Science Standards Workgroup Response to Public Comments

Public comments were reviewed and deliberated by the science standards workgroup through multiple venues. The workgroup evaluated comments between public hearings and also reviewed comments at an in-person meeting in Pierre on April 30, 2015. The responses to written comments that opposed the standards or requested changes to the standards are listed below. The workgroup thanks those that provided feedback on the standards.

The workgroup believes that the concepts and content in the science standards represent the most current research in science and science education. All theories are presented in a way that allows teachers to structure an experience around multiple pieces of scientific evidence and competing ideas to allow students to engage in an objective discussion. The theories are presented because they have a large body of scientific evidence that supports them. These standards were developed in such a manner to encourage students to analyze scientific evidence and draw their own conclusions.

Exhibit # 1 – Terry Gerber – Parent and Administrator	
Comments	Workgroup Response
I like that the science standards are very clearly defined for grades K-5. I extremely dislike that we move from grade-level standards to "content-level" standards in grades 6-12. My thought is that the standards should be grade-level standards through 8th grade.....these are the 6th grade standards that need to be taught, these are the 7th grade standards and these are the 8th grade standards. Kids fall through the cracks as they transition from one school to another in SD. Some schools teach life science at 7th grade, some at 8th grade, etc..... Give us grade level standards K-8! They should have all or most of the standards when they take the 8th grade science test. My other comment is to define high school standards by course. If I'm teaching Physical Science, what content do I teach? If I'm teaching Biology, what do I need to cover? If I'm teaching Chemistry, Physics, Anatomy, etc.....what do I need to teach? I hate this ambiguous 9-12 standards. Although Physical Science and Biology are required to graduate from any school in SD, no guarantee that any 2 schools are doing the same thing. Applaud you for your work K-5.....disappointed 6-12 that we still are being ambiguous about what specifically needs to be taught in each grade/course!	Course pathways will be set in Spring/Summer of 2015. A workgroup of teachers, administrators, and instructional coaches will be convened to complete this work. The recommended pathways will be created as an appendix.

Exhibit #2 – No Name – Educator	
Comments	Workgroup Response
The science standards are very clear for the elementary grades and become vague and confusing starting with grade 6 because the standards move from being organized by grade level to being organized by science strand. The standards should be organized by grade level through 8th grade and then by course in high school. Because Physical Science is a requirement for every child to graduate from a school in South Dakota, the standards should be listed for that specific course as well as Biology, Chemistry, etc... This committee is missing an opportunity to get all school districts on the same page!	Course pathways will be set in Spring/Summer of 2015. A workgroup of teachers, administrators, and instructional coaches will be convened to complete this work. The recommended pathways will be created as an appendix.
Exhibit # 5 – Dawn Hilgenkamp – Parent	
Comments	Workgroup Response
There is nobody that teaches at a higher level than high school. There should be some science college professors on the panel, to make sure our kids are learning the proper things so they are not behind when they go to college. The ball was dropped with the math standards. Kids are not learning enough before going to college. I think the Common Core Standards are ridiculous. The state of SD needs to join the other states in the push to get rid of the Common Core Curriculum.	There were four post-secondary representatives on this workgroup. Remainder of the comment is not about the science standards.

Exhibit #7 – D. Jarzab – Educator	
Comments	Workgroup Response
First of all a sincere thank you to all of the committee members for reviewing the 2005 standards and enhancing them for the betterment of SD students and the future citizens they will become. Regarding 1-LS1-1, this standard seems more fitting for an older grade level, perhaps second grade. Regarding 2-LS2-1, this standard seems more fitting for a younger grade level, perhaps K. (Especially if they are required to make models of land/water bodies, as in 2-ESS2-2, which I think is very age-appropriate, then they will most likely already know that plants need sunlight and water to grow.) Regarding the Middle School Life Science Conceptual Understanding, please consider adding the following, "Plants use the energy form light AND GAS FROM THE AIR to make sugars through…" (p23.) This is an important misconception and I was glad to see this addressed in 5-LS1-1. This concept should be reinforced in MS. Here are some typos to be considered… 3-LS1-1 add a comma before "but" and add a colon after "common" 3-LS4-3 add the word "of" after the word "evidence" MSLSCU (p23) add an apostrophe to the word "its" before populations (second to last sentence in first paragraph) MS-LS1-2 add the word "the" before the word "ways" HS-LS2-6 reword…..Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms DURING STABILITY, HOWEVER in moderate to extreme fluctuations….	Individual workgroup member responses to this comment are marked as Exhibit 23. The following statement is from the standards workgroup as a whole: The standards in question have been reviewed by the workgroup and have been deemed grade-level appropriate. The grammatical suggestions were also reviewed and deemed unnecessary. Middle School Life Science Conceptual Understanding will be rewritten to state, "Plants use resources from the environment and energy from light to make sugars..." Standard H-LS2-6 will be rewritten based the suggestion as follows, "Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms under stable conditions; however, in moderate to extreme fluctuations in conditions may result in new ecosystems."
Exhibit # 13 – Nicomas Dollar – Educator	
Comments	Workgroup Response
I would like to see examples of activities used to teach the new standards. For example: How would you teach the following standard and what activities could you use? K-2 the standard LS1.A Using plant and animal anatomical function to design a solution to a human oproblem of growth and development.	Examples were not included in the standards to reduce the problem of teachers using only the examples. Also, this decision allows teachers the flexibility to meet the standards with regard to student needs.

