will not appear in the final bill, its incorporation in the conference committee's report will be welcomed by evolution opponents. Indeed, in press releases and presentations to school boards, evolution opponents have repeatedly failed to distinguish between the report and the bill, stating that the bill itself contained Santorum's language. For more on the significance of eliminating the Santorum resolution from the final bill, see a discussion by the [National Center for Science Education](#). (01/22/02)

Background

A day before the Senate completed six weeks of debate on its version of the comprehensive education bill, S.1 (later folded into H.R.1), Sen. Rick Santorum (R-PA) introduced a two-sentence amendment drafted by evolution opponents. The amendment, presented in the form of a non-binding "Sense of the

Federal Challenges to Teaching Evolution

Page 2 of 3

Senate" resolution, defines "good science education" and encourages teaching the "controversy" surrounding biological evolution. Amidst a flurry of other amendments, the Senate voted 91-8 in favor of the provision on its way to passing the entire bill by the same margin. Earlier, a group of conservative representatives had stripped a science testing provision out of the House counterpart bill in part because of concerns that the tests would include evolution-related questions. For more on the introduction and passage of the Santorum resolution, see AGI's June 19, 2001 special update. A column in the September 2001 issue of *Geotimes*, entitled "Monkey Business", provides additional analysis and discussion of this issue.

In August 2001, responding to the congressional discord on the teaching of evolution, the leaders of 96 scientific and educational organizations endorsed a letter urging the House-Senate conference committee chairmen for H.R.1 to remove the Santorum resolution. A number of additional organizations signed on to the letter after it was first sent to Capitol Hill on August 22nd with 82 signatures. AGI and 15 of its member societies are among the organizations represented, which also include the National Science Teachers Association and the Association of American Universities. See the AGI's August 23, 2001 special update for the text of the letter. At the time the letter was sent, congressional staff were meeting daily to hammer out a compromise on House-passed and Senate-passed versions of H.R.1, a massive overhaul of federal elementary and secondary education programs. The conference was to have been completed when senators and representatives returned to Washington after Labor Day, but largely due to the events of September 11th, they did not finish until December. President Bush repeatedly urged Congress to present him with a bill. An article in the Sep. 13 *Washington Post* noted the Santorum resolution as one of several "social" issues dividing conferees.

Although the evolution debate has historically taken place at the state and local level, evolution opponents began a concerted campaign in 2000 to involve Congress and federalize the issue. On May 10, 2000, supporters of intelligent design theory brought their message to Capitol Hill in a series of events for Members of Congress and their staff. A three-hour briefing focused on the scientific evidence for the origin and development of life and the universe as the work of an intelligent designer. The speakers presented their version of the scientific debate between Darwinian evolutionary theory and intelligent design theory. Speakers also addressed the social, moral, and political consequences of Darwinism. Sponsored by the Discovery Institute, the briefing was hosted by the chairman of the House Subcommittee on the Constitution, and co-sponsors included Rep. Thomas Petri (R-WI), then expected to be the next chairman of the House Education and the Workforce Committee (he subsequently was named the committee's vice-chair). The briefing took place as the 106th Congress was debating legislation to overhaul federal K-12 education programs: the precursor to H.R.1 in the following 107th Congress. That briefing is described in AGI's May 11, 2000 special update and in a subsequent column, entitled "Creationists Open a New Front", that appeared in the July 2000 issue of *Geotimes*.

A month after the briefing, on June 14, 2000, Rep. Mark Souder (R-IN) gave a speech on the floor of the House responding to a letter he had received from professors at Baylor University criticizing him for sponsoring the May 10th Capitol Hill briefing on intelligent design creationism. He acknowledged University of California Berkeley law professor Phillip Johnson and others for drafting his response. His speech, including the Baylor letter, can be found in the Congressional Record.

More information on the background of this controversy is located on the State Challenges of Teaching Evolution page.

Sources: American Geophysical Union, Library of Congress, National Center for Science Education, National Science Teachers Association, The Washington Post.

Federal Challenges to Teaching Evolution

Page 3 of 3

Please send any comments or requests for information to the AGI Government Affairs Program at govt@agiweb.org.

Contributed by David Applegate, AGI Government Affairs Program; and AGI/AAPG Geoscience Interns Mary Patterson and Heather Golding.

Last updated: January 22, 2002

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Discovery Institute News

1402 3rd Ave - Suite 400 - Seattle, WA 98101 - (206) 292-0401 x107

Ohio Praised for Historic Decision Requiring Students to Critically Analyze Evolutionary Theory

By: Discovery Staff
Discovery Institute
December 10, 2002

Contact: Mark Edwards -- 206.292.0401 x107 -- medwards@discovery.org
SEATTLE--After months of debate, the Ohio State Board of Education has adopted science standards that require Ohio students to know why "scientists continue to investigate and critically analyze aspects of evolutionary theory." The Board unanimously approved the science standards this morning.

Calling this provision in Ohio's science standards "historic," Dr. Stephen C. Meyer, director of Discovery Institute's Center for Science and Culture, noted that "Ohio has become the first state to require students to learn about scientific criticisms of Darwinian evolution as well as scientific evidence supporting the theory. This represents an important milestone in the effort to ensure that students learn the full range of relevant scientific evidence. This policy will help remedy the selective presentation of evidence made by most biology textbooks today."

Ohio's new evolution standard does not require teaching the theory of intelligent design. "In recent weeks some have mischaracterized the new language as an effort to mandate teaching the theory of intelligent design in the classroom, but that is not accurate and is not what we asked for," said Dr. Meyer. "The new standard requires students to learn about the evidence for and against Darwin's theory. It does not mandate that students be tested about the theory of intelligent design, though it does leave teachers free to discuss it."

Dr. Meyer, a Cambridge-trained philosopher of science, and his colleague, Dr. Jonathan Wells, a Berkeley-trained biologist (both of Discovery Institute), were invited by the Board of Education to testify in March at a public hearing about the scientific controversy over Darwinian evolution. At the March hearing, Meyer, an advocate of the theory of intelligent design, proposed a compromise. Meyer suggested that the Board not require students to know the evidence and arguments for the modern theory of intelligent design, but that they should require students to know the scientific arguments for and against neo-Darwinism. The Ohio State Board's decision today essentially affirms this approach by allowing students to learn evidence based scientific critiques of contemporary evolutionary theory. (Meyer's original proposal to the Board can be found in his March 30, 2002 op-ed in the Cincinnati Enquirer, "Teach the Controversy")

Dr. Jonathan Wells, author of "Icons of Evolution," a book that documents scientific errors in textbook presentations of the case for modern Darwinism, urged the Ohio State Board of Education to adopt curricular materials that more accurately represent the current state of scientific knowledge and to remedy the one-sided presentation of evidence in favor of contemporary Darwinian evolution. "Most biology textbooks continue to use outdated and discredited evidences like peppered moths and Haeckel's embryos when it comes to their treatment of

Darwinian theory. It is critically important for school districts in Ohio to revise their biology curricula in order to meet the new standards."

