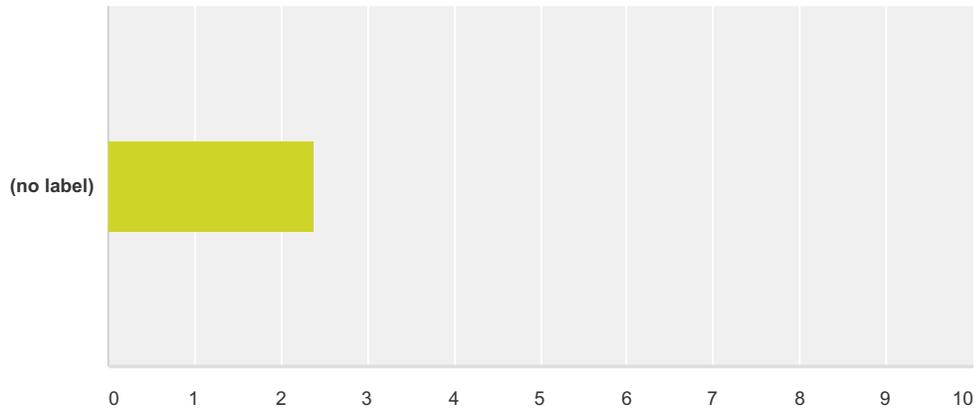


Q3 The standards in this strand are developmentally appropriate.

Answered: 29 Skipped: 190



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	31.03% 9	13.79% 4	41.38% 12	13.79% 4	29	2.38

#	Suggested revisions for standards:	Date
1	MS-PS1-1: middle school students should not be asked to model specific molecules such as ammonia or methanol. The water molecule and NaCl molecules are more appropriate. Understanding the basic structure of an atom and the parts of an atom and showing an understand of how atoms of different elements vary in size and ability to bond is enough at the middle school level. Drawing molecular structures should be assessed in high school.	12/2/2015 11:01 PM
2	I am commenting where I can. It has come to our attention that the Standards have not been assigned to grade levels and they need to be. OF BIGGER CONCERN, SCIENTIFIC INQUIRY HAS BEEN LEFT OUT ALTOGETHER. SCIENTIFIC INQUIRY IS THE BASIS FOR CONDUCTING ANY EXPERIMENT. IT IS INTRODUCED IN THE 6TH GRADE, HEAVILY TAUGHT IN THE 7TH GRADE, TAUGHT AGAIN IN THE 8TH GRADE, TESTED IN THE 8TH GRADE BY THE STATE OF MISSOURI, AND EXPECTED TO BE COMMON KNOWLEDGE IN THE 9TH GRADE. ALONG WITH SCIENTIFIC METHOD, STUDENTS ARE SUPPOSED TO BE ABLE TO ILLUSTRATE THEIR DATA ON A TABLE, A BAR GRADE, A LINE GRAPH, EXPLAIN VALIDITY, KNOW THE DIFFERENCE BETWEEN QUALITATIVE AND QUANTITATIVE DATA, AND MUCH MORE. THIS OVERSIGHT IN CURRICULUM IS VERY CONFUSING AND NEEDS TO BE ADDRESSED.	12/2/2015 2:09 PM
3	I don't think MS-PS1-3 is a standard that should be included.	12/2/2015 10:44 AM
4	I am a college educated Certified Public Accountant with 25 years experience owning and operating my own business. I also served on a school board for 12 years. There has not been enough time given to non educators to evaluate these standards. There has not been given enough information on content to evaluate the implementation of these standards either. This comment applies to every strand of every one of the curriculum standards.	12/1/2015 11:32 PM
5	Both MS-PS1-2 and MS-PS1-4 are too rigorous for a 6th grader. I've tried to write this each time but science teachers would like some guidelines in the state of Missouri that help us to form a pacing guide or an outline to what we teach when. Every school district does it differently.	12/1/2015 3:04 PM
6	MS-PS1-1 should not include extended structures such as sodium chloride and diamonds. This is not developmentally appropriate for this age group. In addition, this is extensively covered in high school chemistry and should not be assessed for mastery at the 6-8 level. Standards should reflect expectations for mastery.	12/1/2015 12:57 PM