Exhibit #15 – No Name – Educator	
Comments	Workgroup Response
Are you proposing that the MS standards be broken up to physical science in 6th grade, life science in 7th grade, and earth science in 8th? I don't understand how students will be able to transition from one school to the next if the districts are asked to decide what to teach when.	Course pathways will be set in Spring/Summer of 2015. A workgroup of teachers, administrators, and instructional coaches will be convened to complete this work. The recommended pathways will be created as an appendix.
Exhibit #16 – No Name – Educator	
Comments	Workgroup Response
I am a 4th grade teacher. I compared the new standards with what I currently teach. Only about half of them are similar. According to the new ones, I would not teach matter, electricity, magnets, the human body, the water cycle, weather, and the Earth, Sun, and Moon. Instead they have added the concepts of sound, light, waves, the eye, non-renewable and renewable resources and I am sure more that I have missed. Some of these "new" standards aren't in my book so I will need to spend many hours finding material to teach these concepts...just like I had to do with the older standards. I don't mind transitioning our students to think like engineers, however I do not understand why we shift the concepts around between the grade levels? This is very time-consuming as a teacher when we have to develop whole age-appropriate units for new concepts. If we are going to be trained...than hopefully it is time spent on developing these units as a team.	This comment is about implementation and curriculum and not the standards. Support will be provided through state and district level training once standards are adopted.

Exhibit #17 – Amy Wagner	
Comments	Workgroup Response
Amy Wagner State Coordinator for the National Day of Prayer and And a Grandmother who helps homeschool two elementary grandkids. There is an increasing fear among homeschool families that by following the Federal Government wishes their rights, as parent educators will be danger. I would have to agree with them as experience has taught me that when the Federal Government gets involved in a problem the only thing that expands is Government burocracy, Governmental control and the taxes we pay. The problems never seem to go away but only get worse. Our founding fathers did not set up such a sprawling government as the one we have today. We are a Republic; therefore individual States not only have the right but obligation to serve the people of their state. All one needs to do to see the dangers of this Federally run education system is to look at Germany just prior to Would War 2. The people were fooled by the authoritarian government's desire to take care of the people. In fact I agree with our new United States Senator Mike Rounds when he says the National Education Department needs to be dismantled. Control of our schools needs to be returned to the people and the school boards of local communities. When the Federal Government dangles a carrot of dollars in front of any of societies problems the people should run in the opposite direction. All that aside: As I look back on my educational experience and I believe it follows the majority of people, I do not see standardized requirements and tests as even one of the items that enhanced my education. I do remember taking such tests where we were filling in little circles. Most of the time we gave them little thought or cared much about them. There were those type A students who would become our future valedictorians who did care and took grievous time to complete the test to the best of their ability. But most of us got tired of it and just started filing in the circles with our Number 2 pencils. By the way, of all the valedictorians that I know, personally, both, friends and family members, not one of them invented anything….. It takes creative minds and unlimited gifts to create. When we are told what to think and how to think it, the creative soul becomes inhibited and doubt crowds into the self-image of the child made in the image of God. I will have to say that there is a common denominator for every class or grade in school in which I did well. Further I see that common denominator in the education of my children and grandchildren. The common denominator was the teacher. Good teachers produce good students. Teachers who are bogged down with teaching to a test for fear of their student's scores effecting their standing do not offer classrooms that are conducive to creative learning. After all before all this standardized testing The United States of America was the leader in creativity and ingenuity. I believe we still are, however, today, the creativity and ingenuity go untapped. If there are no new inventions it is because the US is not coming up with them. We are the creative innovators of the world. No other nation has the society to foster the creativity that our world needs to better every society. Other societies simply do the work to make what ours creates. It is not common core nor other standardized curriculum or tests that South Dakota needs to adopt, but we must empower our teachers to teach. We must attract and keep good teachers in our state. I understand that when a carrot loaded with dollar signs is dangled in front of your nose, it is hard to resist, but I believe in the people of South Dakota. We cannot take the risk of money offered to us by an administration which leans heavy toward Authoritarian Rule. In fact, if given the opportunity' I believe the students of South Dakota could come up with better solutions.	There was no federal government involvement in the creation of the proposed South Dakota Science Standards, nor monetary reward for adopting.