The Ohio State Department of Education already has pledged to carry out the intent of the new evolution standard. Susan Zelman, Ohio's State Superintendent of Public Instruction, testified before the state legislature on Nov. 13 that she would "make a commitment that in our curriculum model we will deal with this controversial issue [of evolution] in an intellectually honest way, to protect the spirit of [Indicator] #23 'to investigate and critically analyze aspects of evolutionary theory,' and try to give examples about how to do that."

Discovery Institute is a non-profit, non-partisan policy and research organization that studies issues from transportation to technology to tax policy. In science education, it supports a "teach the controversy" approach to Darwinian evolution. Its Center for Science and Culture has more than 40 affiliated biologists, biochemists, physicists, philosophers and historians of science, and public policy and legal experts, most of whom also have positions with colleges and universities. www.discovery.org

News stories are not archived please do not link to this page.

**DISCOVERY
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Discovery Institute is a non-profit, non-partisan, public policy think tank headquartered in Seattle and dealing with national and international affairs. For more information, browse Discovery's Web site at: <http://www.discovery.org>

Public School (Let's Roll) Science Standards Packet

10/23/02

A/ Preparation:

Should the Public Schools Teach Creation? (BTG # 28)

Introducing Creationism into the Public Schools (Impact # 20)

Creation Science and the Local School District (Impact # 67)

Establishing Scientific Guidelines for Origins - Instruction in Public Education (Impact # 93)

Summary of Scientific Evidence for Creation (Impacts # 95-96)

What Really Happened on the Kansas School Board? (BTG # 131b)

Teachers Can Teach Creation Science in the Classroom (Impact # 196)

An Educational Step in the Right Direction (Impact # 270)

A Call to Arms for Conservative Christian Science Educators (Impact # 306)

U.S. Senate Passes Amendment and Supports Critical Thinking regarding Evolutionary Theory (6/13/01)

Creationism and First Amendment Rights (7-18-02)

*Teaching Creation Science in Public Schools, Dr. Duane T. Gish (1995, 70 pp.) www.icr.org.

*Scientific Creationism, Dr. Henry M. Morris (2nd. ed., 1985, 294 pp.) www.icr.org

Evolution - Legislation - 1st Amendment Links Re: Current Law on restriction of individual rights to practice one's faith in a classroom setting

What Could Happen Next? - Prepared by Christian Legal Association (CLA)

Legal Opinion Memorandum - May Creationism be legally taught in a public school setting? (CLA)

Department of Education Guidelines for Religious Expression - Prepared by American Center for Law & Justice (ACLJ)

Legally Teaching Creation Science in Public Schools - Prepared by Liberty Counsel (LC)

Public Schools Christians Have Rights! (Answers in Genesis)

B/ The Struggle - Creation vs. Evolution:

Evolution, Creation, and the Public Schools (Impact # 1)

Evolution in Public Schools and Creation in Students' Homes: What Creationists Can Do (Impact # 69)

Evolution in Public Schools and Creation in Students' Homes: What Creationists Can Do (Impact # 70)

Resolution for Balanced Presentation of Evolution and Scientific Creationism (Impact # 71)

Are Schools Teaching Evolution Well Enough? (BTG # 114b)

Evolutionary Indoctrination and Decision-Making in Schools (Impact # 120)

Evolution Verses the People (BTG # 161)

Biology Textbooks Worldview Development and the Creation/Evolution Controversy (Impact # 278)

Should Evolution be Immune From Critical Analysis in the Science Classroom? (Impact # 282)

Evolution is Religion-Not Science (Impact # 332)

Teaching Creation and Evolution in Public Schools (CEN Tech. Journal 13 (2):118-123, 1999)

*Evolution the Fossils Still Say No! Dr. Duane T. Gish (1995, 391)

C/ The Result - No Child Shall Be Left Behind education bill: (H.R. 1)

Honest Science "Left Behind" in US Education Bill (1/7/02)

Federal Challenges to the Teaching of Evolution (1-22-02)

Santorum Language on Evolution (1/31/02)

Santorum Letter to ICR (3/20/02)

Negotiators Retain Heart of Education Department Proposals (3/27/02)

Committee on Education and the Workforce Letter to NCSE (5/14/02)

Behind the Headlines Newsfax Standards Under Siege (7/5/02)

Equal Time for Creation in Cobb County? (8-26-02)

Georgia School District Adopts a Creation Policy (8-29-02)

Monkeys Out of Evolutionists (8-29-02)

Does Creationism Deserve to be Taught Along with Evolution in the Public Schools? (ACLIJ)

D/ Science and the Bible:

Does Science Conflict With the Bible? (BTG # 107b)

Faith Under Fire Taking Creation Back to School: What can Teachers Do? (Impact # 196)

Teaching the Bible in Public Schools? (Impact # 279)

*Science and the Bible, Dr. Henry Morris (1986 ed. 184 pp.) www.icr.org

*Note: An asterisk (or blue type) indicates a Book (not included in Packet, but available from www.icr.org.) rather than an article.

Name: Evolution

Discipline: Legislation

Category: 1st Amendment

Key Words:

Abstract:

Q 1: What is the current law on the restriction of individual rights to practice one's faith in a classroom setting?