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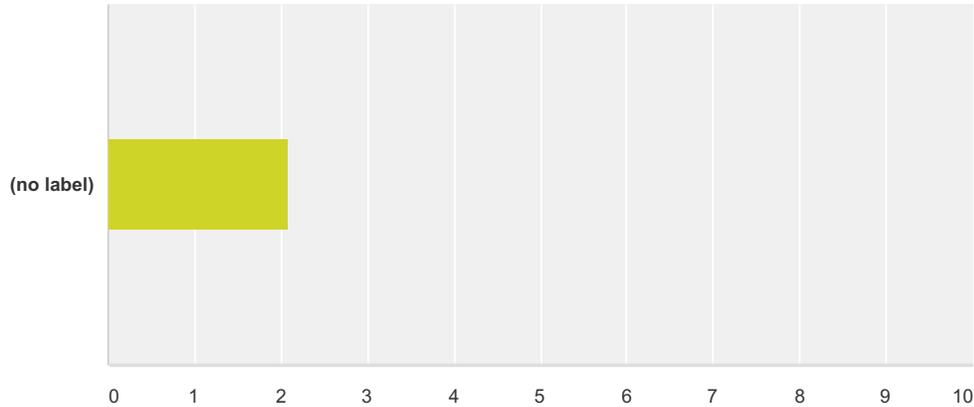
7	<p>I am a current sixth grade teacher, teaching science for the past 15 years. Looking over the proposed standards I feel very overwhelmed. First, compared to the GLE standards the proposed standards are not nearly specific enough. Half of my year's current GLEs are summed up in six standards. If these were the only standards that a new or inexperienced teacher were given, they would have a very difficult time knowing exactly what to teach. I think that a lot of the necessary background information that would be required to achieve the higher expectations the new standards expect are left out. I feel that the required background information and anything pertaining to the scientific method and variables is information that is necessary, but is missing from these standards, is it being assumed that we would just include this information on our own? I would include it in my plans for the year, but a new teacher would never know to do this. I feel this is potentially setting ourselves up for a lot of future gaps of knowledge. It is very confusing to follow as to where the "addressed elsewhere" standards are found; addressed elsewhere under a different strand or grade? It is not made clear. Looking at the sixth grade standards, I don't see where much content area has been removed, some is unclear if it is removed or not, but several units under physics have been added. I feel that in order for my students to understand what I am teaching, this is too much for sixth grade. Finally, pertaining to all the standards as a whole, the wording is not very student friendly. I post our class objectives daily on the board from the GLEs and we discuss them prior to our lesson. The students know exactly what they are required to know in this format. The wording of the new strands would be very overwhelming to them, example, "construct an argument supported by empirical evidence....." I feel they would shut down as soon as they saw this terminology.</p>	11/30/2015 11:52 AM
8	<p>The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.</p>	11/30/2015 10:15 AM
9	<p>MS PS 1 - 3 On this standard - emphasis is on natural resources that undergo a chemical process to create a synthetic material. Under DCI, "each pure substance has characteristic of physical and chemical properties used to identify the substance," so how does that statement apply to the standard above. I do not see how a space spin-off for technology relates to that standard. What does the asterisk mean on some of the standards at the end? Why do you not order the DCI , CCC and SEP within an ordered form, example PS 1-1 listed after PS 1-4 in the DCI section?</p>	11/24/2015 1:00 PM
10	<p>I have commented in the past about using the term "model". I find it way too vague and abstract for this grade level. The average student in rural areas I have taught in would think of the classic volcano if I use the term model. I am basing my opinion having taught 7-8 grade in several states for over a decade.</p>	11/24/2015 11:35 AM
