

**Policy 2520.35C: Next Generation Content Standards and Objectives for Science in West Virginia Schools
Comment Log
October 10, 2014 to November 10, 2014**

Action Type
 N: No Response - Negative
 NA: Not Accepted + Positive
 A: Accepted o Neutral

| Date | Individual/Organization | Comments | Action/ Type | Rationale |
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| §126-44CC-1. General. | | | | |
| 10-12 | jim rye professor wvu morgantown wv | Adopt these standards as soon as possible. These standards are parsimonious compared to the 1996 iteration and will facilitate science instruction and literacy especially at the elementary grade level. | N/+ | |
| 10-14 | Stephanie Neace Teacher Cabell County Board of Education Huntington Wv | I am a kindergarten teacher, and I am excited to see the standards are written to encourage project based and hands on science by the learner! However, animal observation has been a HUGE part of our curriculum and the students love it and do so well with it. I feel it encourages observation skills and stimulates curiosity. I would love to see a standard or two written about observing animals and their life cycles and drawing conclusions based on observations. Thank you for your consideration. | N/+ | |
| 10-15 | Tabby Woy Teacher Keyser High Keyser WV | I hate to think that Physical Science will no longer be taught at a 9th grade level. The chemistry section helps prepare the students for biology. If they don't have the physical science chemistry, they will have a difficult time in chemical reactions, cycles, organic section of biology, and macro molecules. The weather and space portion of physical science helps the students understand biomes, weather patterns, and climates which enable them to see the correlation in adaptation, etc. | N/- | |

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| | | Many students don't take chemistry and or physics but a strong physical science background will enable them to take anatomy, environmental, and earth science. | | |
| 10-17 | Ted Hanket Physics Teacher John Marshall High School Glen Dale WV | Personally, I do not like the idea of changing 9th grade from physical science to earth science. When I get the students in physics class it is nice that they have some back ground information. If physical science is not taught in 9th grade then I am not sure when they will get any other information. | N/- | |
| 10-20 | Emily Hedrick Special Education Teacher Hampshire County Schools Romney WV | The proposed NxG Science Standards are far too vague, as compared to our current standards. If you want the students to be able to "do something", tell us what you want them to be able to do. We are supposed to post our daily objectives on the board, using words that our students will understand. The proposed standards will not allow us to do this. For example, can we think of another way to say "define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions" ??? I teach science to grades 6-8 and am honestly very overwhelmed by these standards. Within each grade-level, we'll be jumping from one standard to something completely different, rather than building on their knowledge of a particular strand of science throughout the school year. Personally, I think that it would be far more productive to teach science as they do in high school and college... one area of science per grade level. Earth Science could be taught in Grade 6, Life Science in 7th, and Physical Science in Grade 8. Please consider rearranging the proposed Science standards so as there will be more "flow" to our curriculum. Finally, IF these standards are passed and we are expected to implement them, we need the materials and resources | N/- NA/- N/o | NxG Science Content Standards and Objectives show show the interrelations of the science disciplines in preparation for high school science courses. |

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| | | to do so. Constructing models and conducting research requires appropriate resources, that not everyone has access to. Also, unit plans and sample lessons should be uploaded to the state website so as to help with the transition to these ridiculously broad standards. | | |
| 10-20 | Crystal Rexrode Romeny Middle School Romeny WV | First, let me start by saying this comment page is difficult enough to understand exactly what you want here. Second, the new proposed objectives are so broad that we are going to be setting our students up for failure. We have consistently asked for Earth Science to be taught in 6th grade, Life Science in 7th Grade and Physical Science in 8th grade. All that has been done is to switch things around. I teach 8th grade and half of my standards are completely gone. Some have went to 6th and 7th grade, but a lot are just gone. Now, if they are included, in some round about way, they are not very easy to pull out. Resources, we need resources. As I look at new objectives, I can't help but feel frustrated that I have an end objective but I have to still teach a content from the beginning because there is no building evident with this | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |
| 10-20 | Julie Rowan-Wolford 6th grade science Romney Middle School Romney WV | Many of the standards are so broad that it seems one could spend weeks or months only to find that what was covered wouldn't guarantee they'd be successful on a standardized test which will follow in the spring. While we are supposed to be giving students direct and to the point guidelines with what we are to teach, the CSO's we are given are nebulous. Having a "best practices" text/standardized website and equipment for every child to utilize with FUNDED materials for students to use would be ideal for being able to actually have students pass their standardized state tests, but given the support the language and math departments have been given I'm not holding my breath. If we believe this is the best route to go, appropriate materials should be compiled and | N/- N/o | |

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| | | disseminated to staff instead of the current scavenger hunt for locating guessed at relevant materials. | | |
| 10-20 | Tyler Lancaster Seventh Grade Science Teacher Romney Middle School Romney WV | <p>The new Next Generation Science Standards have several issues that should be dealt with prior to adoption. The initial issue that my fellow science teachers at Romney Middle School have noticed is the broadness of quite a few of the objectives such as S.6-8.ETS.4- develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design. Essentially we are being told that the students need to engineer a new product, and test it, but what are the guidelines involved? Is it merely an objective for proper use of scientific method? Or is there specific content that should be associated with the design?</p> <p>A second issue that my colleagues have discussed is the inability to have continuity throughout each grade level. The opportunity to involve students in any topic of depth will likely escape us because of the scattered nature of the topics, whereas if the focus was on one main topic per grade level,(i.e. Earth Science, Life Science, Physical Science) then the students would have the opportunity to continually build upon the previous topics of that course. Essentially this issue could be resolved by structuring each grade level by an encompassing topic as the previously mentioned three major topics.</p> <p>The most pressing issue that we have noticed is the presence of some very abstract ideas in the grade six objectives. At the age of sixth graders many of the students still have difficulty understanding extremely abstract ideas, and are far more comfortable with concrete topics, such as earth science content. The idea of sixth grade students being able to fully understand the objective S.6.PS.1- use mathematical representations to describe a simple model for waves</p> | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |

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| | | <p>that uncles how the amplitude of a wave is related to the energy of a wave is far fetched, and even sixth graders being able to grasp the concept of a wave and its ability to transfer energy at all with their concrete minds is nearly impossible.</p> <p>The proposal that my colleagues and I have discussed that would remedy the majority of these issues is to have grade six focus on content objectives encompassing earth and space science to account for the students' abstract reasoning deficit, and as the students' abstract reasoning develops more into seventh grade the seventh grade curriculum should focus on the slightly more abstract life science objectives and begin to bring in some of the chemistry of life as part of life science to lead into the eighth grade curriculum to be focused on the objective encompassing the overly abstract and mathematical concepts in physical science in eight grade.</p> | | |
| 10-22 | <p>Teresa Barton Teacher PikeView High School Princeton WV</p> | <p>I am interested in knowing what certifications will be used for these high school classes. Will there be reciprocity from Virginia if a teacher has a certification in Earth/Space Science. Will the "old" WV General Science certification work for these courses?</p> | N/o | |
| 10-23 | <p>Eric Chemistry Educator Teacher Keyser WV</p> | <p>1.) I applaud Earth Science in Grade 9. 2.) I do NOT applaud general science as an option in grade 11. Students with low math skills will opt for Environmental Science. Students who do NOT want Chemistry will opt for general science. This will eliminate many chemistry positions. It also DUMBS down the curriculum. What will the current freshmen and sophomores take during their junior year since they had PHYSICAL SCIENCE as freshmen? Will they opt for Environmental Science and eliminate most chemistry classes for two years? Does this mean I will be riffed in the process? Please advise. It would be</p> | <p>N/+ NA/o</p> <p>NA/-</p> | <p>The physical science course is a blend of chemistry and physics. Students will make decisions about 3rd and/or 4th science courses based on their <i>Personalized Education Plans</i> and the requirements of post-secondary institutions they plan to attend.</p> |

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| | | <p>nice to know now and NOT mid summer when all jobs have been filled!</p> <p>3.) Why does WV keep reinventing the wheel? VA has had a set of courses and this has worked for more than 30 years with END OF COURSE exams. The tests are tied to LEVELS of diplomas. Tie the test to the diploma and rates will increase.</p> | | |
| 10-23 | <p>Jeff Garvin Teacher Mountainview Elementary Morgantown WV</p> | <p>I like the simplicity of the standards and the depth.</p> | N/+ | |
| 10-23 | <p>Michele Adams Martinsburg wWV</p> | <p>1. Not enough general content- they need background knowledge (example--they need to learn the periodic table, atoms, molecules before the 6th grade objective of learning the chemical process behind photosynthesis. I did not see this content anywhere prior to 6th grade).</p> <p>2. Not enough focus on matter in 6th grade. Too much focus on weather in 6th grade</p> | NA/- | <p>One goal of the new standards was for students to become scientifically literate--they are to be able to speak and listen, and read and write as scientist do. The proposed standards will allow students to develop those literacy skills while they as acquire understanding of content specific language and develop science and engineering skills.</p> |
| 10-24 | <p>Anna Troynar 5th Grade Science Teacher Hancock County Schools Weirton WV</p> | <p>The standards state that all teachers are responsible for engaging students in active inquiry, investigations, and hands-on activities throughout our instructional day. Teachers are not equipped with the materials needed to provide this integrated, inquiry-based approach. Our current science textbooks are copyright 2000 and the WV Handle on Science kits for the 5th grade level do not match the new standards.</p> | N/o | |
| 10-25 | <p>Michele Adams Teacher Martinsburg WV</p> | <p>To achieve these objectives, teachers and students will need more technology in their CLASSROOMS!. Our computer labs are rarely available for research and writing because we are testing our students to</p> | N/o | |

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| | | oblivion- I counted one grade was tested 26 times in our school last year! The state needs to provide us with more technology in our rooms if they want success- it certainly won't be achieved with 4 old student computers that barely turn on. | | |
| 10-26 | Nicholas Belmont Teacher Belva WV | 1) I'm concerned that science teachers around the state were not informed on the adoption of these standards. There seemed to be no transparency in how the adoption committee was chosen. I know several science teachers who would have liked input into the development of the new standards. There has been a lack of communication on the science standard adoption and standardized testing information. | N/o | |
| 10-28 | will concerned citizen Martinsburg WV | <p>Why is chemistry being eliminated and general science being implemented in the 11th grade? General science belongs in the middle school! In Germany, Japan, Singapore, and Finland the level of chemistry taught in WV would be considered 8th grade science. The 11th grade science is equitable to AP chemistry!</p> <p>Our neighbor, Virginia, still has chemistry as their third science. By eliminating chemistry one of the following must be true:</p> <p>a.) WV students are less intelligent than in the neighboring states</p> <p>b.) WV teachers are less competent than in the neighboring states</p> <p>c.) WV wants to dumb down the students we currently have - what happens when the student decides in their first year of college they want to go into a science related field? They are then at a severe disadvantage.</p> <p>I know this will not be addressed since the state board president is the wife of a "senator".</p> | NA/- | Chemistry is not being eliminate from the 11 th grade. Chemistry in the 11 th and Physics in the 12 th is recommended for students on STEM path. Students may elect to take AP physics in the 12 th grade if they have the math skills. |
| 10-28 | George Watson Professor | I am quite concerned that we are continuing to push Common Core standards on our children with no | N/- | |

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| | Marshall University Huntington WV | thought to whether it actually works. In essence you are treating children of this state like lab rats, with no option for parents to choose whether they want to have their children participate. No data has been developed to show that these standards will improve student learning and no country other than the United States is following this path. | | |
| 11-04 | m smith teacher school chas wv | Regarding grade 6 proposed standards for science: selection of topics is too narrow in scope, there should be a broader range and selection of topics. Grade 6 is a time where students have their first fully dedicated class in science and they are very eager and excited to learn about a wide variety of topics. A broader sampling of topics needs to be included to develop and nurture scientific curiosity. Objectives are so bogged down with overly specific, sophisticated, technical jargon they are difficult to understand. Some concepts are too abstract and not developmentally appropriate for 6th grade. | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |
| 11-05 | Cassandra Forshey teacher Parkersburg South High School Parkersburg WV | I'm concerned over the application of the new standards in my classroom. I have two desktops that work sporadically and our bandwidth doesn't support our current usage, much less the usage required to meet standards that involve numerous computational models. Also, our "current" textbooks are a decade old and only a third of the books' content addresses the new standards. Money needs to be allocated for the necessary resources. | N/o | |
| 11-05 | Dave Barr Science Teacher Wahama High School Mason WV | I like the sequence of classes. | N/+ | |
| 11-05 | C Kibby Science teacher capon bridge middle capon bridge wv | There seems to very little Science being taught, and more lang.arts. | NA/- | The proposed standards will allow students to develop literacy skills while they as acquire understanding of |

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| | | | | content specific language, develop an understanding of the concepts of science and engineering skills. |
| 11-06 | I.M. Teacher WV | I do not like to proposed middle standards which are to be aligned with NGSS - they seem to be a rehash of existing CSOSs. The multi-discipline approach to science (a little of this, a little of that) does not serve our middle school students well - although these are somewhat of an improvement over previous CSOs. As a teacher, organizing and developing excellent lessons ranging from physics to cells is difficult to manage in classrooms,schools, counties with limited resources (manpower as well as equipment and supplies). I think that our students and teachers would be much better served by specific discipline concentration by grade. I encourage the committee of middle school writers to look at neighboring states - particularly as we have so many students that move regionally, not just within the state. I have had a chance to review both Maryland and Virginia and would like to see WV follow a similar approach. | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |
| 11-06 | Tina Cartwright Associate Professor Marshall University Huntington WV | Thank you for the opportunity to serve on the feedback team to supporting writing of the Next Gen Standards. I am VERY glad that our state is moving forward on gathering feedback on potential adoption. The elementary performance expectations are a HUGE improvement over the current CSOs. For example, 4th grade teachers are currently challenged to teach 35 standard 2 objectives which necessitates them spending VERY little time on any one particular objective. The proposed next generation standards provides the focus and depth that will allow our elementary educators to spend sufficient time to create meaningful learning experiences for our WV students. | N/+ | |

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| | | <p>HOWEVER, sufficient funding for professional development will be necessary to ensure that our educators (at all levels and particularly elementary teachers) can confidently create these meaningful learning experiences. Although adoption of curriculum materials is a decentralized process, sufficient funding and encouragement by WVDE should be made available so that counties can adopt innovative, interactive hands-on curriculum which will support teachers adequately so they can create these meaningful learning experiences in their classroom.</p> <p>Thank you for supporting integrated science instruction for the middle school curriculum. I believe this is critical for coherent and meaningful implementation by our best "generalist" science instructors in middle school.</p> <p>High school students need more science instruction and I understand why the ESS topics are taught at 9th grade because they need to be taught by "general science" certified teachers. However, some of the performance expectations may not be developmentally appropriate for 9th grade (such as those pertaining to global climate models).</p> <p>I am concerned that the high school physical science set of performance expectations are "recommended" as the 3rd level course. I believe that they should also be required (unless students take a Physics course). Students could be declared as STEM, take chemistry and NOT take physics or the physical science course -- electing to take a Biology AP, for example. This might result in students not having a course focusing on the</p> | <p>N/o</p> <p>NA/-</p> | <p>Students will make decisions about 3rd and/or 4th science courses based on their <i>Personalized Education Plans</i> and the requirements of post-secondary institutions they plan to attend.</p> |
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| | | <p>physical science performance expectations.</p> <p>I am excited to be involved in science education at this time in my home state. I think these standards will provide an opportunity to have a significant impact on improving the quality of science education in WV. Future careers in WV rely on a scientific literate population. It's up to us to lay the groundwork and foundation of science literacy in WV.</p> | | |
| 11-07 | <p>deborah shaffer-palmer teacher moundsville middle school moundsville wv</p> | <p>Most of the 8th grade standards there is very little in the way of resources for embryo growth and differences etc. Not important in real life. s8ls7 s8ls8. This could be taught in less than 5 minutes. There is not before for the standards. For 7th grade cells will have to be retaught because they retain nothing from 6th grade because no one is able to concentrate on content long enough to make learning connections that last. I am very disappointed in our state for this attempt to promote learning!</p> | N/o | |
| 11-07 | <p>deborah shaffer-palmer teacher moundsville middle school moundsville wv</p> | <p>The standards are not educating our students in what they will need to be successful in real life. Look at group more cohesion of topics and reinforcement throughout a school ypear. I did not have physics (until college) except for 9th grade intro to physical science and was successful. Why set up our students to fail. Isn't it more important they have a clue where their gall bladder is when the doctor says take it out?</p> | N/o | |
| 11-08 | <p>Bruce Rose NBCT science teacher Greenbrier East High School Lewisburg West</p> | <p>I feel Earth science should be taught in grade 8. If grades 6-8 are left non-specific, there is less accountability for which teacher is responsible for what content. Also because grade 6-8 classes are general classes, teachers are responsible for more content and cannot go into as much detail in any one area. Earth science should be taught in grade 8 vs. grade 9 because content is more concrete and is more suitable for younger children vs. physical science.</p> | NA/- | <p>The limited number of topics in each grade level will allow time for experiential learning and deeper understanding of concepts.</p> <p>Earth and Space Science (ESS) requirements align to the math skills and the NxG</p> |