A 1: ICR is not a law firm, does not practice law, and is not in a position to give legal advice. However, the U.S. Congress and the President of our country have passed into law a new education bill entitled "No Student Left Out Education Bill" on January 8, 2002. Details of this law and its intent are found in the following URL's:

URL: <http://www.susvalley.bhcom1.com/cgi-bin/db.cgi/7/5/2001?db=newsfaxes>
URL: <http://www.acs.ucsd.edu/~idea/senate.htm>
URL: http://www.adl.org/religion_ps/evolution.asp
URL: http://www.edweek.org/ew/ew_printstory.cfm?slug=28essea.h21
URL: <http://www.infidels.org/activist/state/evolution.shtml>
URL: http://www.natcensciedd.org/resources/articles/5445_eight_significant_court_decisi_2_15..
URL: List of Colleges and Universities that Support Creationism - 28k
URL: <http://www.icr.org/newsletters/btg/btgjune02.html> - 25k
URL: <http://www.icr.org/pubs/imp/imp-020.htm> - 36k
URL: <http://www.icr.org/pubs/imp/imp-279.htm> - 28k
URL: <http://www.icr.org/pubs/imp/imp-071.htm> - 29k
URL: <http://www.icr.org/pubs/btg-b/btg-114b.htm> - 15k
URL: <http://www.icr.org/pubs/btg-a/btg-103a.htm>
URL: http://www.icr.org/creationproducts/creationsscienceproducts/Teaching_Creation_Science_in_Public_Schools.html - 3k
URL: <http://www.icr.org/pubs/president/prz-0205.htm> - 25k
URL: <http://www.icr.org/pubs/btg-a/btg-161a.htm> - 30k
URL: <http://www.icr.org/pubs/imp/imp-069.htm> - 28k
URL: <http://www.icr.org/pubs/imp/imp-070.htm> - 25k
URL: <http://www.icr.org/newsletters/btg/btgmay02.html> - 27k
URL: <http://www.icr.org/pubs/imp/imp-306.htm> - 26k
URL: Creation Science and the Local School District
URL: <http://www.icr.org/pubs/imp/imp-080.htm> - 35k
URL: ICR And The Future
URL: <http://www.icr.org/pubs/btg-b/btg-028b.htm> - 15k
URL: <http://www.icr.org/pubs/imp/imp-332.htm> - 29k
URL: <http://www.icr.org/pubs/btg-b/btg-069b.htm> - 16k
URL: <http://www.icr.org/pubs/btg-b/btg-131b.htm> - 15k
URL: <http://www.icr.org/pubs/imp/imp-282.htm> - 29k
URL: <http://www.icr.org/pubs/president/prz-0205.htm>
URL: <http://www.freedomforum.org/templates/document.asp?documentID=3924>
URL: <http://www.icr.org/pubs/imp/imp-080.htm>
URL: <http://www.icr.org/pubs/imp/imp-303.htm>

URL: <http://www.icr.org/pubs/imp/imp-170.htm> - 24k
URL: <http://www.icr.org/pubs/imp/imp-105.htm> - 27k
URL: <http://www.icr.org/radio/fuf/speakers.htm>
URL: <http://www.icr.org/pubs/imp/imp-001.htm>
URL: <http://www.icr.org/newsletters/pc/pcjune02.html> - 26k

In addition, the following books are recommended:
Teaching Creation Science in Public Schools, by Dr. Duane Gish
Kansas Tornado, by Dr. Paul Ackerman & Bob Williams
The Origin of Species Revisited, Vol 1 & 2, by Wendall R. Bird

I have also included some information on selecting a Christian University and the related information on legal precedents (from an evolutionary perspective), the new education bill, etc. If you need further assistance please call on us.

Ga. county to permit teaching of creationism alongside evolution

News-Journal wire services

MARIETTA, Ga. -- The Cobb County school board voted unanimously Thursday night to give its teachers permission to introduce varying views about the origin of life in the classroom, including creationism.

The proposal says the district "believes that discussion of disputed views of academic subjects is a necessary element of providing a balanced education, including the study of the origin of species."

Cobb County resident Jeffrey Selman spoke out against the decision.

"I am flabbergasted. All these people want to take a pseudoscientific approach to religion," Selman said. "Let them believe in God. Let me believe in God. But how can they deny that this is bringing religion into classrooms? Science as we know it will lose all its credibility."

Others praised the board's choice as a way to encourage academic freedom and applauded the decision.

"We are not advocating religion in the classroom, but rather a comprehensive presentation both for and against Darwinism," said Cobb County resident Larry Taylor. "We believe teachers should educate, not indoctrinate."

The meeting room was packed with Cobb County parents, educators, theologians and students. The board allowed 48 people to talk, allotting them each one minute.

Hundreds crowded outside the room and a handful of supporters from both sides took their opinions outside, sparking impromptu shouting matches.

After the vote Board Chairman Curt Johnston read a six-paragraph statement. No other school board members made remarks.

"Our intention is to promote a broad-based science curriculum which will acknowledge that there are differences of opinion about the origin of life and to encourage students and others to be tolerant and respectful of those who may have different beliefs," Johnston read.

The school board revised the policy initially proposed by adding, "The purpose of this policy is to foster critical thinking among students to allow academic freedom consistent with legal requirements to promote tolerance and acceptance of diversity of opinion and to ensure a posture of neutrality toward religion."

The policy allows teachers to discuss opposing views to evolution.

Michael Gray, a junior at Pope High School in Cobb County, said he was relieved after the decision.

"I had to do a term paper about evolution and there were just things that I could disprove or have alternate reasons for," Gray said. "I want my brother and sister to be given the option and not told it's the absolute truth."

Despite the board's decision, opponents say it will not be the end of the emotionally charged debate.

"It would be as if Cobb County were putting up a giant sue me' sign," said Barry Lynn, executive director for Americans United for Separation of Church and State, earlier Thursday. "The acceptance of a resolution would inevitably lead to a lawsuit."

Since the board decided to consider the proposal in August, it has been inundated with letters and calls from both sides in a polarized debate that has attracted national attention to the conservative county north of Atlanta.

"This is genuinely a showdown over whether or not we will turn biology classes into Sunday school classes," said Lynn, a lawyer and a Christian minister. "It's as blunt as that."

John Avise, a professor of evolution and genetics at the University of Georgia, said he was concerned that the resolution in the state's second-largest district would create confusion and open the door for religion to enter public schools.

"Subjects are always open for discussion," Avise said. "That doesn't mean any theory dreamed up by someone deserves equal time."

Biology professors at every major university in Georgia and the National Science Teachers Association have told the school board they would be making a big mistake if the resolution passed.

The American Civil Liberties Union is already suing the district for putting stickers in thousands of middle and high school science books that said evolution is theory, not fact, and should be critically considered.

The U.S. Supreme Court ruled in 1987 that creationism was a religious belief that could not be taught in public schools along with evolution.

On the Net:

Cobb County Schools: <http://www.cobb.k12.ga.us/>

Americans United for Separation of Church and State: <http://www.au.org/contact.htm>

Does Creationism Deserve to be Taught Along with Evolution in the Public Schools?

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AMERICAN CENTER FOR LAW AND JUSTICE

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Does Creationism Deserve to be Taught Along with Evolution in the Public Schools?