11	<p>Middle school science standards are not given by grade level. I can only comment that the standards are inappropriate for my grade level as written. Currently, our sixth graders come to us with very little science background. Attempting these standards as written would be similar to attempting reading without ever having heard letter sounds. Broad standards few details.</p>	11/13/2015 1:38 PM
12	<p>In regard to all 6-8 standards, more details under each standard. Each standard is too vague need more details. "Addressed elsewhere" does not work.</p>	11/13/2015 11:03 AM
13	<p>My comments will be in regards to all six to 8 standards: *Need more details under each standard! Each standard is too vague and needs more details *Like that standards are more "reader friendly" **"Addressed elsewhere" does not work *IF the intention is that all Life Sciences will be taught at one grade level, that is an excellent idea!</p>	11/13/2015 10:57 AM
14	<p>In regards to all 6-8 standards, we need more details under each individual standard; they are too vague. Provide rubrics, scoring guides, checklists, components, etc. "Addressed elsewhere" does not work; tell me where. If the intention is that all Life Science will be taught at one grade level, that is an excellent idea!!!</p>	11/13/2015 10:53 AM
15	<p>To understand how to navigate the new standards proposed to the state of Missouri it is important to recognize the work group's intention of providing local control to the districts. The standards are broken down into foundational umbrellas, which are to be distributed into courses and grade levels for, high school and middle school respectively, by the local school districts. This poses a need for DESE to recognize a reformation in how to assess the students' knowledge of the standards. Not every school district teaches Earth and Space Science or Physical Science. Thus, if DESE wants to adopt these standards, clear expectations of how EOCs are to be created for specific courses and which standards are required for those courses will need to be made available to school districts and the public.</p>	11/13/2015 10:40 AM
16	<p>Where are the concepts for each grade level specified in each field? Is there an appendix explaining what MS and HS stand for? MSPS1-3 Synthetic materials are not necessarily made from natural products and many synthetic materials are an exact copy of the natural product, with the only exception that they are made in a lab (or just by humans) as opposed to in nature. I guess, the only corrections that needs to be made is the understanding of "synthetic", which means made in a lab or other means except by natural processes. A synthetic material can look exactly like a natural product in structure and properties (many medicines). MSPS1-6 There are more kinds of energy (not only thermal) that are applicable to chemistry and physical science (thermal, phase, chemical) and there are ways to transfer energy (heating, through waves, etc.). For one energy to be transformed in another kind of energy it does not necessarily imply a chemical change/process. Be careful how you use the terminology of a chemical process (does it mean change?)</p>	11/12/2015 1:46 PM