Exhibit #18 – Brandon Valley Middle School	
Comments	Workgroup Response
We feel these are very broad and non-specific. It would be nice to see 2 or 3 real examples of each to help use them more efficiently. We would like to know to better teach the engineering practices and if IT classes cover those standards for us? With so many school districts having 5-6 buildings, will these standards be 5-8? Why are 5th grade and 6th grade standards so identical?	Course pathways will be set in Spring/Summer of 2015. A workgroup of teachers, administrators, and instructional coaches will be convened to complete this work. The recommended pathways will be created as an appendix. Engineering practices are embedded within the standards, and engineering is an expectation for science classrooms to help students work with core science ideas. The workgroup built a matrix that displays how ideas build across grade bands 3-5 and 6-8, but the standards are written by grade-level K-8. http://doe.sd.gov/ContentStandards/documents/AppendixA-DCI-Progression.pdf

Exhibit #20 – No Name – Parent	
Comments	Workgroup Response
It is interesting to note that these proposed standards endorse evolution without any acknowledgement of challenges the THEORY faces. These challenges might include the fact that (1) there has not been one single transitionary form confirmed yet even though the fossil record has expanded dramatically since Darwin's time, (2) the fact that evolution cannot account for abiogenesis - the origin of the first life, (3) the fact that the theory is based off an a priori assumption of naturalism which is NOT science but a philosophical assumption, and finally (4) the fact that the Cambrian explosion is a significant problem for Neo-Darwinists. I feel that these items completely ignored in the standards endorse a secular attempt to commit students to accept naturalism, which is not science, it is a philosophy. The primary standards to which I am referencing can be found below and should anyone like to discuss the issue, I invite debate as I am well versed on the theory of evolution as well as on competing theories. HS-LS4-1 Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. (SEP: 8; DCI: LS4.A; CCC: Patterns) HS-LS4-2 Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment. (SEP: 6; DCI: LS4.B, LS4.C; CCC: Cause/Effect)	Previous comments of individual workgroup members are marked as Exhibit 23. The following statement is from the workgroup as a whole: The practice of scientific communication supports the evaluation of both strengths and weaknesses of evidence presented. Science examines all points of view that are based in scientific evidence. Scientific arguments are strengthened by multiple lines of evidence. This standard examines multiple lines of well –developed scientific evidence. Understanding of multiple lines of evidence is fundamental for further scientific study and important to future careers in many areas including biology, medicine, and agriculture.

Exhibit #21 – Nicole Osmundson – Parent	
Comments	Workgroup Response
I would like to see standards written in a manner that allows evidence to be presented for and against theories. For example: MS-ESS3-5- Ask questions to clarify evidence for and against factors that may have caused a change in global temperatures over the past century. HS-ESS1-2 Construct an explanation for and against the Big Bang Theory ..... HS-LS4-1 Communicate scientific information that common ancestry and biological evolution are supported and disputed. MS-ESS3-4- I wonder how this standard can be taught without bias to population control, etc? Can it be worded in a way that would allow free discussion of all sides of this issue?	Response: MS-ESS3-4: The committee thoughtfully discussed, debated, and selected the wording of MS-ESS3-4. Changing the wording to include a statement addressing population control would change the meaning of the standard. As the standard is currently written, students would be determining possible effects of population growth on Earth's systems. Changing the standard could restrict the standard and would effectively limit free discussion. MS-ESS3-5: The verbiage "for and against" limits the discussion to only two sides. By embedding the phrase "may have caused," the standard allows for engagement in multiple viewpoints. HS-ESS1-2: The verbiage "for and against" limits the discussion to only two sides. This theory is presented to allow students to construct an explanation about the Big Bang Theory. That explanation should include what evidence is and is not supporting that theory. The workgroup created a statement and embedded it in the beginning of the standards document to reflect their view on approaching the teaching of theories. The workgroup feels that all standards and the inherent nature of the science practices allow students to engage in free discussion regarding all topics. HS-LS4-1: The practice of scientific communication supports the evaluation of both strengths and weaknesses of evidence presented. Science examines all points of view that are based in scientific evidence. Scientific arguments are strengthened by multiple lines of evidence. Scientific arguments are strengthened by multiple lines of evidence. Understanding the multiple lines of evidence is fundamental for further scientific study and important to future careers in many areas including biology, medicine, and agriculture.