By Jay Sekulow
Chief Counsel, American Center for Law and Justice

The debate over the origins of life is as old as life itself. In 1925, biology instructor John Scopes was prosecuted for teaching evolution. Now, it's creation science that is in the legal crosshairs. The issue is back in the news - this time an Atlanta-area school district debates whether teachers can discuss the concept of creationism along with evolution.

The Supreme Court has been very clear about this issue. While the Supreme Court has said that the teaching of creation science cannot be required in public schools, it is also very clear that creation science need not be shut out and removed from the discussion of the origins of life in public schools.

In the case of *Edwards v. Aguillard* the Supreme Court in 1987 stated that "teaching a variety of scientific theories about the origins of humankind to school children might be validly done with the clear secular intent of enhancing the effectiveness of science instruction." The court also indicated that there should be no constitutional crisis created with including creation science so long as it is done with the "intent of enhancing the effectiveness of science instruction" and, provided it is not taught to the exclusion of evolution.

That's where the focus needs to be in our educational system today. This is not about replacing evolution with creationism in the public school. But, what's wrong with making sure that other origins of life theories are presented, too?

The debate of how to handle the issue of creation science in our public schools is getting a lot of attention across the country with activity taking place recently in many states including Georgia, Kansas, Pennsylvania, Indiana, Washington, Ohio, Colorado, and Alabama.

And, much of the debate often centers on whether school districts should be permitted to include a sticker in science textbooks - a message that merely acknowledges the fact that evolution is not the only theory when it comes to the origins of life. In the Georgia school district currently grappling with this issue, school officials approved a sticker for textbooks that said evolution is a theory, not fact and stated that evolution should be "approached with an open mind, studied carefully and critically considered." A sound and reasonable approach. But - in Georgia - as well as many other states - critics abound and groups like the ACLU threaten legal action to make sure that creation science gets squashed like a bug or insect.

Does Creationism Deserve to be Taught Along with Evolution in the Public Schools?

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The fact is that that creationism does deserve to be taught along with evolution in the public schools - as long as it is done in a manner that does not promote a religious purpose and is done in a way that will enhance the educational process.

Why do the defenders of evolution feel so threatened by other theories like creationism and intelligent design, which teaches that a force greater than man created life?

Students should be permitted to examine all sides of an issue - and that includes the origins of life. Don't put up road blocks to knowledge. And, don't make the mistake of thinking this is about teaching religion. The fact is that information is knowledge and there is nothing wrong or unconstitutional with presenting students with alternatives - especially when studying the origins of life.

Jay Sekulow is Chief Counsel of the American Center for Law and Justice, an international public interest law firm specializing in constitutional law. The ACLJ is based in Virginia Beach, VA and its web site address is www.aclj.org.

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LEGAL OPINION MEMORANDUM

March 2000

On Legal Issues Involved in the Teaching of Evolution and Creationism

in America's Public Schools

By

The Christian Law Association

Seminole, Florida

Question Presented

May creationism be legally taught in a public school science setting?

Summary

While creationism may not legally be taught in America's government schools, nothing prohibits public school teachers from presenting legitimate evidence in science class that both supports and refutes Darwinism, even if such evidence would tend to support the religious theory of creation.

Legal Analysis

The United States Supreme Court has held that scientific creationism is a religion, while it does not regard evolution as religious. This was the Court's determination in the case of *Edwards v. Aquillard*, 482 U.S. 578 (1987). The key case regarding the teaching of religion in public schools is *Abington v. Schempp*, 374 U.S. 203 (1963), which prohibited the *devotional* use of religious materials in public school classrooms. At the same time, however, the Court affirmed the continuing *educational* use of religious materials, presented objectively.

The Court said:

Nothing we have said here indicates that such study of the Bible or of religion, when presented objectively as part of a secular program of education, may not be effected consistently with the First Amendment.

10/07/2002

Therefore, religion, including the religious belief in creation, is appropriately brought into the public school curriculum wherever it naturally arises—as it does in the study of origins. Scientific evidence pertaining to all theories of origin can be objectively overviewed in a public school science class without the teacher crossing the constitutional line of proselytizing or devotional use of religion. In fact, the student who is only taught to blindly accept the unproven theory of Darwinian macroevolution despite mounting scientific evidence against it is poorly served by the school district.

The real issue regarding the teaching of evolution in public schools is not a legal question. The real question is whether a science teacher who does not recognize that evolution is merely a theory and not a scientifically proven fact is qualified to teach it in a public school science class. Public school teachers should be required to keep up with current scientific data on evolutionary theories of macroevolution. One good starting point for a teacher to update his or her skills would be to read the significant work of Dr. Michael Behe of Lehigh University, who has effectively challenged Darwinian theories based on recent scientific data in his book, Darwin's Black Box. Dr. Behe teaches biochemistry and molecular biology at Lehigh University in Bethlehem, Pennsylvania. In his book, Dr. Behe spells out his theory of "irreducible complexity." Both the book and the theory were favorably reviewed in the New York Times and Dr. Behe was himself asked to produce a column for the Times outlining his theory. Public school teachers of evolutionary theory should be required to keep up with such new information.

Even before Dr. Behe's book appeared, Dr. Charles Thaxton was the first scientist to propose the theory of "intelligent design" as an alternative to evolution. The forward to Dr. Thaxton's groundbreaking book was written by a prominent atheistic scientist. Dr. Thaxton, who now teaches in Czechoslovakia, first presented his views on The Mystery of the Origin of Life at the state university at Austin, Texas, in 1989. He demonstrated that when scientists attempt to prove evolutionary theory, they are required to manipulate the building blocks of life in a manner that actually disproves evolution and points toward the necessity for an intelligent designer of the processes of life. This theory is compatible with religious views of creation, but not with Darwinism. It is this sort of evidence that must be presented to school children in order to educate them sufficiently in the most modern views of evolution. Instead of presenting a religious theory, public school teachers need only present these new scientific evidences and let the students evaluate which theories of origin they best support. Information about what various religions believe about the origins of life can be presented in an objective manner. Evolutionary theories can be weighed objectively against the emerging evidence to see whether they hold up. This is not teaching religion, but teaching good science.

While Dr. Behe and Dr. Thaxton never mention creationism, their theories support the thesis that some intelligent designer must be linked to the origin of life in much the same way that computer programs can be shown to be intelligently designed. Dr. Phillip Johnson and Charles Colson have both authored numerous books analyzing and debunking myths associated with evolution. Mr. Colson's new book, How Now Shall We Live, focuses on the fact that evolution is primarily a philosophy that undergirds a specific secular world view, and is not a science at all.