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| | | Physical science should be taught in grade 9. If this class is removed, students will be missing content needed as prerequisites for biology and chemistry later. To simply say the content is taught in elementary/middle school is to ignore what actually happens. There are questions about readiness of children for physical science content and certification/training of teachers in middle school in physical science. Readiness of children means they are more concrete thinkers at younger ages, and are less able to understand concepts from chemistry and physics which are more abstract. For example chemistry deals with atoms, particles that are too small to be seen, so by its nature is more abstract. Also readiness means students lack math skills/knowledge, example algebra, to understand physical science content at middle school level. Also middle school science teachers, with certification in grades 6-8 general science probably are not certified to teach physical science. | | Mathematic Content Standards and Objectives for grade 9. |
| 11-08 | Tim Curtis preservice teacher Fairmont State University Fairmont WV | I feel it is a great idea to deepen our students'™ knowledge by decreasing the number of standards. A decrease in the number of standards will relieve the teacher from rushing through content and will allow more time for teachers to actively engage each student in their lessons, resulting in more in-depth experiences. I love that engineering practices have been included. Students need experiences with science, technology, and engineering practices at younger ages in order to keep up with the increasing demand of careers in these fields. Overall, I am for this change and the quality over quantity approach. | N/+ | |
| 11-09 | Kelly Carter 8th Grade Science Teacher Marshall County Schools Wheeling WV We | First of all, I feel compelled to say that in my professional opinion, the division of the scientific topics in the middle grades is counterproductive to student learning and inhibits the natural flow of | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in |

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| | | <p>increasing the complexity of material as students gain footing. In my experience with integrated main topics, as we have had for quite some time and are proposed, students are most often unable to build on knowledge they have learned in previous years. They don't remember the material and precious time is lost reteaching. If the topics were connected at the initial time of teaching, students are capable of achieving a much higher level of processing and retention. It reminds me of climbing the same mountain a little more each year when you could just head all the way to the top and take mountain after mountain. Most other science teachers I talk to agree it would be best to go back to having Physics, Biology, Earth and Space and Life Sciences taught in separate years in Middle School once again. Some of our neighboring states have never left that format. That would allow students to reach a high level of advancement in each topic without stutter stepping. Large segments of learning can be spiraled through the years and not small portions of a topic.</p> <p>Now to address the standards presented. I'm thrilled to see the amount of little pieces of localized information reduced. The idea of teaching what an atom is one year and the periodic table the next year does not provide the student with a flow of knowledge. When I was in school we learned about matter, what it was, properties of matter, how it behaved, atoms, the periodic table, atomic structure, and chemical reactions. It all went together and it all made sense. When we had it in high school, we remembered most of it and were able to build in topics of increasing complexity.</p> | <p>N/+</p> | <p>preparation for high school science courses.</p> |
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| | | <p>Im an 8th Grade teacher so Iâ€™ll focus my comments in that area.</p> <p>Although it seems there are fewer standards, they are very broad encompassing wide fields of science. For instance 1 Growth, Development and Reproduction of organisms includes: anatomy of animals and plants, â€œcharacteristic animal behaviorâ€• , environmental and genetic influences on growth, protein synthesis, genetic structure, mutations, sexual and asexual reproduction, and technological influence on growth. What about what genetics is? How did it begin? How does it work? Genetics has always been a new topic in 8th grade so we have to put the basics in somewhere. I do love that we are adding a more modern touch to the material, such as including technological influence.</p> <p>â€¢ Im happy to see a return to Natural Selection as it took a hiatus on the last selection of standards.</p> <p>â€¢ Chemistry: Standard 1 is to build models of molecules. Students must know about atoms, the periodic table, the behavior of electrons, etc.</p> <p>â€¢ I love how the students are asked to complete tasks at higher levels of mastery but I feel that the basic underlying necessary information is overlooked or is that just assumed?</p> <p>â€¢ I love how the students have more direction in the projects they do.</p> <p>â€¢ I love the higher thinking involved.</p> <p>â€¢ I love the freedom I, as a teacher has to create learning experiences and encourage my students to create them as well.</p> <p>â€¢ I donâ€™t have a clear understanding how the literacy standards work over the 3 grade periods. I assume they are there to draw from any grade?</p> <p>â€¢ I would like some information about how testing will change with this new style of standard.</p> | <p>N/o</p> <p>N/+</p> <p>N/o</p> <p>N/+</p> <p>N/+</p> <p>N/+</p> <p>N/o</p> | |
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| | | <p>â€¢ Professional development will be needed to support changes in adding engineering and literacy content.</p> <p>â€¢ I wish there was more emphasis on technology.</p> <p>â€¢ We will need a lot of professional development to design our lessons and receive support and collaboration from our superiors and peers for this transition to be successful.</p> <p>â€¢ A database of successful lessons should be available for teachers to access. The State department should give teachers the opportunity to sit together and create materials to share with their colleagues. This takes time so I hope we start this soon.</p> <p>â€¢ A variety of resources should be available.</p> <p>â€¢ I am in support of literacy across the curriculum and I do incorporate it. Our students have a double period of math and language arts and I feel that science standards have been sacrificed to incorporate writing standards. Science is very important in the future of our local and global society and I think it should regain its former stature of importance in our curriculum planning. Innovation and scientific inquiry are more important than ever before as our students strike forth into a world to compete on a global platform.</p> <p>â€¢ Literacy Resources would be very helpful as many of us are not trained to teach writing.</p> <p>â€¢ I love that students can follow their own interests.</p> <p>â€¢ The Engineering standards are very vague and I would love to have access to some examples.</p> <p>In summary, I appreciate these new standards reflect increased rigor, more student involvement, teacher freedom, address our modern circumstances, and higher level thinking processes. Iâ€™m excited to have fewer standards in which we can delve more</p> | <p>N/+</p> <p>N/o</p> | |
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| | | <p>deeply into the field. I wonder if we have moved to the opposite end of the spectrum to have very broad standards that are still scattered and removed from what I consider the natural flow of information building on each other.</p> <p>I love how engineering is taking a larger role, but Iâ€™m concerned they and science content have taken a backseat to the literary standards.</p> <p>I hope we as teachers and students will be properly supported through the transition by the State Department.</p> <p>Thank you for hearing our comments.</p> | | |
| 11-09 | <p>Lisa stout Teacher Lost creek Wv</p> | <p>I see the vision, the goal of these standards. My concern is the certifications for teaching the high school courses. I believe that a general science degree should not be considered for the 10-12 options. A general science certification does NOT prepare an educator with the necessary skills to prepare students for the next step. I am speaking from personal experience, I have a general science degree, but I also have a degree in chemistry, biology, and have completed the FSU physics cohort. The general science course work is adequate preparation for the middle school levels, not high school. If a teacher with a general science degree wishes to teach at a higher level, at a minimum, make them take the praxis to prove they know the material--the passage of the new policy promotes this. You can't up the expectation and rigor in the sciences for students and not up the level of training of the educators. Trust me, there are many in the system that are poorly prepared to teach the various disciplines in science. I know of individuals teaching courses like anatomy physiology or environmental yet they have never had the course themselves. I have always been an advocate for giving students the best, hence why I specialized in all</p> | N/o | |

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| | | should also be one of the strengths. I would like to see WV collaborate with MD, Virginia, Pennsylvania, Ohio, Kentucky to develop consistent standards by grade level. | | |
| 11-10 | Elizabeth Strong President West Virginia Science Teachers Association Wheeling WV | The West Virginia Science Teachers Association endorses Policy 2520.3C Next Generation Content Standards and Objectives for Science in West Virginia Schools. The organization endorses this policy due to the widespread involvement of West Virginia K-16 science educators and stakeholders in the review of the Next Generation Science Standards prior to their release and the potential of these standards to move science to the level of importance needed to move West Virginia forward. | N/+ | |
| 11-10 | Jennifer Robertson-Honecker Assistant Professor and STEM Specialist West Virginia University Morgantown WV | In concurrence with the WVSTA, I wish to endorse this policy. I teach college introductory chemistry and conduct informal science outreach/education across the state, and I know first hand that WV students are struggling in science compared to their out-of-state peers because of a lack of proper preparation in K-12 science coursework. I am hopeful that these new standards will address these needs. Especially in the elementary classrooms where science content is nearly nonexistent. | N/+ | |
| 11-10 | Kimberly S. Napora teacher Point Pleasant Junior Senior High School Point Pleasant WV | I feel it would be in the best interest of the high school course layout design to switch the Biology and Physical Science courses. I do not feel that Physical Science should be a "recommended third course" option - rather it should be at least the "10th" grade option to better prepare those students going into Chemistry and Physics. | N/- | |
| 11-10 | Laurie Ruberg CEO PLANTS, LLC Wheeling WV | I am pleased to see West Virginia take active steps to integrate the Next Generation Science Standards. Science is a dynamic subject area that evolves as new technologies emerge and enable new discoveries and expanded understandings of the natural world. | N/+ | |

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| 11-10 | Anne Smith Middle School science teacher Pocahontas County Schools Green Bank WV | Science standards are the first step in creating a decent science program. We need class sizes in science to be limited to provide students with adequate amounts of lab materials and we need room sizes that allow for safe and meaningful labs to be performed. Vague or non-existent procedures are now in place for both class size and science classroom size and that needs changed as well. Materials will also need to be provided to teachers so they can properly incorporate these standards. | N/+ | |
| §126-44CC-2. Purpose. | | | | |
| 10-20 | Emily Hedrick Special Education Teacher Hampshire County Schools Romney WV | The proposed NxG Science Standards are far too vague, as compared to our current standards. If you want the students to be able to "do something", tell us what you want them to be able to do. We are supposed to post our daily objectives on the board, using words that our students will understand. The proposed standards will not allow us to do this. For example, can we think of another way to say "define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions" ??? I teach science to grades 6-8 and am honestly very overwhelmed by these standards. Within each grade-level, we'll be jumping from one standard to something completely different, rather than building on their knowledge of a particular strand of science throughout the school year. Personally, I think that it would be far more productive to teach science as they do in high school and college... one area of science per grade level. Earth Science could be taught in Grade 6, Life Science in 7th, and Physical Science in Grade 8. Please consider rearranging the proposed Science standards so as there will be more "flow" to our curriculum. Finally, IF | N/o | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |

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| | | these standards are passed and we are expected to implement them, we need the materials and resources to do so. Constructing models and conducting research requires appropriate resources, that not everyone has access to. Also, unit plans and sample lessons should be uploaded to the state website so as to help with the transition to these ridiculously broad standards. | | |
| 10-24 | Anna Troynar 5th Grade Science Teacher Hancock County Schools Weirton WV | <p>The purpose to have students define problems and design solutions related to these objectives sounds great on paper. However, if you go to the studies on what a fifth grader is capable of learning, I do not feel that most fifth graders are ready for such advanced thinking activities. For example, some of my fifth graders find it hard to grasp the concept that the sun is a star. According to Piaget, fifth graders are still in the Concrete Operational Stage: 7-11 years</p> <ul style="list-style-type: none"> * Able to solve concrete (hands-on) problems in logical fashion. * Understands laws of conservation and is able to classify and seriate. * Understands reversibility. | NA/- | Experiential learning is required for significant understanding of concepts K-12. |
| 10-26 | Nicholas Belmont Teacher Belva WV | <p>1) I'm concerned that quality instructional materials will not be available by the time the standards are adopted (keyword is quality). SciencePlus textbooks were not quality and did not cover the appropriate standards.</p> <p>2) I'm very concerned about parental involvement in their child's education. Lack of textbooks and going to digital (many do not have internet) makes it hard for parents to help their children. This can be seen from the new Carnegie adoption in math (just look at the new Math 1, Math 2, Math 3, and Everyday Math programs). Parents are not able to help their children anymore with homework and such. Depending on the county this is true of CATS Science education</p> | N/o N/o | |

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| | | <p>program.</p> <p>3) I'm concerned that new hire science teachers won't have enough resources to teach the NXTGen standards.</p> | N/o | |
| 11-04 | <p>m smith teacher school chas wv</p> | <p>Overall curriculum is lacking developmental nature for scientific concepts- safety, scientific method, matter, motion and forces,etc.</p> <p>The National Science Teachers Association states that concepts for middle school should be "age-appropriate, engaging so that students can build on prior knowledge (I do not see continuity in building of concepts from grade to grade- middle school) to attain the necessary background to participate successfully and responsibly in our highly scientific and technological society." They also go on to say that "grades 5 through 9 are a pivotal time in their understanding and enthusiasm of science. Research has shown that if educators don't capture students' interest and enthusiasm in science by grade 7, students may never find their way back to science."</p> | NA/- | <p>Science and engineering practices are embedded throughout the objectives. When narrowing the description of science exploration to the scientific method students get a limited and unreal sense of science practices.</p> |
| 11-05 | <p>C Kibby Science teacher capon bridge middle capon bridge wv</p> | <p>Our students need more science facts and theorys to get a real grasp of what science is. They come with a small background and are very confused about what science really is.</p> | NA/- | <p>NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses.</p> |
| 11-07 | <p>deborah shaffer-palmer teacher moundsville middle school moundsville wv</p> | <p>Most schools struggle to teach the abstract and this is what I am seeing as important now. We do not have students who are mentally ready to handle the abstractness of physics nor do they have the math skills necessary at this age. Physics for this age will be of little value. We do not have adequate materials or money to do this either. Class size is too large to handle this type of hands on safely.</p> | N/o | |
| 11-07 | <p>deborah shaffer-palmer teacher</p> | <p>Standards are not going to be taught well, they are too vague in outcomes desired.</p> | NA/- | <p>NxG Science Content Standards and Objectives</p> |

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| | moundsville middle school moundsville wv | | | show the interrelations of the science disciplines in preparation for high school science courses. |
| 11-10 | Anne Smith Middle School science teacher Pocahontas County Schools Green Bank WV | I think these standards need to be adopted-if we are going to be compared to other states, and compete for money with them, then there needs to be a standardized way of doing this. It is unfair to compare states with each other when all are doing something different. | N/+ | |
| §126-44CC-3. Incorporation by Reference. | | | | |
| 10-20 | Emily Hedrick Special Education Teacher Hampshire County Schools Romney WV | The proposed NxG Science Standards are far too vague, as compared to our current standards. If you want the students to be able to "do something", tell us what you want them to be able to do. We are supposed to post our daily objectives on the board, using words that our students will understand. The proposed standards will not allow us to do this. For example, can we think of another way to say "define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions" ??? I teach science to grades 6-8 and am honestly very overwhelmed by these standards. Within each grade-level, we'll be jumping from one standard to something completely different, rather than building on their knowledge of a particular strand of science throughout the school year. Personally, I think that it would be far more productive to teach science as they do in high school and college... one area of science per grade level. Earth Science could be taught in Grade 6, Life Science in 7th, and Physical Science in Grade 8. Please consider rearranging the proposed Science standards so as there will be more "flow" to our curriculum. Finally, IF | N/o | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |

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| | | these standards are passed and we are expected to implement them, we need the materials and resources to do so. Constructing models and conducting research requires appropriate resources, that not everyone has access to. Also, unit plans and sample lessons should be uploaded to the state website so as to help with the transition to these ridiculously broad standards. | | |
| 10-20 | Julie Rowan-Wolford 6th grade science Romney Middle School Romney WV | While the national trend looked to be more Earth science at 6th grade, we seem to be keeping to a hodgepodge of topics, which doesn't seem to be a true usage of Common Core. | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |
| 11-04 | m smith teacher school chas wv | Regarding objective: S.6.PS.2- integrate qualitative and technical information..... too abstract, narrow topic, not developmentally appropriate for this grade level, how would one even go about teaching this topic? what materials would be provided? Too bogged down in abstract concepts. S6.PS.6 and 8 are repetitive Engineering standards- too wordy , over complicated, reword, examples? S6. ESS.1- Re: when discussing gravity, students need more of a foundation in motion and forces for example learning relationship between time and distance, frame of reference and Newton's Laws of Motion. Again too much focus on specific idea and not enough focus on basic concepts. | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |
| 11-07 | deborah shaffer-palmer teacher moundsville middle school moundsville wv | 7th grade not enough about cell for retention of material. Physics should be replaced with more needed knowledge of days gone by such as diseases. s7ess1 what does it even mean? It in my opinion is the same as the next standard about water cycles. Does it mean nitrogen, oxygen, carbon cycles? the standards should be clear and not subject to a foggy interpretation. | N/o N/- | |

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| 11-07 | deborah shaffer-palmer teacher moundsville middle school moundsville wv | Mental abilities of middle school students not able to do physics math as a general rule | N/o | |
| 11-09 | c lamb science teacher morgantown wv | Biology content does not include topics that are considered to be prior knowledge for AP or any proper college preparatory Biology: cell organelles and membrane structure and function, active and passive transport, it also leaves out enzymes. Also the depth of the content would be inappropriate for non-college prep Biology. It could be very frustrating for non college bound students, since it would not be seen as relevant to their lives. | NA/- | Experiential learning is required for significant understanding of concepts K-12. <i>Personalized Education Plans</i> allow students to choose courses that will prepare them for their post-secondary career goals. |
| 11-10 | Laurie Ruberg CEO PLANTS, LLC Wheeling WV | The Framework for Science Literacy published by the National Academy of Science in 2013 provides the science content background from which the next generation science standards are based. Practices for integrating science and engineering are outlined in this reference material. The WV science standards should encourage teachers to refer to this document for pedagogical ideas and more detailed content references. | N/+ | |
| §126-44CC-4. Summary of Content Standards and Objectives. | | | | |
| 10-13 | Elizabeth Gallaher Teacher Capital High School Charleston WV | 1. If Earth and Space will be recommended for 9th grade students, will it be counted as a lab credit? 2. Also, along the same vein, will Physical Science be offered as a lab credit as well since it will offered to upper level students? 3. Can Anatomy still be broken into two courses (Anatomy I and II) or is it expected to have the material covered in one year? | N/o N/o NA/o | Districts may use local control to make decisions about local science electives. |
| 10-14 | Frances Tolley Science. Chair | Where is chem II? Bio II? Zoology? Earth Science (upper level). Please don't cut our electives. | N/o | Students pursuing more rigorous STEM paths may |