Exhibit #22 – Florence Thompson – Self	
Comments	Workgroup Response
I object to the adoption of the standards for the following reasons: 1. Adoption of new standards at this time is in violation of the intent of South Dakota State Law (SDCL 13-3-48.1). The South Dakota legislature has wisely passed a law requiring the State Board of Education to pause development of new standards until 2016. It makes sense to wait, because Common Core is running into many implementation problems and into growing opposition across the country. At least two issues of constitutionality are headed for the US Supreme Court. Congress has legislation pending which could significantly weaken Federal interference in Education which would give the states more freedom. 2. These standards are not South Dakota standards but are a cynical Rebranding of the national Common Core Standards (CCSS). This same strategy of Rebranding has occurred in other states as the Common Core hierarchy struggles to maintain control. Using common sense, how can these be independently derived South Dakota standards? Is it just a coincidence that the proposed SD Standards still conform to the common core template in order to qualify for funding, align with the Common Core tests and textbooks and are nearly identical with every other state's Common Core standards? 3. Common Core is an unproven, radical, top-down-imposed transformation of the American education system. It moves US Education from a Knowledge system to a Process system. Its core tenet is called "Critical Thinking" but is not true critical thinking. This so-called "Critical Thinking" is constantly drilled into every lesson as the only	Point 1 - the law states: "nothing in this section prohibits the board from adopting standards drafted by South Dakota educators and professionals which reference uniform content standards, provided that the board has conducted at least four public hearings in regard to those standards." Point 2, 3, and 5 - Concerns and Complaints against Common Core theory are irrelevant to these proposed standards because they are not

acceptable thinking style. This “Discovery” method deliberately ignores the accumulated knowledge of civilization. Instead it forces children to constantly “reinvent the wheel” and then to verbally justify their findings. This method is radically experimental. It is the wrong learning style for many children, particularly visual learners (many Native Americans), simultaneous learners and those with poor short-term memory function. It is neuro-developmentally inappropriate for young children. Young children need to absorb and learn their knowledge base from adult example and instruction. This knowledge, they will later be able to use, as young adults, for true critical thinking or logical reasoning. Common Core methodically slows and fragments the learned acquisition of Knowledge. Instead it makes children dependent on constantly changing computer information for Knowledge base. 4. The extreme over-emphasis on “collaboration” forces conformity or "groupthink” on children. Individualism is discouraged. Individuals are not allowed to excel except through the group. 5. The Common Core compliant texts and materials/media reveal a political agenda with a pervasive bias against Western civilization, American values, Judeo-Christian morality, national sovereignty, constitutional rights, private property, economic freedom (capitalism), etc. Propaganda replaces truth in Science, History and Economics. Common Core is designed to indoctrinate children into conformity and political activism in accordance with the global/socialist agenda. 6. How can you be so blind as to cooperate with this monstrosity? What is the harm in waiting?	Common Core Standards. Point 4 - Collaboration and communication is essential to how science is done. Individual work is supported by and contributes to collaboration. Point 6 - The workgroup is pleased with the teamwork and cooperation that the Science workgroup members showed in working to create and modify standards that are easily understood and relevant to educators.