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17	Standard is developmentally appropriate, BUT there needs to be a scope and sequence to suggest when this should be taught.	11/9/2015 4:28 PM
18	The strands are too vague and therefore we are not able to determine developmental appropriateness.	11/4/2015 1:10 PM
19	Keep proposed standards as is for this strand. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students.	10/31/2015 4:23 PM
20	HS-PS1-6 and HS-PS1-7: The concept of equilibrium requires many subtopics not listed as standards (molarity, rate law, kinetics, Keq, Le Chatliers, etc.) to fully cover this standard. Many of these subtopics have no real life application and are unnecessary to teach in order for a student to be college and career ready. Either get rid of this standard or clarify better what should be taught. HS-PS4-2 and HS-PS4-1: Students in high school are just developing their abstract reasoning skills. Describing energy and matter as both a particle and having wavelength is a concept my college chemistry students can barely grasp. General chemistry students probably do not have the abstract ability to understand this.	10/29/2015 1:15 PM

Q4 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 24 Skipped: 195



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	41.67% 10	20.83% 5	25.00% 6	12.50% 3	24	2.08

#	Suggested revisions for standards:	Date
1	The standards do follow a coherent path IF you are a science major and understand the high level language presented in the standards written for middle school.	12/2/2015 11:01 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:15 AM
3	I have serious concerns about state assessment expectations. The emphasis on labs and the suggestions for assessment are helpful. Examples of how these will be assessed by the state would go a long way toward acceptance.	11/13/2015 1:38 PM
4	Sequence or development of the standards across the middle school grades is unclear. What 8th graders can comprehend and how they perform is different than 6th graders. Specific grade levels need to be determined and identified in the standards.	11/13/2015 10:56 AM
5	To understand how to navigate the new standards proposed to the state of Missouri it is important to recognize the work group's intention of providing local control to the districts. The standards are broken down into foundational umbrellas, which are to be distributed into courses and grade levels for, high school and middle school respectively, by the local school districts. This poses a need for DESE to recognize a reformation in how to assess the students' knowledge of the standards. Not every school district teaches Earth and Space Science or Physical Science. Thus, if DESE wants to adopt these standards, clear expectations of how EOCs are to be created for specific courses and which standards are required for those courses will need to be made available to school districts and the public.	11/13/2015 10:40 AM
6	As a Chemistry teacher I am having trouble understanding which standards apply to the Chemistry subject and how the concepts above are built gradually by grades.	11/12/2015 1:46 PM
7	The standard needs more detail, the old GLE's were very specific as to what needed to be taught - with a substandard break down. This would be very difficult for a first year teacher in the subject level to know how much time to dedicate on the topic.	11/9/2015 4:28 PM

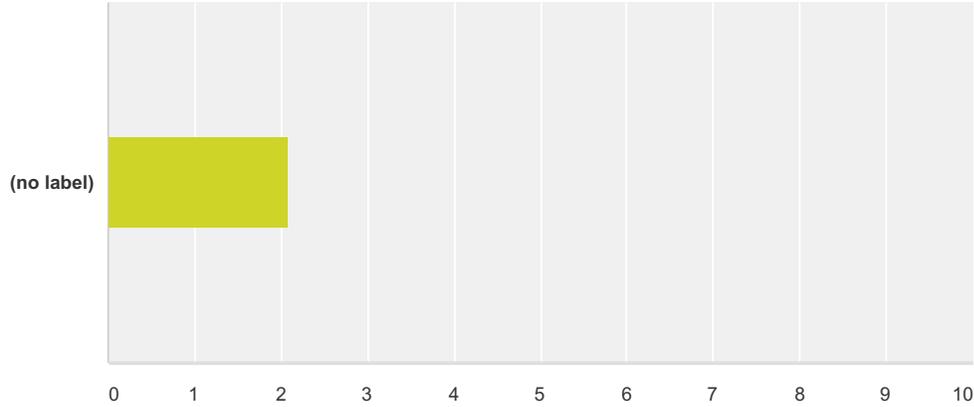
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8	There is not a coherent path to follow for grade levels.	11/4/2015 1:10 PM
9	Need to be organized!	11/4/2015 1:06 PM
10	Keep proposed standards as is for this strand. They are based upon years of research and learning progressions for how students best learn and understand science.	10/31/2015 4:23 PM
11	HS-PS1-5: You cannot teach bond energy without mentioning endothermic and exothermic. There needs to be a strand dedicated to endo/exothermic in order to adequately teach bond energy. There is no strand about properties of gases and ideal gases. These are very important concepts for life and college. Students will not be college and career ready without touching on these subjects. HS-PS1-3: This strand mentions melting point and boiling point, but many students do know at an in depth level the concepts of melting, boiling, freezing, condensation, sublimation, and evaporation. There needs to be a strand or an addition to the strand for phase changes.	10/29/2015 1:15 PM

MS-PS1 Matter and its Interactions (6-8)

Q5 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 23 Skipped: 196



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	47.83% 11	8.70% 2	30.43% 7	13.04% 3	23	2.09