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| | Hurricane High Hurricane WV | Teaching the chem standards in a single term means less practice etc...even colleges don't do moles and equilibrium in the same term. | NA/- | elect to take AP courses. Local districts have the option of including additional science elective including Chem II, Bio II, and Physics II, etc. |
| 10-20 | Emily Hedrick Special Education Teacher Hampshire County Schools Romney WV | The proposed NxG Science Standards are far too vague, as compared to our current standards. If you want the students to be able to "do something", tell us what you want them to be able to do. We are supposed to post our daily objectives on the board, using words that our students will understand. The proposed standards will not allow us to do this. For example, can we think of another way to say "define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions" ??? I teach science to grades 6-8 and am honestly very overwhelmed by these standards. Within each grade-level, we'll be jumping from one standard to something completely different, rather than building on their knowledge of a particular strand of science throughout the school year. Personally, I think that it would be far more productive to teach science as they do in high school and college... one area of science per grade level. Earth Science could be taught in Grade 6, Life Science in 7th, and Physical Science in Grade 8. Please consider rearranging the proposed Science standards so as there will be more "flow" to our curriculum. Finally, IF these standards are passed and we are expected to implement them, we need the materials and resources to do so. Constructing models and conducting research requires appropriate resources, that not everyone has access to. Also, unit plans and sample lessons should | N/o | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |

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| | | be uploaded to the state website so as to help with the transition to these ridiculously broad standards. | | |
| 10-20 | Julie Rowan-Wolford 6th grade science Romney Middle School Romney WV | The worst CSO presented seems to be S.6.PS.1 through S.6.PS.3. Many sixth graders would find it difficult, if not impossible, to grasp such an abstract concept. I can't imagine what PRACTICING sixth grade teacher developed this as appropriate for the maturational level of the audience. | N/- | |
| 10-20 | Tyler Lancaster Seventh Grade Science Teacher Romney Middle School Romney WV | <p>The new Next Generation Science Standards have several issues that should be dealt with prior to adoption. The initial issue that my fellow science teachers at Romney Middle School have noticed is the broadness of quite a few of the objectives such as S.6-8.ETS.4- develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design. Essentially we are being told that the students need to engineer a new product, and test it, but what are the guidelines involved? Is it merely an objective for proper use of scientific method? Or is there specific content that should be associated with the design?</p> <p>A second issue that my colleagues have discussed is the inability to have continuity throughout each grade level. The opportunity to involve students in any topic of depth will likely escape us because of the scattered nature of the topics, whereas if the focus was on one main topic per grade level,(i.e. Earth Science, Life Science, Physical Science) then the students would have the opportunity to continually build upon the previous topics of that course. Essentially this issue could be resolved by structuring each grade level by an encompassing topic as the previously mentioned three major topics.</p> <p>The most pressing issue that we have noticed is the presence of some very abstract ideas in the grade six objectives. At the age of sixth graders many of the</p> | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |

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| | | <p>students still have difficulty understanding extremely abstract ideas, and are far more comfortable with concrete topics, such as earth science content. The idea of sixth grade students being able to fully understand the objective S.6.PS.1- use mathematical representations to describe a simple model for waves that uncles how the amplitude of a wave is related to the energy of a wave is far fetched, and even sixth graders being able to grasp the concept of a wave and its ability to transfer energy at all with their concrete minds is nearly impossible.</p> <p>The proposal that my colleagues and I have discussed that would remedy the majority of these issues is to have grade six focus on content objectives encompassing earth and space science to account for the students' abstract reasoning deficit, and as the students' abstract reasoning develops more into seventh grade the seventh grade curriculum should focus on the slightly more abstract life science objectives and begin to bring in some of the chemistry of life as part of life science to lead into the eighth grade curriculum to be focused on the objective encompassing the overly abstract and mathematical concepts in physical science in eight grade.</p> | | |
| 10-21 | <p>Jodie Roush Teacher Mason County Schools Point Pleasant WV</p> | <p>If the ninth grade course is changed from the current Physical/Earth/Space standards to just Earth and Space, students will not be prepared to enter Chemistry or Physics in the 11th grade. Although some of the standards are addressed in courses prior to 9th grade, the depth of knowledge retained will be insufficient for students opting to complete Chemistry or Physics in the 11th grade. There is an option to strengthen understanding of physical science through the third course elective, however this will delay participation in Physics and Chemistry until the 12th grade year and will effectively eliminate rigorous</p> | NA/- | <p>NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses.</p> <p>Chemistry is not being eliminate from the 11th grade. Chemistry in the 11th and Physics in the 12th is recommended for students on</p> |

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| | | course such as AP Physics and AP Chemistry. It could be resolved if 9th grade students could opt to replace the Earth/Space coursework with the PS Elective. | | STEM path. Students may elect to take AP physics in the 12 th grade if they have the math skills. |
| 10-21 | Melinda Tripp Teacher Triadelphia Middle School Wheeling West | <p>I teach 8th grade Science now and in looking at these proposed standards, where are Newton's Laws and Physics for this grade level (speed/velocity/acceleration). They are not topics in 7th grade either. Our textbooks are out of date as it is; will we have a textbook or kits? We haven't had textbooks since 2005.</p> <p>Also, the 7th grade proposed CSO's are acceptable for that grade level. Grade 8 is heavily loaded with genetics/biology objectives, no physics, and some chemistry and earth history. The proposed 6th grade CSO's would also mean current science kits are not covering proposed curriculum - will the kits be continued and/or changed to account for new proposals.</p> <p>It would be so progressive for WV to focus on science as a whole per grade level per subject, i.e. biology in 6th grade, earth history in 7th grade, and chemistry/physics in 8th grade. Our current system has our student's heads spinning and gives way to zero progression of scientific concepts. My students score well on standardized tests; but I feel as though I never complete a unit as I must start the next spiral in a hodge podge curriculum, with out of date textbooks and no time for lab preparation and follow up. The reading and writing components are easily understand and absorbed in our classes as time allows due to blended classrooms of all ability groupings.</p> | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |
| 10-23 | Eric Chemistry Educator Teacher Keyser WV | <p>Where is nomenclature in chemistry?</p> <p>Where is molality and Normality in chemistry solutions.</p> <p>In 18 years of teaching chemistry I have only one time</p> | <p>N/o</p> <p>N/o</p> <p>N/o</p> | |

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| 10-23 | Jeff Garvin Teacher Mountainview Elementary Morgantown WV | I like the new standards. | N/+ | |
| 10-25 | Michele Adams Teacher Martinsburg WV | There are 19 objectives for science and 19 for reading/language arts in 6th grade. I am going to need professional development opportunities in reading and writing. I feel the objectives revolving around content are scattered. I would have preferred we leave the basic content as it stands today, yet incorporate the design, research/investigations and the reading and writing standards around them. The content we teach now is fundamental to moving on to these higher-order thinking skills (we have to remember 6th graders are only 11 years old). The wording on many objectives is NOT teacher-friendly. Can it be simplified? (Example-S.6-8.EST.1-What does this run-on verbiage even mean?) | N/- | The proposed standards will allow students to develop literacy skills while they as acquire understanding of content specific language, develop an understanding of the concepts of science and engineering skills. |
| 10-26 | Nicholas Belmont Teacher Belva WV | 1) There is NO mention of the 50% hands-on!!! Is that in or out? 2) I'm concerned that the CSO's seem to be more detailed than the NXTGen standards. It appears we are going back to the IGO's where they were less detailed. 3) Is the standardized test going to be like the norm referenced test with the IGO's or criterion reference with the CSO's? 4) The new standards need examples incorporated to each one to give teachers a specific idea of what is expected to be taught (Students need examples and so do teachers). New teachers would definitely find this helpful. 5) I feel that we should go back to the old system of Life Science, Earth Science, & Physical Science in different years. The way the CSO's and the NXTGen | NA/- NA/- N/o N/o NA/- | At every grade level in the rational statement, there is reference to hands-on and experiential learning to deepen the understanding of scientific content. The objectives lend themselves to “the doing” of science. Experiential learning is required for significant understanding of concepts K-12. |

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| | | <p>standards are set up make it virtually impossible to teach them all, therefore there are gaps in the students science education. Moving back to the old system will reduce these gaps because that can be picked up in high school classes such as physical science, biology, chemistry, geology, and environmental science.</p> <p>6) I question whether there are quality resource materials out there to support this program that are cost-effective. Also, technology should be of high quality (and cover the new standards) and should be used where appropriate. We should not be spending money on technology that is not high quality (eg: TechSteps).</p> | | |
| 10-29 | <p>Kathy Jacquez teacher Fairmont Senior High School Fairmont WV</p> | <p>I am impressed with the limited number of CSOs listed for grades K-2 and the fact that engineering is included in these primary grades. The division of the CSOs into the categories of life science, physical science, Earth and space science and engineering reflects adherence to the National Science Standards but maintains a clear pathway for the teacher to design lessons. However, the most important area where the needs of the student are placed above all else is found in the change to Earth and space science for freshman. For years, freshman have struggled with the math necessary to understand the science concepts found in ninth grade science. The students seemed to understand the concepts but when calculations were performed they did not exhibit strong Algebra skills. They would subsequently blame the science as being too difficult when in reality it was their math fears holding them back. By placing the physical science course in the 11th and 12th grade selections, the student has been given time in their math classes to learn the skills needed to perform the calculations. I think this is the perfect solution for ALL of our students.</p> | N/+ | |

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| | | I am impressed with the new standards and cannot wait for their adoption!! | | |
| 11-03 | Amanda Lester Science Teacher Sandy River Middle School Iaeger WV | While it would be wonderful to be able to accomplish these standards and objectives, I worry that because more time is given to language arts and math already, we will not be able to meet the complex reading and writing objectives that are included in our standards. We are given only 40 minutes a day for science. Reading language arts and math receive 80 minutes a day. I feel that if we are required to teach these skills in our curriculum, then more compromise needs to be made when it comes to scheduling and time provided for our students. I am confident that these standards can be achieved if we have the right time constraints. I feel that there should be a required amount of time given for science as well as social studies in comparison to the times given for reading language arts and math. This is especially relevant seeing as part of our evaluations is now based on how well our schools perform on language arts and math, even though we do not teach those subjects. If we are to teach those subjects as well as our own content, then we should be given equal consideration in all areas of concern, especially time. | NA/o | Policy 2510 states “The principal and a team of teachers will determine an adequate amount of time necessary to achieve mastery of the approved content standards and objectives for each program of study and effectively address the academic needs of all students in the literacy skills of reading, writing, speaking, listening and language in all content areas.” |
| 11-03 | Dianna Buchman Teacher Wayne County Schools Ceredo WV | Although I applaud the state's attempt to keep Next Generation chunks together (eg Forces and Interactions) within the middle school grade levels, it is my belief that we should use the standards as written and teach Physical Science, Life Science and Earth Science in independent years. As an educator who was a student in the integration time period, the connections between the sciences are equally dependent on the effort of your teacher regardless of which model is chosen. However, the flow between topics is smoother as written in the National standards and it is my belief that, cognitively, students will be | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |

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| | | more readily able to draw connections and connect their internal schemata when they aren't asked to make sure drastic jumps between concepts (eg Newton's forces to water systems). | | |
| 11-04 | Mark Lemasters Science Teacher Magnolia High School New Martinsville WV | <p>To teach Earth Science at the 9th grade level denies students who wish to study more advanced work in Biology, Chemistry, and Physics an adequate background in the physical sciences to fully understand the concepts of biology. The biological sciences have always been filled to capacity within high school curricula; always under represented have been Chemistry and Physics. Prior to 1996, chemistry and physics classes have been small in number.</p> <p>After the implementation of the physical science subject matter into IGO's and CSO's, enrollment increased and many took both biology and chemistry and met success in both. With the current emphasis on STEM, it is vital that physics skills be addressed for those who will work with engineering type careers.</p> <p>Sadly, Earth Science classes around the state have always been "dumping" grounds, an "easy" class for the masses to pass. When taught correctly, the principles of biology, chemistry, and physics are present in an applied manner. It is as rigorous as the other three as well.</p> <p>I implore you to reconsider the placement of Earth Science as the first required class of high school students who already are eager to learn but limited in career pathway options (other than vocational).</p> | NA/- | <p>The physical science course is a blend of chemistry and physics. Students will make decisions about 3rd and/or 4th science courses based on their <i>Personalized Education Plans</i> and the requirements of post-secondary institutions they plan to attend.</p> <p>Chemistry is not being eliminate from the 11th grade. Chemistry in the 11th and Physics in the 12th is recommended for students on STEM path. Students may elect to take AP physics in the 12th grade if they have the math skills.</p> |
| 11-04 | Mark Lemasters Science Teacher Magnolia High School New Martinsville WV | After examining the content standards and objectives for chemistry and physics, I was shocked to learn how few of the underlying principles were present. This list of CSO's seems less rigorous than any previous set and | NA/- | Students will make decisions about 3 rd and/or 4 th science courses based on their <i>Personalized Education</i> |

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| | | seems to rely heavily on retention of past material. I don't think that the teachers can follow the vagueness or incompleteness of the course content. While I like the exploratory nature, it seems that a lot of dissection of the concepts has to be done on top of the normal teaching process. | | <i>Plans</i> and the requirements of post-secondary institutions they plan to attend. |
| 11-04 | m smith teacher school chas wv | Overall, too narrow in scope, lacking key fundamental concepts such as matter- how can you teach chemical reactions of something (standard S 6.PS.5) when you have not taught matter, atoms,molecules, compounds, phases and how to read and understand the Periodic table? Do not see these concepts addressed in 5th grade standards. | NA/- | Emphasis should be on the molecules being broken down and put back together and that energy is released, not on chemical reactions. |
| 11-05 | Dave Barr Science Teacher Wahama High School Mason WV | It still looks basically the same as what we have been teaching in science. The numbering may be simpler. | N/+ | |
| 11-05 | C Kibby Science teacher capon bridge middle capon bridge wv | Not enough of basic science concepts and very difficult to see any accountability for what they learn. Extremely difficult to give them a foundation for later when they are getting very little in middle school. | NA/- N/o | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |
| 11-06 | I.M. Teacher WV | The middle school standards are awkward. Very few middle school students have had science preparation in the elementary school so I feel that 6th grade should focus on the process and language of science. For example: S6PS3 "integrate qualitative . . . to support the claim that digitized signals sent as wave pulses . . ." is not for 6th graders. Many of the proposed CSOs follow the same grandiose language. The committee needs to take a hard look at exactly how these will be implemented in a classroom. I am surprised at the lack of integration of math and engineering in all the middle school standards. These are poorly written and should not be accepted as is. S68L15 - . . . present the | N/- | |

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| | | relationships between information and ideas - what is this all about? | | |
| 11-07 | deborah shaffer-palmer teacher moundsville middle school moundsville wv | Do we not care about space any more? That was what helped to launch our country into a learning frenzy. We obviously are still involved with space since the recent space vehicles exploded and crashed. My husband is an engineer and he sees no benefit in the structure of the curriculum to promoting future scientists. The textbooks and computer sites offer little in direct help for resources for teaching middle school abstract concepts that minds are not ready to tackle. Look at combining and making each grade level only 1 type of science for continuity. Standards are way to vague. | NA/o | More emphasis has been placed on Space science with the Earth and 9 th grade Space Science requirement. An Engineering, Technology and Application of Science Standards is in each science course. |
| 11-07 | deborah shaffer-palmer teacher moundsville middle school moundsville wv | Lacking in scope for life situations. | N/o | |
| 11-09 | Linda Fonner 5th grade teacher New Martinsville School New Martinsville WV | As an elementary teacher with 35 years of experience, I have seen many changes in curriculum over the years. I wholeheartedly approve of the Next Generation Science Standards. We have attempted to "cover" too many objectives in the past. Now with four major topics, topics can be covered in more detail and can be truly investigated, not just addressed. Elementary teachers that are self-contained have so many objectives to teach across the subject levels. By lessening the number of science standards, I believe, we will see science topics taught more and student investigations improving. I have just finished my term as WVSTA president. At our conferences, I have held forums with elementary teachers from across the state that want to teach science, but who have been overwhelmed with all that they have to try and cover. Again, the new standards will help. | N/+ | |