Evolution's hold on academe is weakening and will likely continue to wane rapidly as new scientific evidence regarding DNA and the building blocks of life are unlocked. The new scientific evidence presented by Dr. Behe and Dr. Thaxton has not been refuted by

evolutionary scientists. Dr. Behe notes that Darwin himself recognized that if some irreducibly complex organism were identified that did not permit gradual evolution, the theory of evolution would become untenable. Dr. Behe has done exactly that in his work on cellular biology. Public school boards need to mandate that evolution be taught by presenting both the scientific pros and cons. There is no question that such a curriculum would be constitutional. The new evidences are not based on God, but on science. Students would need to take the next step on their own if they choose to plug in God as the "intelligent designer." That is as far as teachers can constitutionally go at the present, but it is probably far enough.

The Kansas Board of Education recently voted to omit questions on evolution from the statewide science exam because they did not feel the state recommended science textbook, which only provided a positive view of evolution, was factual. The Supreme Court has never mandated that Darwinism must be taught as fact; nor have they ever prohibited science teachers from teaching scientific evidence disproving evolution to public school students. If such scientific evidence better supports religious views of the origin of life, there is no constitutional foul. Public school science teachers may constitutionally teach the fact that scientists are beginning to take a new critical look at evidence supporting evolution, which is an objective development in the field of science.

By any modern scientific measure, macroevolution is a theory, not a proven fact. Students who are not given arguments that both support and refute this theory are not being given a good science education. This issue transcends the question of whether the Supreme Court would ever permit the teaching of creationism in public schools. The issue really becomes whether public school science teachers are well or ill informed regarding their subject matter from a scientific perspective.

The United States Supreme Court struck down the State of Arkansas' anti-evolution statute that prohibited the teaching of evolution in public schools. The Court found in *Epperson v. Arkansas*, 399 U.S. 97 (1968), that the primary purpose of the Arkansas statute was religious and had no objective secular or scientific basis. The Supreme Court ruled in *Edwards v. Aguillard*, 482 U.S. 578 (1987), that a state could not mandate the teaching of creationism by requiring that creation theories be taught whenever evolutionary theories were taught. But objective presentations of religious views, which are not devotional or proselytizing, have never been banned from the classroom where they logically fit as they do in any analysis of the origins of life.

There are two lower court cases where teachers were prohibited from presenting views contrary to evolution in a science class. In one, *Pelozo v. Capistrano Unified School Dist.*, 37 F.3d 517 (9th Cir. 1994), the teacher was combining religious proselytizing with teaching about creation in the classroom. In the other, *Webster v. New Lenox School Dist.*, 917 F.2d 1004 (7th Cir. 1990), the issue was whether the teacher's First Amendment rights were violated by the school curriculum policy regarding evolution. The court held that the teacher "had not been prohibited from teaching any nonevolutionary theories," but was merely prohibited from "religious advocacy." *Id.* at 1008.

Finally, it is entirely constitutional for a teacher to permit a student to bring his or her own religious perspective into the science classroom discussion. It is perfectly appropriate for a teacher to permit students to present scientific evidence against macroevolution, even if that evidence includes discussion of a religious perspective. It is not good educational

policy to advocate a blind adherence to any particular evolutionary scheme. Furthermore, it is religious discrimination to prohibit students from expressing their religious viewpoints objectively in class. Teachers could set up student debates and other assignments where students were invited to evaluate the conflicting scientific evidence that is currently emerging.

The teacher is an agent of the state capable of violating the Establishment Clause if he or she brings religion into the classroom in a non-objective manner. The student, on the other hand, stands outside of an Establishment Clause analysis because the student is not an employee or agent of the state. With respect to student debates or discussions, the issue is placed squarely into a Free Speech analysis where the issues become religious discrimination and the free expression rights of students in school.

The United States Supreme Court held in the case of *Bd. Of Educ. V. Mergens*, 496 U.S. 226, 250 (1990), that "there is a crucial difference between *government* speech endorsing religion which the Establishment Clause forbids, and *private* speech endorsing religion which the Free Exercise and Free Speech Clauses protect." While the teacher's speech is government speech, a student's speech is private speech protected by the Free Speech Clause even in the public school classroom.

Guidelines for Religious Freedom in Public Schools, was a document that was first issued to all school districts in the United States by President Clinton, Attorney General Reno and Secretary of Education Riley in August, 1995. It was reissued by Secretary Riley in May, 1998. In the section regarding the rights of students with respect to class assignments the document states:

Student Assignments: Students may express their beliefs about religion in the form of homework, artwork and other written and oral assignments free of discrimination based on the religious content of their submissions. Such home and classroom work should be judged by ordinary academic standards of substance and relevance, and against other legitimate pedagogical concerns identified by the school.

It is not a legitimate pedagogical concern for a teacher to prohibit a student from expressing scientific and objective information that refutes evolution, even if such information contains a religious viewpoint. Every school should have a copy of the Religious Expression Guidelines in its school library and educators should abide by its legal conclusions. The Guidelines reflect the current state of the law.

Conclusion

A teacher does not engage in prohibited religious speech when the teacher presents credible scientific information in a public school science class that refutes the theory of evolution. Similarly, a teacher does not violate the Establishment Clause when he or she teaches objectively about various religious beliefs regarding origins. Furthermore, it would be a violation of the First Amendment right of Free Speech in public school if a teacher prohibited students from doing assignments or making class presentations

LEGAL OPINION MEMORANDUM March 2000 On Legal Issues Involved in the Teac... Page 5 of 5

analyzing which theories of origins best fit with current scientific evidence—whether those theories are secular or religious. Teachers may not chill students' exercise of their own constitutional rights of free speech in completing school assignments. A science teacher may not teach the religion of creationism in the classroom, but may present evidences to objectively support and refute all theories of the origins of life and the universe.

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Home

WHAT SHOULD PUBLIC SCHOOL KIDS BE TAUGHT ABOUT EVOLUTION AND CREATION?

DIFFERENT APPROACHES

More than two-thirds of Americans favor teaching both evolution and creation in public schools. This could explain why so many states and local school districts are beginning to ~~look-again~~take another look at their science curriculum. Can a public school present the latest scientific theories refuting evolution without violating the First Amendment's prohibition on government sponsored religious instruction?

State and local school officials have broad discretion in determining the public school curriculum. Approaches to teaching evolutionary theories vary greatly from region to region. There is a broad spectrum of approaches to this issue being considered by various states and localities:

- Ohio and Michigan are considering a curriculum that would present two theories of origins—evolution and intelligent design—neither of which would be presented as a fact. Students would be encouraged to weigh the evidence for and against each theory and decide for themselves what theory the evidence best supports. The intelligent design theory (ID) would be taught from a secular and scientific perspective; and the theory would not answer the question of who or what might be behind the design seen in the scientific evidence.