Exhibit #24 – Catherine Billion – Other	
Comments	Workgroup Response
SD has handed over control of the education of its own children to an entity unknown to many SD citizens. "South Dakota Science Standards" is a MISNOMER. They are WORD FOR WORD, "Next Generation Science Standards” (NGSS), verbatim in every single state that adopted Common Core (and thus, "National Standards”… read them here, then compare them to SD DOE: http://www.nextgenscience.org/search-standards-dci). NGSS came directly out of the United Nations Educational, Scientific, and Cultural Organization's (UNESCO's) Agenda 21 Global "Decade of Education For Sustainable Development initiative: (read about it here: e.g. "Population Control" https://www.iisd.org/rio+5/agenda/chp05.htm "Management of Biotechnology" https://www.iisd.org/rio+5/agenda/chp16.htm "Making Decisions for Sustainable Development" https://www.iisd.org/rio+5/agenda/chp08.htm There is much Science content missing in SD's global "Next Generation Science Standards.” {Where is botany? Real chemistry?} They are fraught with problems. Many informational errors: (e.g. "Fifth Grade Earth and Space Science Conceptual Understanding: Stars range greatly in size and distance from Earth, and this can explain their relative brightness." {NO, IT CAN'T. What they are burning and how fast also explains brightness . So if this is basic for fifth graders, how come the authors don’t know it?}). Theories are dictated as fact: (e.g. "HS-LS4-1 Communicate scientific information that common ancestry and biological evolution are supported by	UNESCO was not involved in the South Dakota standards development process. UNESCO materials were not referenced in the process of adoption. The South Dakota Standards are not word for word Next Generation Science Standards. Fifth grade conceptual understanding is written at a level appropriate to the students at that age. Composition of stars is too advanced for that grade-level. In response to the comment about HS-LS4-1: The practice of scientific communication supports the

multiple lines of empirical evidence." {Presenting only one theory dampens all wonder and curiosity, which is integral to all Natural sciences}). Humans are noted as "animals" beginning at K level {what happened to human dignity? Teaching these subversive claims in the standards clearly demonstrates UNESCO's agenda to limit the earth's human population, while increasing animal species' populations... read this from UNESCO: http://habitat.igc.org/agenda21/ch-05.html }. PLEASE get educated on the private international organization (UNESCO) whose Global agenda (with its environmental propaganda) is controlling our SD (and U.S.) educators and the content which our most vulnerable people, our children, are learning at school. Thank you for the opportunity to post commentary.	evaluation of both strengths and weaknesses of evidence presented. Science examines all points of view that are based in scientific evidence. Scientific arguments are strengthened by multiple lines of evidence. Understanding the multiple lines of evidence is fundamental for further scientific study and important to future careers in many areas including biology, medicine, and agriculture. The remainder of comments are not about the science standards.
Exhibit #25 – Fran Ruesink – Educator	
Comments	Workgroup Response
Are the MS Science Standards (G6-8) going to be separated into sub groups as in previous standards? Example: G6: Physical Science Life Science,Earth Science Nature of Science,Science Technology G7: Life Science,Nature of Science,Science Technology G8: Physical Science,Earth Science,Nature of Science, Science Technology	Course pathways will be set in Spring/Summer of 2015. A workgroup of teachers, administrators, and instructional coaches will be convened to complete this work. The recommended pathways will be created as an appendix.
Exhibit #26 – Nancy Neff – Parent	
Comments	Workgroup Response
I would suggest a change in wording for MS-LS4-2--Apply scientific ideas to construct an explanation for similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. My suggestion would be to delete the final four words of this standard, or better yet, delete this standard	MS-LS4-2 - This standard is asking students to examine evidence and infer meaning based on scientific ideas. It is not designed to debate the theory of evolution. It is designed to allow students to examine a strong single line of evidence. This also provides a direct connection to HS-LS4-1. Removing the last four words changes this standard to only look at

altogether. There is value in examining fossils, but not in pushing students to draw conclusions that are just theories.	similarities and differences and does not allow the students to create an explanation regarding the line of evidence. Changing this standard also would affect the progression of learning from middle school to high school.

Exhibit #27 – Jill Stoebner	
Comments	Workgroup Response
I attended the recent School Board Meeting in Sioux Falls and want to echo the concerns addressed by Nicole Osmundson about the wording in several standards. One standard that was missed, however, is MS-LS4-2--Apply scientific ideas to construct an explanation for similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. This standard implies that evolution is a fact and that examining fossils proves that fact. Evolution is a theory and this standard pushes students to draw conclusions that support that theory. There does not appear to be room for alternatives. I appreciated the comments made by President Kierkegaard, at the Board meeting, regarding including additional wording referencing additional points of view and not exclusively related to evolution.	This comment asks for embedding an alternative. Standard MS-LS4-2 examines a single line of evidence. If an "alternative" or oppositional line of evidence is added, then the intent of this standard is changed. This standard is not about debating a theory, but is about students looking at a strong specific line of evidence. Science examines all points of view that are based in scientific evidence. Scientific arguments are strengthened by multiple lines of evidence. Understanding the multiple lines of evidence is fundamental for further scientific study and important to future careers in many areas including biology, medicine, and agriculture.