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| | | In our society, STEM careers are growing rapidly. The Next Generation Standards incorporate engineering and problem-solving. Not only is this needed for STEM careers but also for everyday living. | | |
| 11-09 | c lamb science teacher morgantown wv | Biology content does not include topics that are considered to be prior knowledge for AP or any proper college preparatory Biology: cell organelles and membrane structure and function, active and passive transport, it also leaves out enzymes. Also the depth of the content would be inappropriate for non-college prep Biology. It could be very frustrating for non college bound students, since it would not be seen as relevant to their lives. | NA/- | Students will make decisions about 3 rd and/or 4 th science courses based on their <i>Personalized Education Plans</i> and the requirements of post-secondary institutions they plan to attend. |
| 11-09 | Kathy Jacquez member West Virginia Science Teachers Association WV | At the end of yearly conference held at Glade Springs this past weekend, the West Virginia Science Teachers Association held its annual business meeting. Under new business, I made the following motion, "I move that the WVSTA endorse the new content standards and objective currently out on comment." The motion was seconded, discussed and overwhelming passed. Although each science teacher present could find small parts that we would like to add to these standards, we all agreed that it is time for science to enter the next generation of standards and hope that the State Board members will agree with the teachers of science and pass this policy. | N/+ | |
| 11-09 | Carolyn Thomas Science Teacher Wildwood Middle School Shenandoah Junction WV | I would prefer to see the middle school follow a Science Domains Model " rather than a Conceptual Progressions model (see http://www.nextgenscience.org/sites/ngss/files/Appendix%20K_Revised%208.30.13.pdf). I think that this will support greater development of student understanding and application of science content and provides for better utilization of resources and talents | N/o | |

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| | | <p>extractive industries. How can we expect students to study geology in college when the last time they have been fully exposed to the content is junior high school? Earth Science fields are a way to keep our brightest students in the state serving our industries in oil, gas, and coal. In addition, an understanding of earth science better prepares chemists, biologists, and physicists. Surrounding states have been requiring earth science in the 9th grade for many years so the instructional materials are readily available for adoption. In addition, students are developmentally and mathematically prepared to learn the content in earth science, which is not the case in physical science classes. Earth science is the correct choice for preparing students for advanced science courses since it employs concrete visible concepts, eliminating a source of frustration for students challenged by the abstract science concepts faced in the chemistry and physics topics of physical science. Earth Science in these CSOs are rigorous and will prepare students for college. The flexibility of the proposed three tracks will meet the needs of workforce ready, STEM, and non-STEM college majors.</p> <p>Integrated science at the middle school level eliminates any gaps in content by exposing students to all science disciplines in all grade levels. Middle School teachers are certified as generalists in science and are equipped with the necessary content to adequately teach this way. While it might be unpopular with a few teachers who have a "pet" field they would like to teach, this integrated approach IS the best approach for young students who do not need instruction focused on a specific discipline. They need to understand the interrelated nature of science (e.g. the physics and chemistry of volcanoes and the</p> | | |
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| | | <p>biological processes involved in succession following an eruption).</p> <p>Middle school is the time to delve deeply into overarching themes. High school is the time to burrow into specific fields given the specific certifications required to teach it. These CSOs are designed to present science to elementary and middle in an in-depth way by requiring fewer topics and standards. High School graduates will not be exposed to ALL science disciplines at the appropriate time in their development. Who knows we may keep more students in STEM fields and in the state!</p> | | |
| 11-10 | <p>Elizabeth Strong Project Director WV-Handle on Science Project Wheeling WV</p> | <p>The content standards and objectives are more concise and with fewer number a more in depth coverage can occur in science classrooms. It is possible that some of the content standards and objectives may prove not to be developmentally appropriate, especially at the K-2 band. Integration of sciences in the middle school is the most effective way for ALL students to receive adequate science instruction. Differentiation by the time students reach high school including all students receiving Earth and Space Science instruction in ninth grade will also be more effective.</p> | N/+ | |
| 11-10 | <p>Robert E. Strong Director SMART-Center Wheeling WV</p> | <p>NGSS Comments for November 10, 2014</p> <p>The following are some of the omissions (in no particular order) in the present NGSS that should be considered as West Virginia specific additions for the adoption of the NGSS. It is hoped that these additions will further allow our West Virginia students to play an active and meaningful role as knowledgeable citizens of the 21st and 22nd Centuries.</p> <p>The suggested Mantra for West Virginia STEM and STEAM education:</p> | NA/- | <p>Local districts have the option of including additional science elective including Chem II, Bio II, and Physics II, etc.</p> |

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| | | <p>“Any sufficiently advanced technology is indistinguishable from magic” Sir Arthur C. Clarke</p> <p>A discussion of the technical and moral challenges of Terraforming worlds incorporates all aspects of STEM and STEAM.</p> <p>A real working understanding of the basics of Special and General Relativity are both needed for GPS and electronics devices to work.</p> <p>Deep Geologic Time is considered as the true enabling ingredient for the observed vast changes in biology, geology, astronomy, elemental transmutations, etc.</p> <p>In the Milky Way Galaxy there are more than 100 billion stellar systems and more than 1 trillion extra-solar planets.</p> <p>The number of liquid water worlds (where life may be found) in the Milky Way Galaxy may exceed 1 trillion.</p> <p>SETI (Search for ExtraTerrestrial Intelligence) Science began in West Virginia more than five decades ago at Green Bank “ NARO. Discuss the implications of these SETI results having only negative outcome so far.</p> <p>Astronomical Impacts play a remarkable role in the geology and biology of the Earth and geology and surface features of all solid surfaces in the Milky Way</p> | | |
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| | | <p>Galaxy.</p> <p>☞ Astronomical Impacts create an active transportation mechanism allowing the transfer of macroscopic material samples from every solid surface in the Milky Way Galaxy to “seed” every other world in the Milky Way Galaxy. Discuss the deep time implications of this galaxy wide active transportation mechanism of macroscopic material.</p> <p>☞ We need a more complete and balanced discussion of the complicated and extended long term radiation dangers of Fission Nuclear power plants, their fuels, and waste products.</p> <p>☞ Closed Life Support Systems (CLSS) may be viewed as scale models of the interlocked workings of the Earth’s Atmosphere, Hydrosphere, Biosphere, and lithosphere including Plate Tectonics and Solar Radiation, etc. Why do we need to study and build CLSSs?</p> <p>☞ Discuss the societal implications of the idea that Hydrocarbons may soon be considered far more valuable if utilized as industrial feed-stocks rather than only fuels for the production of heat.</p> <p>☞ Differentiate between Electron-Chemistry (typically known as “Chemistry” where loosely held outer electrons are lost, captured, or shared between atoms creating new combinations of atoms) and Neutron-Chemistry (where loosely held neutrons in the nuclei of some isotopes are lost or captured by other nuclei creating nuclear transmutations in those Isotopes releasing enormous amounts of energy many orders of magnitude greater than Electron-Chemical</p> | | |
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| | | <p>Reactions).</p> <p>• A discussion of historical and modern transformational and disruptive technologies on society, i.e., pony express and telegraph, horse drawn buggies and automobiles, whale oil and kerosene, kerosene and electric lighting, combustion of hydrocarbons and Neutron-Chemistry (LENR - Low Energy Nuclear Reactions / AITA “ Artificial Isotopic Transmutation Amplification)</p> <p>• Piezonuclear Transmutations over deep geologic time may change the elemental composition of rocky / terrestrial worlds to become more “friendly” to the conditions needed for life as we understand it.</p> <p>• To insure that West Virginia students are given the greatest educational advantage three ideas need to be interwoven into the West Virginia version of the NGSS:</p> <ul style="list-style-type: none"> o Fractals (the idea that the physical world is and appears similar a multiple scales of time and space), o Chaos (the mathematics of many bodies interacting), and o Nanotechnology (the science and technology of materials and processes the atomic and molecular scale incorporating ideas of classical and quantum physics) <p>Thank you for your consideration and time. I would be glad to further expand on these ideas for the West Virginia version of the NGSS. Please note, that many of today’s kindergarten students will live to see the year 2100 and beyond. As educators we need to prepare our students of today to one day be active and responsible leader citizens of the 22nd Century.</p> | | |
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| | | <p>Clear and Safe Skies,</p> <p>November 9, 2014</p> <p>Robert E. Strong e-mail: Robert@smartcenter.org Director, SMART-Center 30 22nd Street Wheeling, WV 26003</p> | | |
| 11-10 | <p>Adam Osborne Teacher Hurricane High School Hurricane WV</p> | <p>As a science educator, I understand why the required ninth grade science course will change to earth and space science. It is less math intensive for students who have not received algebra instruction yet, and it is an important topic for our society, especially in West Virginia.</p> <p>My Concern is primarily the fact that students will not be required to receive any physics or chemistry instruction in high school. They could graduate without having any instruction in either of those fields at the high school level. Many careers, with or without post-secondary education and training, require chemistry or physics knowledge, and the last time students would receive instruction in those fields would be middle school.</p> <p>I propose making the 11th grade suggested course of physical science a required course for students in the career pathway. I also propose making physical science or the combination of chemistry I and physics I a requirement for professional pathway students.</p> | NA/- | <p>Students will make decisions about 3rd and/or 4th science courses based on their <i>Personalized Education Plans</i> and the requirements of post-secondary institutions they plan to attend.</p> |
| 11-10 | <p>Laurie Ruberg CEO PLANTS, LLC Wheeling WV</p> | <p>S.6.ESS.5 [Grade 6] - This section should also discuss models of climate changes that include data derived from both natural and human activities.</p> | NA/o | <p>NxG Science Content Standards and Objectives show the interrelations of the science disciplines in</p> |

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| | | <p>S.9.ESS.15 [Grade 9] - This section discusses impact of human activity on climate as measured by climate indicators.</p> <p>S.HS.ENV.17 [High school] Discusses climate influences on habitat. This is a valuable addition to the environmental science curriculum.</p> <p>S.HS.ENV.17 [High school] - Suggests that teachers organize student debates about the causes of climate changes and include such theories as the Milankovitch Cycles. This guidelines should be revised to include a larger list of resources for climate data beyond just listing the Milankovitch Cycles. The U.S. government has invested in many Earth observing satellites that provide extensive data sets for students and researchers to freely access and use for the study of climate indicators such as surface temperature, greenhouse gases, imaging of Earth's water and plant systems, and atmospheric systems.</p> | N/o | preparation for high school science courses. |
| 11-10 | Anne Smith Middle School science teacher Pocahontas County Schools Green Bank WV | I would like to see these standards adopted. I think they are needed in West Virginia, for both our teachers and our students. | N/+ | |
| §126-44CC-5. Severability. | | | | |
| 10-20 | Emily Hedrick Special Education Teacher Hampshire County Schools Romney WV | The proposed NxG Science Standards are far too vague, as compared to our current standards. If you want the students to be able to "do something", tell us what you want them to be able to do. We are supposed to post our daily objectives on the board, using words that our students will understand. The proposed standards will not allow us to do this. For example, can we think of another way to say "define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |

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| | | <p>account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions" ??? I teach science to grades 6-8 and am honestly very overwhelmed by these standards. Within each grade-level, we'll be jumping from one standard to something completely different, rather than building on their knowledge of a particular strand of science throughout the school year. Personally, I think that it would be far more productive to teach science as they do in high school and college... one area of science per grade level. Earth Science could be taught in Grade 6, Life Science in 7th, and Physical Science in Grade 8. Please consider rearranging the proposed Science standards so as there will be more "flow" to our curriculum. Finally, IF these standards are passed and we are expected to implement them, we need the materials and resources to do so. Constructing models and conducting research requires appropriate resources, that not everyone has access to. Also, unit plans and sample lessons should be uploaded to the state website so as to help with the transition to these ridiculously broad standards.</p> | | |
| 10-20 | <p>Tyler Lancaster Seventh Grade Science Teacher Romney Middle School Romney WV</p> | <p>The most pressing issue that we have noticed is the presence of some very abstract ideas in the grade six objectives. At the age of sixth graders many of the students still have difficulty understanding extremely abstract ideas, and are far more comfortable with concrete topics, such as earth science content. The idea of sixth grade students being able to fully understand the objective S.6.PS.1- use mathematical representations to describe a simple model for waves that uncles how the amplitude of a wave is related to the energy of a wave is far fetched, and even sixth graders being able to grasp the concept of a wave and its ability to transfer energy at all with their concrete minds is nearly impossible.</p> | NA/- | <p>NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses.</p> |

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| 11-04 | m smith teacher school chas wv | Science classrooms need to be updated to reflect requirements for these standards- many science classrooms are equipped with slanted desks that are not conducive to laboratory investigations or student collaboration and do not even have sinks or basic safety equipment. | N/o | |
| 11-05 | C Kibby Science teacher capon bridge middle capon bridge wv | In a small ,relatively poor county and small school district it would be hard to get the students on computers to work,let alone where internet is not always reliable. They need more use of a book and not so much time looking stuff up and writing it down,when they don't understand it.We are science teachers,not lang.arts teachers,and have a limited amount of time with students in science,whereas the lang.arts has twice as much time to work on writing and research. | N/o | |
| 11-06 | I.M. Teacher WV | Look at some standards prepared by other states. Sadly, WV is not a leader in education so it makes little sense to reinvent the wheel. | N/o | |
| 11-07 | deborah shaffer-palmer teacher moundsville middle school moundsville wv | Your comment page is not user friendly. I am commenting in each blank to get my point across. You have let the teachers of the state down. This should be done like many years ago when learning/education TOOK place. 7TH grade should be the biology standards, 8th grade the earth standards and 9th and above the physical standards. Much is lost skipping around each year. A concentration of each type of science would yield a greater knowledge outcome. My children were valedictorian and salutatorian for their classes and top 1% of their college classes and feel the same way. Petroleum engineering and Biology,BioMedical science now being a optometry student. I know how to get students to achieve. This will not help scores. | NA/- | NxG Science Content Standards and Objectives show the interrelations of the science disciplines in preparation for high school science courses. |
| 11-07 | deborah shaffer-palmer teacher | Less will be achieved by our students however our reading scores will improve which could lead to | N/o | |

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| | moundsville middle school moundsville wv | improvement over all. I am glad to see this component. Technology with electronics, where is this hardware coming from? School do not have enough for all students to be online at the same time. | | |
| 11-10 | Anne Smith Middle School science teacher Pocahontas County Schools Green Bank WV | I like the rigor of these standards and think they will be a challenge to our students and our teachers, which is what is needed. | N/+ | |

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 10, 2014 3:58 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-10 15:58:06)

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Comment Received for Policy 2520.3C

Name: Anne Smith
Organization: Pocahontas County Schools
Title: Middle School science teacher
City/State: Green Bank, WV
Role: Teacher
Posted: 2014-11-10 15:58:06
Posted from IP:

Comments for section 126-44CC-1 General

Science standards are the first step in creating a decent science program. We need class sizes in science to be limited to provide students with adequate amounts of lab materials and we need room sizes that allow for safe and meaningful labs to be performed. Vague or non-existent procedures are now in place for both class size and science classroom size and that needs changed as well. Materials will also need to be provided to teachers so they can properly incorporate these standards.

Comments for section 126-44CC-2 Purpose

I think these standards need to be adopted-if we are going to be compared to other states, and compete for money with them, then there needs to be a standardized way of doing this. It is unfair to compare states with each other when all are doing something different.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

I would like to see these standards adopted. I think they are needed in West Virginia, for both our teachers and our students.

Comments for section 126-44CC-5 Severability

I like the rigor of these standards and think they will be a challenge to our students and our teachers, which is what is needed.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 10, 2014 3:57 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-10 15:56:32)

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Comment Received for Policy 2520.3C

Name: Laurie Ruberg
Organization: PLANTS, LLC
Title: CEO
City/State: Wheeling, WV
Role: Business-Industry
Posted: 2014-11-10 15:56:32
Posted from IP:

Comments for section 126-44CC-1 General

I am pleased to see West Virginia take active steps to integrate the Next Generation Science Standards. Science is a dynamic subject area that evolves as new technologies emerge and enable new discoveries and expanded understandings of the natural world.