- Alabama and Cobb County, Georgia currently teach evolution as a theory, not as a fact. Textbook disclaimers direct students to approach the material with an open mind, to study it carefully, and to consider it critically.
- Colorado, Hawaii, Indiana, and Oklahoma failed in their legislative attempts to mandate teaching creation science as an alternative theory to evolution.
- Washington's attempt to pass a state law replacing the theory of evolution with the self-evident truth of creation failed.
- The Kansas Board of Education reversed an earlier standard that would give school districts a choice of whether or not to not teach the "Big Bang" theory and macroevolution (the theory that large-scale evolutionary changes created new species). School board members supporting that ~~trend~~ standard were voted out of office.
- Most states present evolution as an indisputable fact.

This variety in approach, combined with the emergence of new scientific evidence refuting evolution, has caused great uncertainty among public school science teachers when planning their science curriculum. Lawsuits and threats of lawsuits cause teachers and school districts to back away from teaching the science of origins in any way that would permit criticism of evolution. Some believe that even teaching *about* the controversy surrounding the theory of evolution would be a violation of the Establishment Clause of the United States Constitution. ~~But~~, in fact, there is much that science teachers can present in their

classrooms about various scientific theories surrounding the origins of life that in no way crosses the Constitutional line.

GOOD SCIENCE

The most important issue regarding the teaching of up-to-date evolutionary theories in public school classrooms should not be the legal one. Instead, the question should be whether a science teacher who does not recognize that evolution is merely a theory and not a scientifically proven fact is really qualified to teach science at all.

By any modern scientific measure, macroevolution is an unproven theory, not a fact. Indeed, there is much lively debate in scientific circles today about macroevolution, about the "Big Bang" theory, and about many other issues of origins. Students who are not taught scientific arguments that both support and refute the theory of evolution, particularly macroevolution, are simply not being given a good science education.

Good science would allow public school teachers to teach the significant work of Dr. Charles Thaxton, who currently teaches in Czechoslovakia, and Dr. Michael Behe who teaches biochemistry and molecular biology at Lehigh University in Bethlehem, Pennsylvania. Dr. Thaxton was the first scientist to propose the theory of Intelligent Design as an alternative to evolution. A prominent atheistic scientist even wrote the forward to Thaxton's groundbreaking book, *The Mystery of the Origin of Life*. Thaxton demonstrated that when scientists attempt to prove evolutionary theory, they are required to manipulate

the building blocks of life in a manner that actually disproves evolution and points toward the necessity for an intelligent designer to be involved in the origins of life.

Behe's effective challenge to Darwinian theories is based on recent scientific data reported in his book, *Darwin's Black Box: The Biochemical Challenge to Evolution*. In this book, Behe spells out his theory of "irreducible complexity." For example, he shows that the biochemical cell structure could not have evolved as Darwin theorized.

Neither Behe nor Thaxton ever mention creationism. They never suggest who or what may have been behind the intelligent design seen in the universe. Their theories support the thesis that some intelligent designer must be linked to the origin of life in much the same way as an intelligent designer is linked to the development of a computer program. Intelligent Design, as suggested by these and other scientists, is a theory that is more compatible with religious views of creation, than it is with Darwinism. For this reason, proponents of the exclusive teaching of macroevolution as a fact are attempting to suggest that ID is really just a back door way of getting religion into the public schools. However, proponents of freethinking in the field of science argue that public school children cannot be properly educated without learning the broad range of scientific theories in the field of evolution. In fact, they contend that school children cannot be properly educated about these controversial issues unless all evolutionary theories are taught objectively. Proponents who argue that public schools should teach intelligent design theories along with scientific evidence that both supports and refutes evolution argue that this approach is not teaching religion; it

is merely teaching good science. A sound education, they argue, is based on intellectual fairness, not on the suppression of relevant evidence that does not support the current dominant theory.

Evolutionary scientists have not refuted the new scientific evidence presented by scientists such as Behe and Thaxton. Instead, most continue to argue that teaching any theory other than evolution is teaching religion.

TEACHING ALTERNATIVE THEORIES

The United States Supreme Court has never mandated that Darwinism must be taught as fact rather than theory; nor have judges ever prohibited science teachers from teaching scientific evidence disproving evolution to public school students. In fact, the Supreme Court has already indicated approval of a science curriculum that would teach much more than evolution. In the case of *Edwards v. Aguillar*, 482 U.S. 578 (1987, U.S.) the Supreme Court said:

Teaching a variety of scientific theories about the origins of humankind to schoolchildren might be validly done with the clear secular intent of enhancing the effectiveness of science instruction.

Congress has also endorsed teaching evolution in a more balanced manner. The Congressional Report, which accompanied President Bush's education initiative in the No Child Left Behind Act of 2001, said:

"Where topics are taught that may generate controversy (such as biological evolution), the curriculum should help students to understand the full range of scientific views that exist, why such topics may generate controversy, and how scientific discoveries can profoundly affect society."

The record is clear that it is constitutional for school boards to permit public school teachers to teach the critical new theories scientists are developing

based on emerging data in the field of evolution. The theory of Intelligent Design is an objective development in the field of science, based upon new scientific data and research. ID would not directly bring God into the classroom. The students would be free to independently determine whether they believe God, an alien, or something else provided the intelligence for triggering life's origin. There is no constitutional foul in such a scientific approach.

Some school boards already concede that evolution is only a theory. They have communicated this message to their students by printing disclaimers on science textbooks. Both the State of Alabama and Cobb County, Georgia have adopted this approach. However, ~~But~~ school districts must be careful not to use such disclaimers as an inappropriate and unconstitutional way of injecting creationism into the science classroom. The newest disclaimer in Cobb County, Georgia appears to have no such religious content or purpose. Nevertheless, on August 21, 2002, a lawsuit was filed in Atlanta, seeking to force the Cobb County school board to remove the disclaimers. The complaint says that asking students to critically consider evolution as merely a theory violates the First Amendment because it is an attempt to inject religion into public schools. It remains to be seen whether this charge will hold up in court.