Comments for section 126-44CC-3 Incorporation by Reference

The Framework for Science Literacy published by the National Academy of Science in 2013 provides the science content background from which the next generation science standards are based. Practices for integrating science and engineering are outlined in this reference material. The WV science standards should encourage teachers to refer to this document for pedagogical ideas and more detailed content references.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

S.6.ESS.5 [Grade 6] - This section should also discuss models of climate changes that include data derived from both natural and human activities.rnns.9.ESS.15 [Grade 9] - This section discusses impact of human activity on climate as measured by climate indicators.rnns.HS.ENV.17 [High school] Discusses climate influences on habitat. This is a valuable addition to the environmental science curriculum.rnns.HS.ENV.17 [High school] - Suggests that teachers organize student debates about the causes of climate changes and include such theories as the Milankovitch Cycles. This guidelines should be revised to include a larger list of resources for climate data beyond just listing the Milankovitch Cycles. The U.S. government has invested in many Earth observing satellites that provide extensive data sets for students and researchers to freely access

and use for the study of climate indicators such as surface temperature, greenhouse gases, imaging of Earth's water and plant systems, and atmospheric systems.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 10, 2014 3:54 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-10 15:54:16)

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Comment Received for Policy 2520.3C

Name: Adam Osborne
Organization: Hurricane High School
Title: Teacher
City/State: Hurricane, WV
Role: Teacher
Posted: 2014-11-10 15:54:16
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

As a science educator, I understand why the required ninth grade science course will change to earth and space science. It is less math intensive for students who have not received algebra instruction yet, and it is an important topic for our society, especially in West Virginia. mnmMy Concern is primarily the fact that students will not be required to receive any physics or chemistry instruction in high school. They could graduate without having any instruction in either of those fields at the high school level. Many careers, with or without post-secondary education and training, require chemistry or physics knowledge, and the last time students would receive instruction in those fields would be middle school.mnmI propose making the 11th grade suggested course of physical science a required course for students in the career pathway. I also propose making physical science or the combination of chemistry I and physics I a requirement for professional pathway students.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 10, 2014 3:51 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-10 15:51:08)

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Comment Received for Policy 2520.3C

Name: Kimberly S. Napora
Organization: Point Pleasant Junior Senior High School
Title: teacher
City/State: Point Pleasant, WV
Role: Teacher
Posted: 2014-11-10 15:51:08
Posted from IP:

Comments for section 126-44CC-1 General

I feel it would be in the best interest of the high school course layout design to switch the Biology and Physical Science courses. I do not feel that Physical Science should be a "recommended third course" option - rather it should be at least the "10th" grade option to better prepare those students going into Chemistry and Physics.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 10, 2014 3:47 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-10 15:46:41)

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Comment Received for Policy 2520.3C

Name: Jennifer Robertson-Honecker
Organization: West Virginia University
Title: Assistant Professor and STEM Specialist
City/State: Morgantown, WV
Role: Higher Education Faculty
Posted: 2014-11-10 15:46:41
Posted from IP:

Comments for section 126-44CC-1 General

In concurrence with the WVSTA, I wish to endorse this policy. I teach college introductory chemistry and conduct informal science outreach/education across the state, and I know first hand that WV students are struggling in science compared to their out-of-state peers because of a lack of proper preparation in K-12 science coursework. I am hopeful that these new standards will address these needs. Especially in the elementary classrooms where science content is nearly nonexistent.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 10, 2014 3:43 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-10 15:43:25)

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Comment Received for Policy 2520.3C

Name: Robert E. Strong
Organization: SMART-Center
Title: Director
City/State: Wheeling, WV
Role: Teacher
Posted: 2014-11-10 15:43:25
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

NGSS Comments for November 10, 2014.rnm The following are some of the omissions (in no particular order) in the present NGSS that should be considered as West Virginia specific additions for the adoption of the NGSS. It is hoped that these additions will further allow our West Virginia students to play an active and meaningful role as knowledgeable citizens of the 21st and 22nd Centuries.rnm The suggested Mantra for West Virginia STEM and STEAM education:rnm "Any sufficiently advanced technology is indistinguishable from magic"rnm Sir Arthur C. Clarkernnm. A discussion of the technical and moral challenges of Terraforming worlds incorporates all aspects of STEM and STEAM.rnm A real working understanding of the basics of Special and General Relativity are both needed for GPS and electronics devices to work.rnm Deep Geologic Time is considered as the true enabling ingredient for the observed vast changes in biology, geology, astronomy, elemental transmutations, ei

tc.rnm In the Milky Way Galaxy there are more than 100 billion stellar systems and more than 1 trillion extra-solar planets.rnm The number of liquid water worlds (where life may be found) in the Milky Way Galaxy may exceed 1 trillion.rnm SETI (Search for ExtraTerrestrial Intelligence) Science began in West Virginia more than five decades ago at Green Bank – NARO. Discuss the implications of these SETI results having only negative outcome so far.rnm Astronomical Impacts play a remarkable role in the geology and biology of the Earth and geology and surface features of all solid surfaces in the Milky Way Galaxy.rnm

Astronomical Impacts create an active transportation mechanism allowing the transfer of macroscopic material samples from every solid surface in the Milky Way Galaxy to "seed" every other world in the Milky Way Galaxy. Discuss the deep time implications of this galaxy wide active transportation mechanism of macroscopic material.rnm Wei
need a more complete and balanced discussion of the complicated and e

extended long term radiation dangers of Fission Nuclear power plants, their fuels, and waste products.

Closed Life Support Systems (CLSS) may be viewed as scale models of the interlocked workings of the Earth's Atmosphere, Hydrosphere, Biosphere, and lithosphere including Plate Tectonics and Solar Radiation, etc. Why do we need to study and build CLSSs? Discuss the societal implications of the idea that Hydrocarbons may soon be considered far more valuable if utilized as industrial feed-stocks rather than only fuels for the production of heat. Differentiate between Electron-Chemistry (typically known as "Chemistry" where loosely held outer electrons are lost, captured, or shared between atoms creating new combinations of atoms) and Neutron-Chemistry (where loosely held neutrons in the nuclei of some isotopes are lost or captured by other nuclei creating nuclear transmutions in those isotopes releasing enormous amounts of energy many orders of magi

nitude greater than Electron-Chemical Reactions). A discussion of historical and modern transformational and disruptive technologies on society, i.e., pony express and telegraph, horse drawn buggies and automobiles, whale oil and kerosene, kerosene and electric lighting, combustion of hydrocarbons and Neutron-Chemistry (LENR - Low Energy Nuclear Reactions / AITA – Artificial Isotopic Transmutation Amplification). Piezonuclear Transmutations over deep geologic time may change the elemental composition of rocky / terrestrial worlds to become more "friendly" to the conditions needed for life as we understand it. To insure that West Virginia students are given the greatest educational advantage three ideas need to be interwoven into the West Virginia version of the NGSS: Fractals (the idea that the physical world is and appears similar a multiple scales of time and space), Chaos (the mathematics of many bodies interacting), and Nano Nanotechnology! (the science and technology of materials and processes the at

omic and molecular scale incorporating ideas of classical and quantum physics) Thank you for your consideration and time. I would be glad to further expand on these ideas for the West Virginia version of the NGSS. Please note, that many of today's kindergarten students will live to see the year 2100 and beyond. As educators we need to prepare our students of today to one day be active and responsible leader citizens of the 22nd Century. Clear and Safe Skies, November 9, 2014 Robert E. Strong e-mail: Robert@smartcenter.org
Director, SMART-Center 30 22nd Street Wheeling, WV 26003

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 10, 2014 3:34 PM
To: Robin Sizemore
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Comment Received for Policy 2520.3C

Name: Elizabeth Strong
Organization: WV-Handle on Science Project
Title: Project Director
City/State: Wheeling, WV
Role: Professional Support
Posted: 2014-11-10 15:34:25
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

The content standards and objectives are more concise and with fewer number a more in depth coverage can occur in science classrooms. It is possible that some of the content standards and objectives may prove not to be developmentally appropriate, especially at the K-2 band. Integration of sciences in the middle school is the most effective way for ALL students to receive adequate science instruction. Differentiation by the time students reach high school including all students receiving Earth and Space Science instruction in ninth grade will also be more effective.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 10, 2014 3:23 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-10 15:23:00)

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Comment Received for Policy 2520.3C

Name: Elizabeth Strong
Organization: West Virginia Science Teachers Association
Title: President
City/State: Wheeling, WV
Role: Teacher
Posted: 2014-11-10 15:23:00
Posted from IP:

Comments for section 126-44CC-1 General

The West Virginia Science Teachers Association endorses Policy 2520.3C Next Generation Content Standards and Objectives for Science in West Virginia Schools. The organization endorses this policy due to the widespread involvement of West Virginia K-16 science educators and stakeholders in the review of the Next Generation Science Standards prior to their release and the potential of these standards to move science to the level of importance needed to move West Virginia forward.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 10, 2014 2:53 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-10 14:53:26)

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Comment Received for Policy 2520.3C

Name: Dr. Deb Hemler
Organization: Fairmont State University
Title: Professor
City/State: Fairmont, WV
Role: Higher Education Faculty
Posted: 2014-11-10 14:53:26
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

Finally! A curriculum which addresses the absence of required earth science in the high school curriculum. In the past, we have given priority to biology, chemistry, and physics omitting an entire branch of science which is critical to our state! Earth science content is necessary to understand the State's extractive industries. How can we expect students to study geology in college when the last time they have been fully exposed to the content is junior high school? Earth Science fields are a way to keep our brightest students in the state serving our industries in oil, gas, and coal. In addition, an understanding of earth science better prepares chemists, biologists, and physicists. Surrounding states have been requiring earth science in the 9th grade for many years so the instructional materials are readily available for adoption. In addition, students are developmentally and mathematically prepared to learn the content in earth science, which is not the case in physical science classes. Earth science is the correct choice for preparing students for advanced science courses since it employs concrete visible concepts, eliminating a source of frustration for students challenged by the abstract science concepts faced in the chemistry and physics topics of physical science. Earth Science in these CSOs are rigorous and will prepare students for college. The flexibility of the proposed three tracks will meet the needs of workforce ready, STEM, and non-STEM college majors. Middle school science at the middle school level eliminates any gaps in content by exposing students to all science disciplines in all grade levels. Middle School teachers are certified as generalists in science and are equipped with the necessary content to adequately teach this way. While it might be unpopular with a few teachers who have a "pet" field they would like to teach, this integrated approach IS the best approach for young students who do not need instruction focused on a specific discipline. They need to understand the interdisciplinary nature of science and the interconnected nature of science (e.g. the physics and chemistry of volcanoes and the biological processes involved in succession following an eruption). Middle school is the time to delve deeply into overarching themes. High school is the time to burrow into specific fields given the specific certifications required to teach it.

These CSOs are designed to present science to elementary and middle in an indepth way by requiring fewer topics and standards. High School graduates will not be exposed to ALL science disciplines at the appropriate time in their development. Who knows we may keep more students in STEM fields and in the state!

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 10, 2014 2:53 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-10 14:52:44)

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Comment Received for Policy 2520.3C

Name: Linda M. Lilly
Organization: Park Middle School
Title: Science 8 Teacher
City/State: Beckley, WV
Role: Teacher
Posted: 2014-11-10 14:52:44
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

Finally! Perhaps I will get to the end of a school year (testing) and will have completely covered all of the material that I am responsible for.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 10, 2014 12:53 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-10 12:52:38)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

#####

Name: Lisa Kukura
Organization: LSIC- University High School
Title: Chair
City/State: Morgantown, WV
Role: Parent-Family
Posted: 2014-11-10 12:52:38
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

Our LSIC discussed the 9th grade Physical Science requirement at our last meeting. Our concern, along with the Chair of our science department and other science teachers is that by not having biology in 9th grade, a student cannot obtain all of the AP science courses offered. I have personally seen this with my own children. My current 9th grader has biology and physical science concurrently, however PS is a repeat, as she had the exact same curriculum in 8th grade. In Spanish, and Math, if the course is offered and the child takes the advanced class in middle school, they move right into the upper level course, i.e. Spanish 2 and Math 2. The same should apply for science. The Earth Science requirement is just substituting a different requirement but does not solve this issue. Earth science can also be taught in 8th grade. One can then take biology, then Chemistry and AP bio, then AP Chem, Physics and then the AP Physics classes in their 10th, 11th and 12th grade yr!

ears. It is a process to obtain biology in the 9th grade as the standards are currently written, and I'm not sure this changes with these new guidelines. I would urge the committee to look at making available biology to upper level students in 9th grade and a choice of Earth Science if one is not not he college or science track.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Sunday, November 09, 2014 8:35 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-09 20:34:38)

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Comment Received for Policy 2520.3C

#####

Name: Carolyn Thomas
Organization: Wildwood Middle School
Title: Science Teacher
City/State: Shenandoah Junction, WV
Role: Teacher
Posted: 2014-11-09 20:34:38
Posted from IP:

Comments for section 126-44CC-1 General

I am delighted that West Virginia is moving ahead to adopt/adapt the Next Generation Science Standards. It demonstrates a commitment to improving the way science is taught to students, aligning with a powerful change across the country. In particular the middle school content will provide students with a deeper and more contextual understanding of science.rnrl teach in the eastern panhandle and we have many students who move regionally - within the state as well as neighboring states. One of the goals of NGSS is to promote a common framework for all students. It should also be one of the strengths. I would like to see WV collaborate with MD, Virginia, Pennsylvania, Ohio, Kentucky to develop consistent standards by grade level.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

I would prefer to see the middle school follow a Science Domains Model "€" rather than a Conceptual Progressions model (see http://www.nextgenscience.org/sites/ngss/files/Appendix%20K_Revised%208.30.13.pdf). I think that this will support greater development of student understanding and application of science content and provides for better utilization of resources and talents in the classroom.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Sunday, November 09, 2014 4:54 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-09 16:54:25)

Follow Up Flag: Follow up
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Categories: Red Category

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Comment Received for Policy 2520.3C

Name: Crystal Allen
Organization:
Title:
City/State: Hundred, WV
Role: Teacher
Posted: 2014-11-09 16:54:25
Posted from IP:

Comments for section 126-44CC-1 General

I am commenting in regards to the fifth grade standards. The standards for the most part are core ideas and integrated throughout the grade levels. There are some content breaks between the grade levels. In particular to the topic of waves and electromagnetic radiation, and the topic of structure and properties of matter. The topic of waves and electromagnetic radiation is introduced in fourth grade and not mention again until sixth grade, the same with the topic of structure and properties of matter is introduced in fifth grade and not again until eighth grade. I think by not mentioning these topics with successive years this is not full integration. rnl would also like to see science literacy objectives throughout k-12 grade levels, not just from grades sixth through twelfth. Every student should be exposed to content literacy skills not just from sixth grade through twelfth grade.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Sunday, November 09, 2014 4:09 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-09 16:08:40)

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Comment Received for Policy 2520.3C

Name: Kathy Jacquez
Organization: West Virginia Science Teachers Association
Title: member
City/State: , WV
Role: Teacher
Posted: 2014-11-09 16:08:40
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

At the end of yearly conference held at Glade Springs this past weekend, the West Virginia Science Teachers Association held its annual business meeting. Under new business, I made the following motion, "I move that the WVSTA endorse the new content standards and objective currently out on comment." The motion was seconded, discussed and overwhelming passed. Although each science teacher present could find small parts that we would like to add to these standards, we all agreed that it is time for science to enter the next generation of standards and hpe that the State Board members will agree with the teachers of science and pass this policy.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Sunday, November 09, 2014 4:09 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-09 16:08:40)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

Name: Kathy Jacquez
Organization: West Virginia Science Teachers Association
Title: member
City/State: , WV
Role: Teacher
Posted: 2014-11-09 16:08:40
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

At the end of yearly conference held at Glade Springs this past weekend, the West Virginia Science Teachers Association held its annual business meeting. Under new business, I made the following motion, "I move that the WVSTA endorse the new content standards and objective currently out on comment." The motion was seconded, discussed and overwhelming passed. Although each science teacher present could find small parts that we would like to add to these standards, we all agreed that it is time for science to enter the next generation of standards and hpe that the State Board members will agree with the teachers of science and pass this policy.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Sunday, November 09, 2014 1:01 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-09 13:00:58)

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Comment Received for Policy 2520.3C

#####

Name: c lamb
Organization:
Title: science teacher
City/State: morgantown, wv
Role: Teacher
Posted: 2014-11-09 13:00:58
Posted from IP:

Comments for section 126-44CC-3 Incorporation by Reference

Biology content does not include topics that are considered to be prior knowledge for AP or any proper college preparatory Biology: cell organelles and membrane structure and function, active and passive transport, it also leaves out enzymes. rnmAlso the depth of the content would be inappropriate for non-college prep Biology.rnIt could be very frustrating for non college bound students, since it would not be seen as relevant to their lives.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

Biology content does not include topics that are considered to be prior knowledge for AP or any proper college preparatory Biology: cell organelles and membrane structure and function, active and passive transport, it also leaves out enzymes. rnmAlso the depth of the content would be inappropriate for non-college prep Biology.rnIt could be very frustrating for non college bound students, since it would not be seen as relevant to their lives.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Sunday, November 09, 2014 11:36 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-09 11:35:45)

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Comment Received for Policy 2520.3C

#####

Name: Lisa stout
Organization:
Title: Teacher
City/State: Lost creek, WV
Role: Teacher
Posted: 2014-11-09 11:35:45
Posted from IP:

Comments for section 126-44CC-1 General

I see the vision, the goal of these standards. My concern is the certifications for teaching the high school courses. I believe that a general science degree should not be considered for the 10-12 options. A general science certification does NOT prepare an educator with the necessary skills to prepare students for the next step. I am speaking from personal experience. I have a general science degree, but I also have a degree in chemistry, biology, and have completed the FSU physics cohort. The general science course work is adequate preparation for the middle school levels, not high school. If a teacher with a general science degree wishes to teach at a higher level, at a minimum, make them take the praxis to prove they know the material-- the passage of the new policy promotes this. You can't up the expectation and rigor in the sciences for students and not up the level of training of the educators. Trust me, there are many in the system that are poorly prepared to !
teach the various disciplines in science. I know of individuals teaching courses like anatomy physiology or environmental yet they have never had the course themselves. I have always been an advocate for giving students the best, hence why I specialized in all science disciplines, not one. I agree with the vision, please consider better preparation/certification when determining high qualified educators.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Sunday, November 09, 2014 8:48 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-09 08:47:58)

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Comment Received for Policy 2520.3C

#####

Name: Kelly Carter
Organization: Marshall County Schools
Title: 8th Grade Science Teacher
City/State: Wheeling, WV West Virginia
Role: Teacher
Posted: 2014-11-09 08:47:58
Posted from IP:

Comments for section 126-44CC-1 General

First of all, I feel compelled to say that in my professional opinion, the division of the scientific topics in the middle grades is counterproductive to student learning and inhibits the natural flow of increasing the complexity of material as students gain footing. In my experience with integrated main topics, as we have had for quite some time and are proposed, students are most often unable to build on knowledge they have learned in previous years. They don't remember the material and precious time is lost reteaching. If the topics were connected at the initial time of teaching, students are capable of achieving a much higher level of processing and retention. It reminds me of climbing the same mountain a little more each year when you could just head all the way to the top and take mountain after mountain. Most other science teachers I talk to agree it would be best to go back to having Physics, Biology, Earth and Space and Life Sciences taught in separate years in Middle School once again. Some of our neighboring states have never left that format. That would allow students to reach a high level of advancement in each topic without stutter stepping. Large segments of learning can be spiraled through the years and not small portions of a topic.rnrn Now to address the standards presented. I'm thrilled to see the amount of little pieces of localized information reduced. The idea of teaching what an atom is one year and the periodic table the next year does not provide the student with a flow of knowledge. When I was in school we learned about matter, what it was, properties of matter, how it behaved, atoms, the periodic table, atomic structure, and chemical reactions. It all went together and it all made sense. When we had it in high school, we remembered most of it and were able to build in topics of increasing complexity. rnrnrnrnrn an 8th Grade teacher so I'll focus my comments in that area.rnrnrnAlthough it seems there are few!er standards, they are very broad encompassing wide fields of science.

For instance 1 Growth, Development and Reproduction of organisms includes: anatomy of animals and plants, "characteristic animal behavior", environmental and genetic influences on growth, protein synthesis, genetic structure, mutations, sexual and asexual reproduction, and technological influence on growth. What

about what genetics is? How did it begin? How does it work? Genetics has always been a new topic in 8th grade so we have to put the basics in somewhere. I do love that we are adding a more modern touch to the material, such as including technological influence. I'm happy to see a return to Natural Selection as it took a hiatus on the last selection of standards. Chemistry: Standard 1 is to build models of molecules. Students must know about atoms, the periodic table, the behavior of electrons, etc. I love how the students are asked to complete tasks at higher levels of mastery but I feel that the basic underlying necessary information is over!

looked or is that just assumed? I love how the students have more direction in the projects they do. I love the higher thinking involved. I love the freedom I, as a teacher has to create learning experiences and encourage my students to create them as well. I don't have a clear understanding how the literacy standards work over the 3 grade periods. I assume they are there to draw from any grade?

I would like some information about how testing will change with this new style of standard.

Professional development will be needed to support changes in adding engineering and literacy content. I wish there was more emphasis on technology. We will need a lot of professional development to design our lessons and receive support and collaboration from our superiors and peers for this transition to be successful. A database of successful lessons should be available for teachers to access.

The State department should give teachers the

opportunity to sit together and create materials to share with their

colleagues. This takes time so I hope we start this soon. A variety of resources should be available. I am in support of literacy across the curriculum and I do incorporate it. Our students have a double period of math and language arts and I feel that science standards have been sacrificed to incorporate writing standards. Science is very important in the future of our local and global society and I think it should regain its former stature of importance in our curriculum planning. Innovation and scientific inquiry are more important than ever before as our students strike forth into a world to compete on a global platform.

Literacy Resources would be very helpful as many of us are not trained to teach writing. I love that students can follow their own interests. The Engineering standards are very vague and I would love to have access to some examples. In summary, I appreciate these new standards reflect increased rigor, more student involvement!

nt, teacher freedom, address our modern circumstances, and higher level thinking processes. I'm excited to have fewer standards in which we can delve more deeply into the field. I wonder if we have moved to the opposite end of the spectrum to have very broad standards that are still scattered and removed from what I consider the natural flow of information building on each other. I love how engineering is taking a larger role, but I'm concerned they and science content have taken a backseat to the literary standards. I hope we as teachers and students will be properly supported through the transition by the State Department. Thank you for hearing our comments.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Sunday, November 09, 2014 8:35 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-09 08:34:46)

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Comment Received for Policy 2520.3C

#####

Name: Linda Fonner
Organization: New Martinsville School
Title: 5th grade teacher
City/State: New Martinsville , WV
Role: Teacher
Posted: 2014-11-09 08:34:46
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

As an elementary teacher with 35 years of experience, I have seen many changes in curriculum over the years. I wholeheartedly approve of the Next Generation Science Standards. We have attempted to "cover" too many objectives in the past. Now with four major topics, topics can be covered in more detail and can be truly investigated, not just addressed. mElementary teachers that are self-contained have so many objectives to teach across the subject levels. By lessening the number of science standards, I believe, we will see science topics taught more and student investigations improving.rnl have just finished my term as WVSTA president. At our conferences, I have held forums with elementary teachers from across the state that want to teach science, but who have been overwhelmed with all that they have to try and cover. Again, the new standards will help.rln our society, STEM careers are growing rapidly. The Next Generation Standards incorporate engineering and problem-solving. Not only is this needed for STEM careers but also for everyday living.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Saturday, November 08, 2014 7:41 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-08 19:40:36)

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Comment Received for Policy 2520.3C

Name: Tim Curtis
Organization: Fairmont State University
Title: preservice teacher
City/State: Fairmont, WV
Role: Teacher
Posted: 2014-11-08 19:40:36
Posted from IP:

Comments for section 126-44CC-1 General

I feel it is a great idea to deepen our students' knowledge by decreasing the number of standards. A decrease in the number of standards will relieve the teacher from rushing through content and will allow more time for teachers to actively engage each student in their lessons, resulting in more in-depth experiences. I love that engineering practices have been included. Students need experiences with science, technology, and engineering practices at younger ages in order to keep up with the increasing demand of careers in these fields. Overall, I am for this change and the quality over quantity approach.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Saturday, November 08, 2014 9:14 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-08 09:13:32)

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Comment Received for Policy 2520.3C

#####

Name: Bruce Rose NBCT
Organization: Greenbrier East High School
Title: science teacher
City/State: Lewisburg, West Virginia
Role: Teacher
Posted: 2014-11-08 09:13:32
Posted from IP:

Comments for section 126-44CC-1 General

I feel Earth science should be taught in grade 8. If grades 6-8 are left non-specific, there is less accountability for which teacher is responsible for what content. Also because grade 6-8 classes are general classes, teachers are responsible for more content and cannot go into as much detail in any one area. Earth science should be taught in grade 8 vs. grade 9 because content is more concrete and is more suitable for younger children vs. physical science. Physical science should be taught in grade 9. If this class is removed, students will be missing content needed as prerequisites for biology and chemistry later. To simply say the content is taught in elementary/middle school is to ignore what actually happens. There are questions about readiness of children for physical science content and certification/training of teachers in middle school in physical science. Readiness of children means they are more concrete thinkers at younger ages, and are less able to understand concepts from chemistry and physics which are more abstract. For example chemistry deals with atoms, particles that are too small to be seen, so by its nature is more abstract. Also readiness means students lack math skills/knowledge, example algebra, to understand physical science content at middle school level. Also middle school science teachers, with certification in grades 6-8 general science probably are not certified to teach physical science.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Friday, November 07, 2014 7:56 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-07 07:55:39)

Follow Up Flag: Follow up
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Categories: Red Category

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Comment Received for Policy 2520.3C

Name: deborah shaffer-palmer
Organization: moundsville middle school
Title: teacher
City/State: moundsville, wv
Role:
Posted: 2014-11-07 07:55:39
Posted from IP:

Comments for section 126-44CC-1 General

The standards are not educating our students in what they will need to be successful in real life. Look at group more cohesion of topics and reinforcement throughout a school year. I did not have physics (until college) except for 9th grade intro to physical science and was successful. Why set up our students to fail. Isn't it more important they have a clue where their gall bladder is when the doctor says take it out?

Comments for section 126-44CC-2 Purpose

Standards are not going to be taught well, they are too vague in outcomes desired.

Comments for section 126-44CC-3 Incorporation by Reference

Mental abilities of middle school students not able to do physics math as a general rule

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

Lacking in scope for life situations.

Comments for section 126-44CC-5 Severability

Less will be achieved by our students however our reading scores will improve which could lead to improvement over all. I am glad to see this component. Technology with electronics, where is this hardware coming from? School do not have enough for all students to be online at the same time.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Friday, November 07, 2014 7:45 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-07 07:45:17)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

#####

Name: deborah shaffer-palmer
Organization: moundsville middle school
Title: teacher
City/State: moundsville, wv
Role: Teacher
Posted: 2014-11-07 07:45:17
Posted from IP:

Comments for section 126-44CC-1 General

Most of the 8th grade standards there is very little in the way of resources for embryo growth and differences etc. Not important in real life. s8ls7 s8ls8. This could be taught in less than 5 minutes. There is not before for the standards. For 7th grade cells will have to be retaught because they retain nothing from 6th grade because no one is able to concentrate on content long enough to make learning connections that last. I am very disappointed in our state for this attempt to promote learning!

Comments for section 126-44CC-2 Purpose

Most schools struggle to teach the abstract and this is what I am seeing as important now. We do not have students who are mentally ready to handle the abstractness of physics nor do they have the math skills necessary at this age. Physics for this age will be of little value. We do not have adequate materials or money to do this either. Class size is too large to handle this type of hands on safely.

Comments for section 126-44CC-3 Incorporation by Reference

7th grade not enough about cell for retension of material. Physics should be replaced with more needed knowledge of days gone by such as diseases. s7ess1 what does it even mean? It in my opinion is the same as the next standard about water cycles. Does it mean nitrogen, oxygen, carbon cycles? the standards should be clear and not subject to a foggy interpretation.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

Do we not care about space any more? That was what helped to launch our country into a learning frenzy. We obviously are still involved with space since the recent space vehicles exploded and crashed. My husband is

an engineer and he sees no benefit in the structure of the curriculum to promoting future scientists. The textbooks and computer sites offer little in direct help for resources for teaching middle school abstract concepts that minds are not ready to tackle. Look at combining and making each grade level only 1 type of science for continuity. Standards are way to vague.

Comments for section 126-44CC-5 Severability

Your comment page is not user friendly. I am commenting in each blank to get my point across. You have let the teachers of the state down. This should be done like many years ago when learning/education TOOK place. 7TH grade should be the biology standards, 8th grade the earth standards and 9th and above the physical standards. Much is lost skipping around each year. A concentration of each type of science would yield a greater knowledge outcome. My children were valedictorian and salutatorian for their classes and top 1% of their college classes and feel the same way. Petroleum engineering and Biology, BioMedical science now being a optometry student. I know how to get students to achieve. This will not help scores.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Thursday, November 06, 2014 7:55 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-06 19:54:47)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

#####

Name: Tina Cartwright
Organization: Marshall University
Title: Associate Professor
City/State: Huntington, WV
Role: Higher Education Faculty
Posted: 2014-11-06 19:54:47
Posted from IP:

Comments for section 126-44CC-1 General

Thank you for the opportunity to serve on the feedback team to supporting writing of the Next Gen Standards. I am VERY glad that our state is moving forward on gathering feedback on potential adoption. The elementary performance expectations are a HUGE improvement over the current CSOs. For example, 4th grade teachers are currently challenged to teach 35 standard 2 objectives which necessitates them spending VERY little time on any one particular objective. The proposed next generation standards provides the focus and depth that will allow our elementary educators to spend sufficient time to create meaningful learning experiences for our WV students. HOWEVER, sufficient funding for professional development will be necessary to ensure that our educators (at all levels and particularly elementary teachers) can confidently create these meaningful learning experiences. Although adoption of curriculum materials is a decentralized process, sufficient funding and encouragement by WVDE should be made available so that counties can adopt innovative, interactive hands-on curriculum which will support teachers adequately so they can create these meaningful learning experiences in their classroom. Thank you for supporting integrated science instruction for the middle school curriculum. I believe this is critical for coherent and meaningful implementation by our best "generalist" science instructors in middle school. High school students need more science instruction and I understand why the ESS topics are taught at 9th grade because they need to be taught by "general science" certified teachers. However, some of the performance expectations may not be developmentally appropriate for 9th grade (such as those pertaining to global climate models). I am concerned that the high school physical science set of performance expectations are "recommended" as the 3rd level course. I believe that they should also be required (unless students take a Physics course). Students could be declared as STEM, take a Physics course, take chemistry and NOT take physics or the physical science course -- electing to take a Biology AP, for example. This might result in students not having a course focusing on the physical science performance expectations.

am excited to be involved in science education at this time in my home state. I think these standards will provide an opportunity to have a significant impact on improving the quality of science education in WV. Future careers in WV rely on a scientific literate population. It's up to us to lay the groundwork and foundation of science literacy in WV.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Thursday, November 06, 2014 9:10 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-06 09:10:24)

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Comment Received for Policy 2520.3C

#####

Name: I.M. Teacher
Organization:
Title:
City/State: , WV
Role: Teacher
Posted: 2014-11-06 09:10:24
Posted from IP:

Comments for section 126-44CC-1 General

I do not like to proposed middle standards which are to be aligned with NGSS - they seem to be a rehash of existing CSOS. The multi-discipline approach to science (a little of this, a little of that) does not serve our middle school students well - although these are somewhat of an improvement over previous CSOs. As a teacher, organizing and developing excellent lessons ranging from physics to cells is difficult to manage in classrooms,schools, counties with limited resources (manpower as well as equipment and supplies). I think that our students and teachers would be much better served by specific discipline concentration by grade. I encourage the committee of middle school writers to look at neighboring states - particularly as we have so many students that move regionally, not just within the state. I have had a chance to review both Maryland and Virginia and would like to see WV follow a similar approach.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

The middle school standards are awkward. Very few middle school students have had science preparation in the elementary school so I feel that 6th grade should focus on the process and language of science. For example: S6PS3 "Integrate qualitative . . . to support the claim that digitized signals sent as wave pulses . . . " is not for 6th graders. Many of the proposed CSOs follow the same grandiose language. The committee needs to a hard look at exactly how these will be implemented in a classroom. I am surprised at the lack of integration of math and engineering in all the middle school standards. These are poorly written and should not be accepted as is. S68L15 - . . . present the relationships between information and ideas - what is this all about?

Comments for section 126-44CC-5 Severability

Look at some standards prepared by other states. Sadly, WV is not a leader in education so it makes little sense to reinvent the wheel.

Robin Sizemore

From: Nobody <nobody@kryten.wnet.edu>
Sent: Wednesday, November 05, 2014 2:04 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-05 14:04:29)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

#####

Name: C Kibby
Organization: capon bridge middle
Title: Science teacher
City/State: capon bridge, wv
Role: Teacher
Posted: 2014-11-05 14:04:29
Posted from IP:

Comments for section 126-44CC-1 General

There seems to very little Science being taught, and more lang.arts.

Comments for section 126-44CC-2 Purpose

Our studentds need more science facts and theorys to get a real grasp of what science is. They come with a small background and are very confused about what sciene really is.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

Not enough of basic science concepts and very difficult to see any accountability for what they learn. Extremely difficult to give them a foundation for latter when the are getting very little in middle school.

Comments for section 126-44CC-5 Severability

In a small ,relatively poor county and small school district it would be hard to get the students on computers to work,let alone where internet is not always reliable. They need more use of abook and not so much time looking stuff up and writing it down,when they don't understand it.We are science teachers,not lang.arts teachers,and have a limited amount of time with students in science,whereas the lang.arts has twice as mush time to work od writing and research.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Wednesday, November 05, 2014 1:41 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-05 13:40:37)

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Comment Received for Policy 2520.3C

Name: Dave Barr
Organization: Wahama High School
Title: Science Teacher
City/State: Mason, WV
Role: Teacher
Posted: 2014-11-05 13:40:37
Posted from IP:

Comments for section 126-44CC-1 General

I like the sequence of classes.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

It still looks basically the same as what we have been teaching in science. The numbering may be simpler.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Wednesday, November 05, 2014 10:33 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-05 10:32:52)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

#####

Name: Cassandra Forshey
Organization: Parkersburg South High School
Title: teacher
City/State: Parkersburg, WV
Role: Teacher
Posted: 2014-11-05 10:32:52
Posted from IP:

Comments for section 126-44CC-1 General

I'm concerned over the application of the new standards in my classroom. I have two desktops that work sporadically and our bandwidth doesn't support our current usage, much less the usage required to meet standards that involve numerous computational models. Also, our "current" textbooks are a decade old and only a third of the books' content addresses the new standards. Money needs to be allocated for the necessary resources.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Tuesday, November 04, 2014 4:28 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-04 16:27:36)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

#####

Name: m smith
Organization: school
Title: teacher
City/State: chas, wv
Role: Teacher
Posted: 2014-11-04 16:27:36
Posted from IP:

Comments for section 126-44CC-1 General

Regarding grade 6 proposed standards for science:rnselection of topics is too narrow in scope, there should be a broader range and selection of topics. Grade 6 is a time where students have their first fully dedicated class in science and they are very eager and excited to learn about a wide variety of topics. A broader sampling of topics needs to be included to develop and nurture scientific curiosity. Objectives are so bogged down with overly specific, sophisticated, technical jargoon they are difficult to understand. Some concepts are too abstract and not developmentally appropriate for 6th grade.

Comments for section 126-44CC-2 Purpose

Overall curriculum is lacking developmental nature for scientific concepts- safety, scientific method, matter, motion and forces, etc.rnThe National Science Teachers Association states that concepts for middle school should be "age-appropriate, engaging so that students can build on prior knowledge (I do not see continuity in building of concepts from grade to grade- middle school) to attain the necessary background to participate successfully and responsibly in our highly scientific and technological society." They also go on to say that "grades 5 through 9 are a pivotal time in their understanding and enthusiasm of science. Research has shown that if educators don't capture students' interest and enthusiasm in science by grade 7, students may never find their way back to science."