TEACHING CREATIONISM

Although the Supreme Court permits science teachers to teach a variety of scientific theories about the origin of life, when it comes to the teaching of creation science, different rules come into play. Creation science may not be taught alongside evolution as an alternative scientific theory. The reason

creationism may not be taught as science in the classroom is because in the case *Edwards v. Aguillard*, the United States Supreme Court held that creation science is a religious belief that may not be advanced as science in public schools. This does not mean that creationism may not be taught at all, but rather that it may only be taught as a religion. There are appropriate and constitutional places in a school curriculum where various religious viewpoints regarding the origins of life may be presented. So long as such religious material is taught in a neutral, objective and academic manner——i.e., presenting students with various cultural and religious theories without expressing approval or disapproval of any one in particular——the constitutional standards for teaching religion in school have been met.

TEACHER COMPLIANCE WITH CURRICULUM CRITICAL

There is one critical warning bell that must be sounded in the current debate regarding teaching evolution in public schools. No teacher should overlook this important principle. No matter what the Constitution says, no matter what Congress says, and no matter what the courts say about teaching alternative evolutionary theories, teachers are bound to teach the curriculum approved by the school board that employs them.

Teachers do not always have individual discretion to create their own curriculum. Therefore, for instance, if a school board policy requires the teaching of evolution as a fact, the science teacher does not have the discretion to ignore that policy and teach evolution only as a theory. If the school board requires the exclusive teaching of evolution, a teacher does not have the discretion to teach

alternative theories. A teacher who teaches material outside a school board established science curriculum policy should expect to be disciplined by the school board. Such a teacher can also expect that a court would uphold the authority of the school board to enforce the teaching of its approved curriculum. This is why it is so important for citizens to be active in school board elections and to follow school board decisions. Ultimately, it is the school board that sets school policy regarding the teaching of science and every other school related issue.

STUDENT FREEDOM OF EXPRESSION

It is important to remember that no matter what curriculum is mandated for science class, it is entirely constitutional for students to bring their own religious perspectives into the science classroom discussion. Students have a constitutional right to express their religious viewpoints in class. For example, it would be appropriate for ~~for a teacher to permit~~ students to choose assignments ~~topics or to do make class presentations~~ assignments analyzing which theories of origins best fit with current scientific evidence—whether those theories are secular or religious.

The United States Department of Education affirms this view. The 1998 *Guidelines for Religious Freedom in Public Schools* address the issue of class assignments as follows:

Student Assignments: *Students may express their beliefs about religion in the form of homework, artwork and other written and oral assignments free of discrimination based on the religious content of their submissions. Such home and classroom work should be judged by ordinary academic standards of substance and relevance, and against other legitimate pedagogical concerns identified by the school.*

CONCLUSION

Because sState and local school officials have broad discretion to establish the public school curriculum, there is a great opportunity for Christians to influence what is taught in their local school district. Christians can elect school board members who are committed to teaching good science. Under the principle of academic freedom and excellence, Christians can lobby the school board for a curriculum that teaches more than one theory of origins.

Christians should promote the teaching of alternative theories for the origin of life as a matter of good science. This will prevent students from being indoctrinated into the unproven theory of macroevolution. Only then will children in the public schools be free to weigh the scientific evidence in a neutral manner, and after weighing that evidence, children -will even be free -to conclude that God is our Creator -to follow that evidence wherever it leads.

To contact the legal missionary ministry of the Christian Law Association, please call (727) 399-8300 or visit www.ChristianLaw.org.

Make copies of this fact sheet to pass out to others! (For example, copy, fold, and use as a church bulletin insert.) Not copyright restricted.

Public schools: Christians have rights!

by Ken Ham, Executive Director,
Answers in Genesis

Sadly, because of intimidation by the American Civil Liberties Union (ACLU) and other humanist organizations with an agenda to rid society of anything Christian, teachers and school districts have tried to purge the public-school classroom of anything they deem religious.

IMPORTANT NOTE: This article is not intended to be, and does not constitute, the giving of legal advice. In this short article we can only summarize the rights of students and teachers in public schools. It's important that one understand exactly how things can be effectively accomplished under the law and by understanding decisions by the U. S. Supreme Court. It is important to remember that this area of the law is constantly changing. For this reason we urge readers that before implementing anything mentioned in this article that you obtain copies of two booklets available from the Christian Law Association (CLA), and that you contact competent legal counsel for advice.

Over the years as I've traveled all across America, I've found that many people believe that the Bible, prayer, Christian clubs, discussions on Creation - both Biblical and scientific - or almost anything to do with Christianity are not allowed in any way in public schools. This is FALSE.

It's about time that Americans knew the facts! Christians actually have much more freedom than they've been led to believe. There are great opportunities to present the Creation/Gospel message in public schools. Christians need to aggressively use their rights and freedoms and stop being intimidated by people who don't really

These booklets were written by Christian lawyers who have carefully studied the U. S. Supreme Court (and other court) decisions.

(CLA) has two booklets that EVERY Christian needs to read. By the way, AiG receives nothing from the sale of these books. We just want the American public to know they exist and to obtain them to spread the Gospel. CLA is offering a special reduced price for both booklets, which involved many hours of research and writing. Mention AiG when ordering.

Titles:

Do Christian Students have any Rights in Public Schools?, \$7.00 post paid.

Witnessing: The New Frontiers, \$7.00 post paid.

SPECIAL PRICE FOR BOTH BOOKS: \$10.00 POST PAID.

Order directly from: Christian Law Association, P.O. Box 4010 Seminole, FL 33775-4010, or phone: (813) 399-8300; Fax (813) 398-3907. Mention "AiG."

**Do Christian Students
have any Rights
in Public Schools?**



Christian Law Association
P.O. Box 4010
Seminole, FL 34645



A ministry of help to Bible-believing churches and Christians

Other freedoms

Did you know that a sidewalk which abuts a public school - and is open to public traffic - is a public forum? Witnessing and Bible/tract (e.g., creation tracts) distribution may not be prevented in such areas (subject to limited controls in the interest of public safety and order). Did you know that "release time" (i.e., when students are excused to go off campus for other learning experiences) is one of the most under-used, constitutionally permitted tools for churches and parents to influence public schools for good?

Did you know that public schools may teach about religion, including material about the Bible and other religious matters, including the history of religion, comparative religion, Biblical literature, and the role of religion in American history and in other countries?

Did you know that school libraries can't discriminate against Creation/Christian books on the basis of ideology?

WAKE UP AMERICA!

There is actually MUCH that can be done to present the Gospel to today's generations. Use your FREEDOMS to reach these generations who are being indoctrinated in the hopelessness of evolutionary humanism!

Sincerely,



Ken Ham

P.S. The Christian Law Association

If you follow their guidelines, you will be amazed at how much freedom there is to present the Christian message to public school students. Information will be given at the end of this article as to how to obtain these booklets. We thank the Christian Law Association for the special offer they've made to get these booklets into the hands of Christians.