Comments for section 126-44CC-3 Incorporation by Reference

Regarding objective:rnS.6.PS.2- integrate qualitative and technical information.....rntoo abstract, narrow topic, not developmentally appropriate for this grade level, how would one even go about teaching this topic? what materials would be provided? Too bogged down in abstract concepts.rnS6.PS.6 and 8 are
repetativernEngineering standards-rntoo wordy , over complicated, reword, examples?rnS6. ESS.1- Re: when

discussing gravity, students need more of a foundation in motion and forces for example learning relationship between time and distance, frame of reference and Newton's Laws of Motion. Again too much focus on specific idea and not enough focus on basic concepts.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

Overall, too narrow in scope, lacking key fundamental concepts such as matter- how can you teach chemical reactions of something (standard S 6.PS.5) when you have not taught matter, atoms,molecules, compounds, phases and how to read and understand the Periodic table? Do not see these concepts addressed in 5th grade standards.

Comments for section 126-44CC-5 Severability

Science classrooms need to be updated to reflect requirements for these standards- many science classrooms are equipped with slanted desks that are not conducive to laboratory investigations or student collaboration and do not even have sinks or basic safety equipment.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Tuesday, November 04, 2014 11:09 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-04 11:08:53)

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Comment Received for Policy 2520.3C

#####

Name: Mark Lemasters
Organization: Magnolia High School
Title: Science Teacher
City/State: New Martinsville, WV
Role: Teacher
Posted: 2014-11-04 11:08:53
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

After examining the content standards and objectives for chemistry and physics, I was shocked to learn how few of the underlying principles were present. This list of CSO's seems less rigorous than any previous set and seems to rely heavily on retention of past material. I don't think that the teachers can follow the vagueness or incompleteness of the course content. While I like the exploratory nature, it seems that a lot of dissection of the concepts has to be done on top of the normal teaching process.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Tuesday, November 04, 2014 10:59 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-04 10:58:35)

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Categories: Red Category

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Comment Received for Policy 2520.3C

Name: Mark Lemasters
Organization: Magnolia High School
Title: Science Teacher
City/State: New Martinsville, WV
Role: Teacher
Posted: 2014-11-04 10:58:35
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

To teach Earth Science at the 9th grade level denies students who wish to study more advanced work in Biology, Chemistry, and Physics an adequate background in the physical sciences to fully understand the concepts of biology. The biological sciences have always been filled to capacity within high school curricula; always under represented have been Chemistry and Physics. Prior to 1996, chemistry and physics classes have been small in number. After the implementation of the physical science subject matter into IGO's and CSO's, enrollment increased and many took both biology and chemistry and met success in both. With the current emphasis on STEM, it is vital that physics skills be addressed for those who will work with engineering type careers. Sadly, Earth Science classes around the state have always been "dumping" grounds, an "easy" class for the masses to pass. When taught correctly, the principles of biology, chemistry, and physics are present in an applied manner. It is as rigorous as the other three as well. I implore you to reconsider the placement of Earth Science as the first required class of high school students who already are eager to learn but limited in career pathway options (other than vocational).

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 03, 2014 9:22 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-03 09:21:48)

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Comment Received for Policy 2520.3C

#####

Name: Dianna Buchman
Organization: Wayne County Schools
Title: Teacher
City/State: Ceredo, WV
Role: Teacher
Posted: 2014-11-03 09:21:48
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

Although I applaud the state's attempt to keep Next Generation chunks together (eg Forces and Interactions) within the middle school grade levels, it is my belief that we should use the standards as written and teach Physical Science, Life Science and Earth Science in independent years. As an educator who was a student in the integration time period, the connections between the sciences are equally dependent on the effort of your teacher regardless of which model is chosen. However, the flow between topics is smoother as written in the National standards and it is my belief that, cognitively, students will be more readily able to draw connections and connect their internal schemata when they aren't asked to make sure drastic jumps between concepts (eg Newton's forces to water systems).

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, November 03, 2014 8:46 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-11-03 08:46:17)

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Comment Received for Policy 2520.3C

#####

Name: Amanda Lester
Organization: Sandy River Middle School
Title: Science Teacher
City/State: laeger, WV
Role: Teacher
Posted: 2014-11-03 08:46:17
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

While it would be wonderful to be able to accomplish these standards and objectives, I worry that because more time is given to language arts and math already, we will not be able to meet the complex reading and writing objectives that are included in our standards. We are given only 40 minutes a day for science. Reading language arts and math receive 80 minutes a day. I feel that if we are required to teach these skills in our curriculum, then more compromise needs to be made when it comes to scheduling and time provided for our students. I am confident that these standards can be achieved if we have the right time constraints. I feel that there should be a required amount of time given for science as well as social studies in comparison to the times given for reading language arts and math. This is especially relevant seeing as part of our evaluations is now based on how well our schools perform on language arts and math, even though we do not teach those subjects. If we are to teach those subjects as well as our own content, then we should be given equal consideration in all areas of concern, especially time.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Wednesday, October 29, 2014 3:20 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-29 15:19:32)

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Comment Received for Policy 2520.3C

Name: Kathy Jacques
Organization: Fairmont Senior High School
Title: teacher
City/State: Fairmont, WV
Role: Teacher
Posted: 2014-10-29 15:19:32
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

I am impressed with the limited number of CSOs listed for grades K-2 and the fact that engineering is included in these primary grades. The division of the CSOs into the categories of life science, physical science, Earth and space science and engineering reflects adherence to the National Science Standards but maintains a clear pathway for the teacher to design lessons. However, the most important area where the needs of the student are placed above all else is found in the change to Earth and space science for freshman. For years, freshman have struggled with the math necessary to understand the science concepts found in ninth grade science. The students seemed to understand the concepts but when calculations were performed they did not exhibit strong Algebra skills. They would subsequently blame the science as being to difficult when in reality it was their math fears holding them back. By placing the physical science course in the 11th and 12th grade selections, the student has been given time in their math classes to learn the skills needed to perform the calculations. I think this is the perfect solution for ALL of our students. I am impressed with the new standards and cannot wait for their adoption!!

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Tuesday, October 28, 2014 12:15 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-28 12:14:35)

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Comment Received for Policy 2520.3C

#####

Name: George Watson
Organization: Marshall University
Title: Professor
City/State: Huntington, WV
Role: Higher Education Faculty
Posted: 2014-10-28 12:14:35
Posted from IP:

Comments for section 126-44CC-1 General

I am quite concerned that we are continuing to push Common Core standards on our children with no thought to whether it actually works. In essence you are treating children of this state like lab rats, with no option for parents to choose whether they want to have their children participate. No data has been developed to show that these standards will improve student learning and no country other than the United States is following this path.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Tuesday, October 28, 2014 5:43 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-28 05:42:36)

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Comment Received for Policy 2520.3C

#####

Name: will
Organization:
Title: concerned citizen
City/State: Martinsburg, WV
Role: Parent-Family
Posted: 2014-10-28 05:42:36
Posted from IP:

Comments for section 126-44CC-1 General

Why is chemistry being eliminated and general science being implemented in the 11th grade? General science belongs in the middle school! In Germany, Japan, Singapore, and Finland the level of chemistry taught in WV would be considered 8th grade science. The 11th grade science is equitable to AP chemistry! Our neighbor, Virginia, still has chemistry as their third science. By eliminating chemistry one of the following must be true: rnrna.) WV students are less intelligent than in the neighboring statesrnb.) WV teachers are less competent than in the neighboring statesrnc.) WV wants to dumb down the students we currently have - what happens when the student decides in their first year of college they want to go into a science related field? They are then at a severe disadvantage.rnrnl know this will not be addressed since the state board president is the wife of a "senator".

Robin Sizemore

From: Nobody <nobody@krylen.wvnet.edu>
Sent: Sunday, October 26, 2014 3:23 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-26 15:23:23)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

#####

Name: Nicholas Belmont
Organization:
Title: Teacher
City/State: Belva, WV
Role: Teacher
Posted: 2014-10-26 15:23:23
Posted from IP:

Comments for section 126-44CC-1 General

1) I'm concerned that science teachers around the state were not informed on the adoption of these standards. There seemed to be no transparency in how the adoption committee was chosen. I know several science teachers who would have liked input into the development of the new standards. There has been a lack of communication on the science standard adoption and standardized testing information.

Comments for section 126-44CC-2 Purpose

1) I'm concerned that quality instructional materials will not be available by the time the standards are adopted (keyword is quality). SciencePlus textbooks were not quality and did not cover the appropriate standards.rn2) I'm very concerned about parental involvement in their child's education. Lack of textbooks and going to digital (many do not have internet) makes it hard for parents to help their children. This can be seen from the new Carnegie adoption in math (just look at the new Math 1, Math 2, Math 3, and Everyday Math programs). Parents are not able to help their children anymore with homework and such. Depending on the county this is true of CATS Science education program. rn3) I'm concerned that new hire science teachers won't have enough resources to teach the NXTGen standards.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

1) There is NO mention of the 50% hands-on!! Is that in or out?rn2) I'm concerned that the CSO's seem to be more detailed than the NXTGen standards. It appears we are going back to the IGO's where they were less detailed. rn3) Is the standardized test going to be like the norm referenced test with the IGO's or criterion reference with the CSO's? rn4) The new standards need examples incorporated to each one to give teachers a specific idea of what is expected to be taught (Students need examples and so do teachers). New teachers would definitely find this helpful.rn5) I feel that we should go back to the old system of Life Science, Earth

Science, & Physical Science in different years. The way the CSO's and the NXTGen standards are set up make it virtually impossible to teach them all, therefore there are gaps in the students science education.

Moving back to the old system will reduce these gaps because that can be picked up in high school classes such as physil:

cal science, biology, chemistry, geology, and environmental science. rn6) I question whether there are quality resource materials out there to support this program that are cost-effective. Also, technology should be of high quality (and cover the new standards) and should be used where appropriate. We should not be spending money on technology that is not high quality (eg: TechSteps).

Robin Sizemore

From: Robin Sizemore
Sent: Tuesday, October 28, 2014 8:13 PM
To: Robin Sizemore
Subject: Fwd: Comment Received for Policy 2520.3C (2014-10-25 18:00:29)

Follow Up Flag: Follow up
Flag Status: Completed

Sent from my iPhone

Begin forwarded message:

From: Nobody <nobody@kivlen.wvnet.edu>
Date: October 25, 2014 at 6:00:29 PM EDT
To: <robin.sizemore@k12.wv.us>
Subject: **Comment Received for Policy 2520.3C (2014-10-25 18:00:29)**

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Comment Received for Policy 2520.3C

Name: Michele Adams
Organization: Teacher
Title:
City/State: Martinsburg, WV
Role: Teacher
Posted: 2014-10-25 18:00:29
Posted from IP:

Comments for section 126-44CC-1 General

To achieve these objectives, teachers and students will need more technology in their CLASSROOMS!. Our computer labs are rarely available for research and writing because we are testing our students to oblivion- I counted one grade was tested 26 times in our school last year! The state needs to provide us with more technology in our rooms if they want success- it certainly won't be achieved with 4 old student computers that barely turn on.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

There are 19 objectives for science and 19 for reading/language arts in 6th grade. I am going to

need professional development opportunities in reading and writing. I feel the objectives revolving around content are scattered. I would have preferred we leave the basic content as it stands today, yet incorporate the design, research/investigations and the reading and writing standards around them. The content we teach now is fundamental to moving on to these higher-order thinking skills (we have to remember 6th graders are only 11 years old). The wording on many objectives is NOT teacher-friendly. (Can it be simplified? (Example-S.6-8.1;ST.1 - What does this run-on verbiage even mean?)

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Friday, October 24, 2014 3:00 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-24 14:59:53)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

#####

Name: Anna Troynar
Organization: Hancock County Schools
Title: 5th Grade Science Teacher
City/State: Weirton, WV
Role: Teacher
Posted: 2014-10-24 14:59:53
Posted from IP:

Comments for section 126-44CC-1 General

The standards state that all teachers are responsible for engaging students in active inquiry, investigations, and hands-on activities throughout our instructional day. Teachers are not equipped with the materials needed to provide this integrated, inquiry-based approach. Our current science textbooks are copyright 2000 and the WV Handle on Science kits for the 5th grade level do not match the new standards.

Comments for section 126-44CC-2 Purpose

The purpose to have students define problems and design solutions related to these objectives sounds great on paper. However, if you go to the studies on what a fifth grader is capable of learning, I do not feel that most fifth graders are ready for such advanced thinking activities. For example, some of my fifth graders find it hard to grasp the concept that the sun is a star. According to Piaget, fifth graders are still in the Concrete Operational Stage: 7-11 years rnrn * Able to solve concrete (hands-on) problems in logical fashion.rn * Understands laws of conservation and is able to classify and seriate.rn * Understands reversibility.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Thursday, October 23, 2014 12:48 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-23 12:47:59)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

Name: Michele Adams
Organization:
Title:
City/State: Martinsburg, WV
Role: Teacher
Posted: 2014-10-23 12:47:59
Posted from IP:

Comments for section 126-44CC-1 General

1. Not enough general content- they need background knowledge (example--they need to learn the periodic table, atoms, molecules before the 6th grade objective of learning the chemical process behind photosynthesis. I did not see this content anywhere prior to 6th grade).rn2. Not enough focus on matter in 6th grade. Too much focus on weather in 6th grade

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Thursday, October 23, 2014 10:29 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-23 10:28:49)

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Categories: Red Category

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Comment Received for Policy 2520.3C

Name: Jeff Garvin
Organization: Mountainview Elementary
Title: Teacher
City/State: Morgantown, WV
Role: Teacher
Posted: 2014-10-23 10:28:49
Posted from IP:

Comments for section 126-44CC-1 General

I like the simplicity of the standards and the depth.
Comments for section 126-44CC-4 Summary of Content Standards and Objectives

I like the new standards.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Thursday, October 23, 2014 9:42 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014 10 23 09:42:24)

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Comment Received for Policy 2520.3C

#####

Name: John McKown
Organization: Wood County Schools
Title: Math/Science Coordinator
City/State: Parkersburg, WV
Role: School System Staff
Posted: 2014-10-23 09:42:24
Posted from IP:

Comments for section 126.44CC-4 Summary of Content Standards and Objectives

S.5.GS.5 Not all ecosystems on Earth get energy from the Sun. Ocean geothermal vents is one example.
S.7.PS.1 Instead of "speed" the term "velocity" should be used. $KE=1/2mv^2$
S.7.PS.2 This standard needs to be clarified as to the type of potential energy. (potential energy of gravity, elastic potential energy or chemical potential energy)
S.7.PS.4 "type" of matter should be "state" of matter
S.7.PS.5 "motion energy" should be changed to kinetic energy or velocity
S.7.PS.9 Gravitational interactions also depend on distance between objects, not just mass.
S.7.PS.9 reasoning behind moving physical science to an 11th grade elective. Why not move the Earth Science course to 8th grade as it was years ago? Chemistry teachers will not like the fact that students will not have the foundation that 9th grade physical science provided. Biology teachers will also find 10th grade students less prepared for the chemistry content involved in biological processes.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Thursday, October 23, 2014 8:44 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-23 08:43:36)

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Comment Received for Policy 2520.3C

#####

Name: Eric
Organization: Teacher
Title: Chemistry Educator
City/State: Keyser, WV
Role: Teacher
Posted: 2014-10-23 08:43:36
Posted from IP:

Comments for section 126-44CC-1 General

1.) I applaud Earth Science in Grade 9.rn2.) I do NOT applaud general science as an option in grade 11.
Students with low math skills will opt for Environmental Science. Students who do NOT want Chemistry will opt for general science. This will eliminate many chemistry positions. It also DUMBS down the curriculum. What will the current freshmen and sophomores take during their junior year since they had PHYSICAL SCIENCE as freshmen? Will they opt for Environmental Science and eliminate most chemistry classes for two years? Does this mean I will be riffed in the process? Please advise. It would be nice to know now and NOT mid summer when all jobs have been filled.rn3.) Why does WV keep reinventing the wheel? VA has had a set of courses and this has worked for more than 30 years with END OF COURSE exams. The tests are tied to LEVELS of diplomas. Tie the test to the diploma and rates will increase.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

Where is nomenclature in chemistry? rnWhere is molality and Normality in chemistry solutions.rn rn 18 years of teaching chemistry I have only one time ever reacted Redox, and that is briefly balancing Redox rxns. Now, the standards state students need to design a redox experiment? rnThere are many other items that are not specified and people new to teaching will not cover those items. Not sure who wrote all the standards, but either they expect certain things to be implied, but they MUST be listed otherwise teachers will not cover them!

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Wednesday, October 22, 2014 10:16 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-22 22:15:54)

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Comment Received for Policy 2520.3C

#####

Name: Teresa Barton
Organization: PikeView High School
Title: Teacher
City/State: Princeton, WV
Role: Teacher
Posted: 2014-10-22 22:15:54
Posted from IP:

Comments for section 126-44CC-1 General

I am interested in knowing what certifications will be used for these high school classes. Will there be reciprocity from Virginia if a teacher has a certification in Earth/Space Science. Will the "old" WV General Science certification work for these courses?

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Tuesday, October 21, 2014 12:21 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014 10 21 12:21:25)

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Comment Received for Policy 2520.3C

#####

Name: Melinda Tripp
Organization: Triadelphia Middle School
Title: Teacher
City/State: Wheeling, West Virginia
Role: Teacher
Posted: 2014-10-21 12:21:25
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

I teach 8th grade Science now and in looking at these proposed standards, where are Newton's Laws and Physics for this grade level (speed/velocity/acceleration). They are not topics in 7th grade either. Our textbooks are out of date as it is, will we have a textbook or kits? We haven't had textbooks since 2005. Also, the 7th grade proposed CSO's are acceptable for that grade level. Grade 8 is heavily loaded with genetics/biology objectives, no physics, and some chemistry and earth history. The proposed 6th grade CSO's would also mean current science kits are not covering proposed curriculum - will the kits be continued and/or changed to account for new proposals. It would be so progressive for WV to focus on science as a whole per grade level per subject, i.e. biology in 6th grade, earth history in 7th grade, and chemistry/physics in 8th grade. Our current system has our student's heads spinning and gives way to zero progression of scientific concepts. My students sci
ore well on standardized tests, but I feel as though I never complete a unit as I must start the next spiral in a hodge podge curriculum, with out of date textbooks and no time for lab preparation and follow up. The reading and writing components are easily understand and absorbed in our classes as time allows due to blended classrooms of all ability groupings.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Tuesday, October 21, 2014 9:56 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-21 09:56:14)

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Comment Received for Policy 2520.3C

#####

Name: Jodie Roush
Organization: Mason County Schools
Title: Teacher
City/State: Point Pleasant, WV
Role: Teacher
Posted: 2014-10-21 09:56:14
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

If the ninth grade course is changed from the current Physical/Earth/Space standards to just Earth and Space, students will not be prepared to enter Chemistry or Physics in the 11th grade. Although some of the standards are addressed in courses prior to 9th grade, the depth of knowledge retained will be insufficient for students opting to complete Chemistry or Physics in the 11th grade. There is an option to strengthen understanding of physical science through the third course elective, however this will delay participation in Physics and Chemistry until the 12th grade year and will effectively eliminate rigorous course such as AP Physics and AP Chemistry. It could be resolved if 9th grade students could opt to replace the Earth/Space coursework with the PS Elective.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, October 20, 2014 9:44 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-20 09:44:10)

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Comment Received for Policy 2520.3C

Name: Tyler Lancaster
Organization: Romney Middle School
Title: Seventh Grade Science Teacher
City/State: Romney, WV
Role: Teacher
Posted: 2014-10-20 09:44:10
Posted from IP:

Comments for section 126-44CC-1 General

The new Next Generation Science Standards have several issues that should be dealt with prior to adoption. The initial issue that my fellow science teachers at Romney Middle School have noticed is the broadness of quite a few of the objectives such as S.6-8.ETS.4- develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design. Essentially we are being told that the students need to engineer a new product, and test it, but what are the guidelines involved? Is it merely an objective for proper use of scientific method? Or is there specific content that should be associated with the design? rMA second issue that my colleagues have discussed is the inability to have continuity throughout each grade level. The opportunity to involve students in any topic of depth will likely escape us because of the scattered nature of the topics, whereas if the focus was on one main topic per grade level,(i.e. Earth Science, Life Science, Physical Science) then the students would have the opportunity to continually build upon the previous topics of that course. Essentially this issue could be resolved by structuring each grade level by an encompassing topic as the previously mentioned three major topics. rnThe most pressing issue that we have noticed is the presence of some very abstract ideas in the grade six objectives. At the age of sixth graders many of the students still have difficulty understanding extremely abstract ideas, and are far more comfortable with concrete topics, such as earth science content. The idea of sixth grade students being able to fully understand the objective S.6.PS.1 - use mathematical representations to describe a simple model for waves that uncles how the amplitude of a wave is related to the energy of a wave is far fetched, and even sixth graders being able to grasp the concept of a wave and its ability to transfer energy at all with their concrete minds is !

nearly impossible. rnThe proposal that my colleagues and I have discussed would remedy the majority of these issues is to have grade six focus on content objectives encompassing earth and space science to account for the students' abstract reasoning deficit, and as the students' abstract reasoning develops more into seventh grade the seventh grade curriculum should focus on

the slightly more abstract life science objectives and begin to bring in some of the chemistry of life as part of life science to lead into the eighth grade curriculum to be focused on the objective encompassing the overly abstract and mathematical concepts in physical science in eight grade.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

The new Next Generation Science Standards have several issues that should be dealt with prior to adoption. The initial issue that my fellow science teachers at Romney Middle School have noticed is the broadness of quite a few of the objectives such as S.6-8.ETS.4- develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design. Essentially we are being told that the students need to engineer a new product, and test it, but what are the guidelines involved? Is it merely an objective for proper use of scientific method? Or is there specific content that should be associated with the design? A second issue that my colleagues have discussed is the inability to have continuity throughout each grade level. The opportunity to involve students in any topic of depth will likely escape us because of the scattered nature of the topics, whereas if the focus was on one main topic per grade level, (i.e. Earth Science, Life Science, Physical Science) then the students would have the opportunity to continually build upon the previous topics of that course. Essentially this issue could be resolved by structuring each grade level by an encompassing topic as the previously mentioned three major topics. The most pressing issue that we have noticed is the presence of some very abstract ideas in the grade six objectives. At the age of sixth graders many of the students still have difficulty understanding extremely abstract ideas, and are far more comfortable with concrete topics, such as earth science content. The idea of sixth grade students being able to fully understand the objective S.6.PS.1- use mathematical representations to describe a simple model for waves that uncles how the amplitude of a wave is related to the energy of a wave is far fetched, and even sixth graders being able to grasp the concept of a wave and its ability to transfer energy at all with their concrete minds is nearly impossible. The proposal that my colleagues and I have discussed that would remedy the majority of these issues is to have grade six focus on content objectives encompassing earth and space science to account for the students' abstract reasoning deficit, and as the students' abstract reasoning develops more into seventh grade the seventh grade curriculum should focus on the slightly more abstract life science objectives and begin to bring in some of the chemistry of life as part of life science to lead into the eighth grade curriculum to be focused on the objective encompassing the overly abstract and mathematical concepts in physical science in eight grade.

Comments for section 126-44CC-5 Severability

The most pressing issue that we have noticed is the presence of some very abstract ideas in the grade six objectives. At the age of sixth graders many of the students still have difficulty understanding extremely abstract ideas, and are far more comfortable with concrete topics, such as earth science content. The idea of sixth grade students being able to fully understand the objective S.6.PS.1- use mathematical representations to describe a simple model for waves that uncles how the amplitude of a wave is related to the energy of a wave is far fetched, and even sixth graders being able to grasp the concept of a wave and its ability to transfer energy at all with their concrete minds is nearly impossible.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, October 20, 2014 9:40 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-20 09:40:23)

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Comment Received for Policy 2520.3C

Name: Crystal Rexrode
Organization: Romeny Middle School
Title:
City/State: Romeny, WV
Role: Teacher
Posted: 2014-10-20 09:40:23
Posted from IP:

Comments for section 126-44CC-1 General

First, let me start by saying this comment page is difficult enough to understand exactly what you want here. Second, the new proposed objectives are so broad that we are going to be setting our students up for failure. We have consistently asked for Earth Science to be taught in 6th grade, Life Science in 7th Grade and Physical Science in 8th grade. All that has been done is to switch things around. I teach 8th grade and half of my standards are completely gone. Some have went to 6th and 7th grade, but a lot are just gone. Now, if they are included, in some round about way, they are not very easy to pull out. Resources, we need resources. As I look at new objectives, I can't help but feel frustrated that I have and end objective but I have to still teach a content from the beginning because there is no building evident with this

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, October 20, 2014 9:41 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-20 09:40:30)

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Comment Received for Policy 2520.3C

Name: Julie Rowan-Wolford
Organization: Romney Middle School
Title: 6th grade science
City/State: Romney, WV
Role: Teacher
Posted: 2014-10-20 09:40:30
Posted from IP:

Comments for section 126-44CC-1 General

Many of the standards are so broad that it seems one could spend weeks or months only to find that what was covered wouldn't guarantee they'd be successful on a standardized test which will follow in the spring. While we are supposed to be giving students direct and to the point guidelines with what we are to teach, the CSO's we are given are nebulous. Having a "best practices" text/standardized website and equipment for every child to utilize with FUNDED materials for students to use would be ideal for being able to actually have students pass their standardized state tests, but given the support the language and math departments have been given I'm not holding my breath. If we believe this is the best route to go, appropriate materials should be compiled and disseminated to staff instead of the current scavenger hunt for locating guessed at relevant materials.

Comments for section 126-44CC-3 Incorporation by Reference

While the national trend looked to be more Earth science at 6th grade, we seem to be keeping to a hodge podge of topics, which doesn't seem to be a true usage of Common Core.

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

The worst CSO presented seems to be S.6.PS.1 through S.6.PS.3. Many sixth graders would find it difficult, if not impossible, to grasp such an abstract concept. I can't imagine what PRACTICING sixth grade teacher developed this as appropriate for the maturational level of the audience.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, October 20, 2014 9:25 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-20 09:24:36)

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Comment Received for Policy 2520.3C

Name: Emily Hedrick
Organization: Hampshire County Schools
Title: Special Education Teacher
City/State: Romney, WV
Role: Teacher
Posted: 2014-10-20 09:24:36
Posted from IP:

Comments for section 126-44CC-1 General

The proposed NxG Science Standards are far too vague, as compared to our current standards. If you want the students to be able to "do something", tell us what you want them to be able to do. We are supposed to post our daily objectives on the board, using words that our students will understand. The proposed standards will not allow us to do this. For example, can we think of another way to say "define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions" ??? I teach science to grades 6-8 and am honestly very overwhelmed by these standards. Within each grade-level, we'll be jumping from one standard to something completely different, rather than building on their knowledge of a particular strand of science throughout the school year. Personally, I think that it would be far! more productive to teach science as they do in high school and college... one area of science per grade level. Earth Science could be taught in Grade 6, Life Science in 7th, and Physical Science in Grade 8. Please consider rearranging the proposed Science standards so as there will be more "flow" to our curriculum. Finally, IF these standards are passed and we are expected to implement them, we need the materials and resources to do so. Constructing models and conducting research requires appropriate resources, that not everyone has access to. Also, unit plans and sample lessons should be uploaded to the state website so as to help with the transition to these ridiculously broad standards.

Comments for section 126-44CC-2 Purpose

The proposed NxG Science Standards are far too vague, as compared to our current standards. If you want the students to be able to "do something", tell us what you want them to be able to do. We are supposed to post our daily objectives on the board, using words that our students will understand. The proposed standards will not allow us to do this. For example, can we think of another way to say "define the criteria and constraints

of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions" ??? I teach science to grades 6-8 and am honestly very overwhelmed by these standards. Within each grade-level, we'll be jumping from one standard to something completely different, rather than building on their knowledge of a particular strand of science throughout the school year. Personally, I think that it would be far!

more productive to teach science as they do in high school and college... one area of science per grade level. Earth Science could be taught in Grade 6, Life Science in 7th, and Physical Science in Grade 8. Please consider rearranging the proposed Science standards so as there will be more "flow" to our curriculum. Finally, IF these standards are passed and we are expected to implement them, we need the materials and resources to do so. Constructing models and conducting research requires appropriate resources, that not everyone has access to. Also, unit plans and sample lessons should be uploaded to the state website so as to help with the transition to these ridiculously broad standards.

Comments for section 126-44CC-3 Incorporation by Reference

The proposed NxG Science Standards are far too vague, as compared to our current standards. If you want the students to be able to "do something", tell us what you want them to be able to do. We are supposed to post our daily objectives on the board, using words that our students will understand. The proposed standards will not allow us to do this. For example, can we think of another way to say "define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions" ??? I teach science to grades 6-8 and am honestly very overwhelmed by these standards. Within each grade-level, we'll be jumping from one standard to something completely different, rather than building on their knowledge of a particular strand of science throughout the school year. Personally, I think that it would be far!

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Comments for section 126-44CC-4 Summary of Content Standards and Objectives

The proposed NxG Science Standards are far too vague, as compared to our current standards. If you want the students to be able to "do something", tell us what you want them to be able to do. We are supposed to post our daily objectives on the board, using words that our students will understand. The proposed standards will not allow us to do this. For example, can we think of another way to say "define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions" ??? I teach science to grades 6-8 and am honestly very overwhelmed by these standards. Within each grade-level, we'll be jumping from one standard to something completely different, rather than building on their knowledge of a particular strand of science throughout the school year. Personally, I think that it would be far!

more productive to teach science as they do in high school and college... one area of science per grade level. Earth Science could be taught in Grade 6, Life Science in 7th, and Physical Science in Grade 8. Please consider rearranging the proposed Science standards so as there will be more "flow" to our curriculum. Finally, IF these standards are passed and we are expected to implement them, we need the materials and resources to do so. Constructing models and conducting research requires appropriate resources, that not everyone has access to. Also, unit plans and sample lessons should be uploaded to the state website so as to help with the transition to these ridiculously broad standards.

Comments for section 126-44CC-5 Severability

The proposed NxG Science Standards are far too vague, as compared to our current standards. If you want the students to be able to "do something", tell us what you want them to be able to do. We are supposed to post our daily objectives on the board, using words that our students will understand. The proposed standards will not allow us to do this. For example, can we think of another way to say "define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions" ??? I teach science to grades 6-8 and am honestly very overwhelmed by these standards. Within each grade-level, we'll be jumping from one standard to something completely different, rather than building on their knowledge of a particular strand of science throughout the school year. Personally, I think that it would be far!

more productive to teach science as they do in high school and college... one area of science per grade level. Earth Science could be taught in Grade 6, Life Science in 7th, and Physical Science in Grade 8. Please consider rearranging the proposed Science standards so as there will be more "flow" to our curriculum. Finally, IF these standards are passed and we are expected to implement them, we need the materials and resources to do so. Constructing models and conducting research requires appropriate resources, that not everyone has access to. Also, unit plans and sample lessons should be uploaded to the state website so as to help with the transition to these ridiculously broad standards.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Friday, October 17, 2014 9:20 AM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-17 09:19:51)

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Comment Received for Policy 2520.3C

#####

Name: Ted Hanket
Organization: John Marshall High School
Title: Physics Teacher
City/State: Glen Dale, WV
Role: Teacher
Posted: 2014-10-17 09:19:51
Posted from IP:

Comments for section 126-44CC-1 General

Personally, I do not like the idea of changing 9th grade from physical science to earth science. When I get the students in physics class it is nice that they have some back ground information. If physical science is not taught in 9th grade then I am not sure when they will get any other information.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Wednesday, October 15, 2014 5:29 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-15 17:29:12)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

#####

Name: Tabby Woy
Organization: Keyser High
Title: Teacher
City/State: Keyser, WV
Role: Teacher
Posted: 2014-10-15 17:29:12
Posted from IP:

Comments for section 126-44CC-1 General

I hate to think that Physical Science will no longer be taught at a 9th grade level. The chemistry section helps prepare the students for biology. If they don't have the physical science chemistry, they will have a difficult time in chemical reactions, cycles, organic section of biology, and macro molecules. The weather and space portion of physical science helps the students understand biomes, weather patterns, and climates which enable them to see the correlation in adaptation, etc. Many students don't take chemistry and or physics but a strong physical science background will enable them to take anatomy, environmental, and earth science.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Tuesday, October 14, 2014 8:15 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-14 20:15:06)

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Comment Received for Policy 2520.3C

#####

Name: Stephanie Neace
Organization: Cabell County Board of Education
Title: Teacher
City/State: Huntington , Wv
Role: Teacher
Posted: 2014-10-14 20:15:06
Posted from IP:

Comments for section 126-44CC-1 General

I am a kindergarten teacher, and I am excited to see the standards are written to encourage project based and hands on science by the learner! However, animal observation has been a HUGE part of our curriculum and the students love it and do so well with it. I feel it encourages observation skills and stimulates curiosity. I would love to see a standard or two written about observing animals and their life cycles and drawing conclusions based on observations. Thank you for your consideration.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Tuesday, October 14, 2014 8:01 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-14 20:01:03)

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Comment Received for Policy 2520.3C

#####

Name: Frances Tolley
Organization: Hurricane High
Title: Science. Chair
City/State: Hurricane, WV
Role: Teacher
Posted: 2014-10-14 20:01:03
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

Where is chem II? Bio II? Zoology? Earth Science (upper level). Please don't cut our electives. mrrnT teaching the chem standards in a single term means less practice etc...even colleges don't do moles and equilibrium in the same term.

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Monday, October 13, 2014 1:44 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-13 13:43:42)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

Name: Elizabeth Gallaher
Organization: Capital High School
Title: Teacher
City/State: Charleston, WV
Role: Teacher
Posted: 2014-10-13 13:43:42
Posted from IP:

Comments for section 126-44CC-4 Summary of Content Standards and Objectives

1. If Earth and Space will be recommended for 9th grade students, will it be counted as a lab credit? m2.Also, along the same vein, will Physical Science be offered as a lab credit as well since it will offered to upper level students? m3. Can Anatomy still be broken into two courses (Anatomy I and II) or is it expected to have the material covered in one year?

Robin Sizemore

From: Nobody <nobody@kryten.wvnet.edu>
Sent: Sunday, October 12, 2014 2:15 PM
To: Robin Sizemore
Subject: Comment Received for Policy 2520.3C (2014-10-12 14:15:17)

Follow Up Flag: Follow up
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Comment Received for Policy 2520.3C

#####

Name: jim rye
Organization: wvu
Title: professor
City/State: morgantown, wv
Role: Higher Education Faculty
Posted: 2014-10-12 14:15:17
Posted from IP:

Comments for section 126-44CC-1 General

Adopt these standards as soon as possible. These standards are parsimonius compared to the 1996 iteration and will facilitate science instruction and literacy especially at the elementary grade level.