Teachers and school officials

The First Amendment to the U.S. Constitution declares that "Congress shall make no law respecting an establishment of religion" by government.

For the public schools of America, the word establishment has been now deemed to mean this: Teachers and school officials, who are representatives of the government, may not do anything to favor religion. This means that teachers may not conduct religious devotions, prayer or Bible reading at the start of the school day. School officials may not sponsor prayers at graduation services, or post the Ten Commandments or religious symbols.

However, school teachers may use the Bible in instructional ways - as literature, history, in comparative religions classes, and ethics. It is only formal, structured prayer and formal, structured devotional use of the Bible in public schools that are forbidden under the First Amendment's "establishment of religion" clause.

Students

American citizens need to remember

that the First Amendment also guarantees that individuals have the right to the "free exercise" of their religion (or non-religion) and free speech rights. Therefore, public school children have rights in public schools, and schools must accommodate the religious expression of public school children.

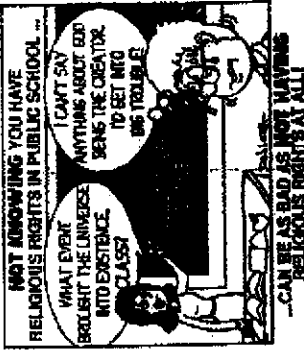
Keep in mind that because most public school teachers and school district officials are typically not lawyers, many are not familiar with what the U. S. Supreme Court permits in public schools. This lack of knowledge will require an education process. The lawyers from the Christian Law Association (CLA) are willing to help at any time concerning these matters. (See information on page iv.)

Specific freedoms

Many will be surprised at the freedoms in public schools. The following are just some of these many freedoms that are described in detail in the CLA booklets. Again, it is imperative that one read the details in these booklets before trying to implement any of the following.

■ May a student give out Gospel tracts or religious literature to his classmates? YES! However, this can only happen in the same manner as it would be for students permitted to distribute non-religious material.

■ May a student witness to his classmates about Jesus or pray with other students on the school campus? YES! (before or after



school, at lunch or during other times when students are permitted to interact with other students).

■ May a student read the Bible during the school day? YES! (Any time that students are allowed to read non-instructional books, Bible reading must be permitted.)

■ May students organize Bible clubs in public school? YES! (Public secondary schools must allow Bible clubs the same privileges as any other school club.)

■ May students write book reports, English papers or do oral assignments based on religious subjects? YES! (Such work must be judged by teachers using ordinary academic standards, and religious topics may not be discriminated against or singled out for special restrictions.)

NOTE: It would not be unconstitutional for a teacher to allow students to share their personal religious viewpoints in the classroom at appropriate times or in appropriate assignments. The teacher may (constitutionally) permit religious students to share their views if the views of all other students are also allowed.

Freedoms to present Creation!
Can the Biblical and scientific aspects of the creation message be presented in the classroom? A teacher in a public school could permit student-led discussions in the classroom on such issues as the origins of man and the universe, including creation science. The teacher may also permit the students to research and write papers on these issues. However, the teacher must be careful to remain neutral throughout the discussion. Christian students could request their teachers to allow student-led discussions. They could then share the material from AiG's books, and its Creation magazine, etc., as part of this discussion. Students can share their faith in Jesus Christ explicitly.

Depending on the individual school board policy, teachers may present views of origins other than evolution to their students, provided they don't favor any one view and all views are presented in a "non-religious" way.

Students could also form a creation science club at the school. This student club will be subject to the same restrictions as all other clubs at the school, but the school may not discriminate against this club on the basis of ideology.

Public school students also have the right to witness to fellow students and even hand out Creation/Gospel tracts as long as such expressive activity does not interfere with the educational mission of the school or the rights of other students.

Aggressive Stock Picks



Symbol: **ETTC**
 Rating: **Strong Buy**
 Target Price: **\$1.00**

***** Early Christmas Stocking Stuffer Special Edition *****

ET Corporation (ETTC) Reaffirms Their Commitment to Help Raise Billions for Political Parties!

Dear Fellow Investors:

Congratulations to those investors who took part in our last Aggressive Stock Pick alert - RMEC which appreciated from .06 to .29 - over 400% return!

The stock market is rallying off the October lows. Have you missed the rally? Definitely not! Small and Mid-Cap companies have been increasing in value at very rapid rates. These companies represent the greatest potential for growth. A prior Aggressive Stock Pick favorite increased in value from .10 to .80 in a 1 month span. **A mere \$1,000 investment could have increased to \$8000!** Did you miss that rally? Well here's your chance to position yourself in that very same stock and not miss the rally! As such.....

Our Current Recommendation is:

*** ETTC ***

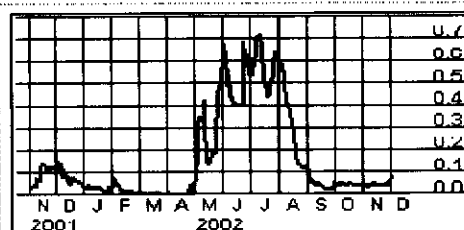
For More Information:

Visit their web site at:
www.etcorporation.com

About The Company:

ET Corporation (ETTC) owns several exclusive 1-900 telephone numbers. ET Corporation has combined 1-900 telecommunications with a 501 (c)(3) not-for-profit fund raising format to pioneer a revolutionary program to fund election campaigns. This program, which will assist political organizations when competing for funds in today's market, uses two of ET's telephone numbers, which have been approved by regulators, 1-900 DEMOCRAT and 1-900 REPUBLICAN.

Chart:



ETTC chart shows consolidation at current levels, and is now beginning to increase in price. This is a BULLISH pattern. Can you afford to miss out on the next market rally?

Reasons To Buy This Stock:

1) ETTC can help each of the two major political parties which have over 75,000,000 registered members. Of these, less than 5% contribute 100% of the hundreds of millions of dollars raised to fund elections. Why? Because the high cost of raising money precludes seeking political contributions of less than \$50 to \$100 from individuals.

2) ETTC can now solicit tens of millions of individuals that have never before been asked to contribute, ask for only \$10 and guarantee that payment of \$6.50, 65%!

3) ETTC can help individuals that have been disenfranchised in the past because they could not make a large political contribution will now be the main source of campaign contributions and they will take back political control from the Special Interest groups and Lobbyists.

Stock Stats:

Stock Symbol: **ETTC**
 Rating: **Strong Buy**
 Current Price: **\$.05**
 6 Month Target Price: **\$1.00**

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