#	Suggested revisions for standards:	Date
1	Make shorter lists of exact learner expectations and keep the terminology in the standards at an appropriate level for middle school students.	12/2/2015 11:01 PM
2	Some standards are too rigorous for this grade level. See other comments.	12/1/2015 12:57 PM
3	Pertaining to all the standards as a whole, the wording is not very student friendly. I post our class objectives daily on the board from the GLEs and we discuss them prior to our lesson. The students know exactly what they are required to know in this format. The wording of the new strands would be very overwhelming to them, example, "construct an argument supported by empirical evidence....." I feel they would shut down as soon as they saw this terminology.	11/30/2015 11:52 AM
4	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:15 AM
5	Very rigorous and difficult to assess.	11/13/2015 1:38 PM
6	To understand how to navigate the new standards proposed to the state of Missouri it is important to recognize the work group's intention of providing local control to the districts. The standards are broken down into foundational umbrellas, which are to be distributed into courses and grade levels for, high school and middle school respectively, by the local school districts. This poses a need for DESE to recognize a reformation in how to assess the students' knowledge of the standards. Not every school district teaches Earth and Space Science or Physical Science. Thus, if DESE wants to adopt these standards, clear expectations of how EOCs are to be created for specific courses and which standards are required for those courses will need to be made available to school districts and the public.	11/13/2015 10:40 AM
7	Again the grade levels are not specified and the transitions are not clear at all.	11/12/2015 1:46 PM
8	This standard needs more detail, specifically what DOK the standard (and the substandards that need to be identified) should be covered.	11/9/2015 4:28 PM
9	Strand is too general to ensure a rigorous path.	11/4/2015 1:10 PM

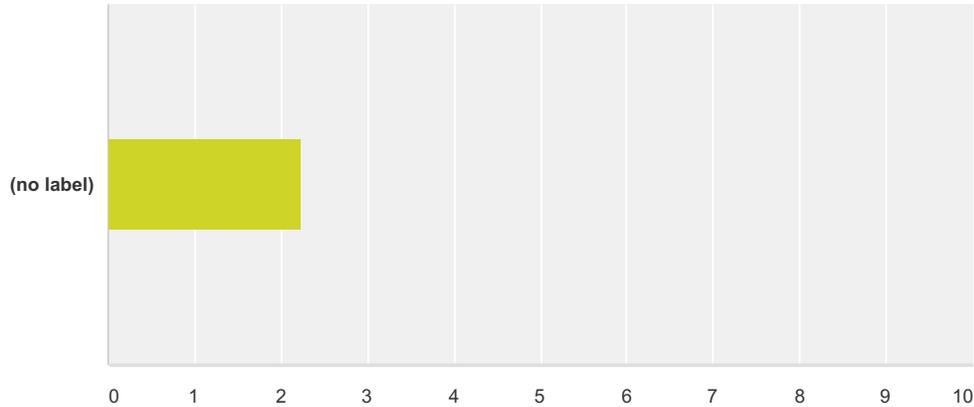
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10	Not in an understandable way!	11/4/2015 1:06 PM
11	Keep proposed standards as is for this strand. By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	10/31/2015 4:23 PM

MS-PS1 Matter and its Interactions (6-8)

Q6 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 21 Skipped: 198



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	42.86% 9	9.52% 2	28.57% 6	19.05% 4	21	2.24

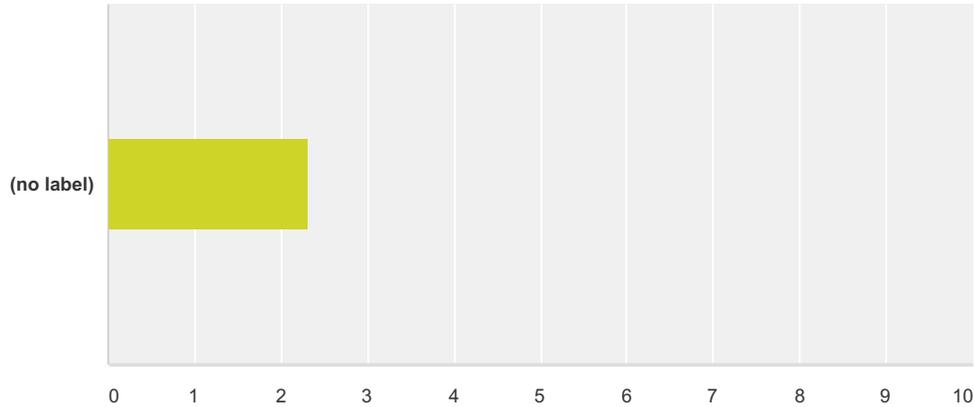
#	Suggested revisions for standards:	Date
1	Standards often have lofty wording which can be vague or interpreted differently depending on the teacher/school. I prefer more specific learning standards so I know exactly what MO expects me to teach and exactly what my students will be expected to know by the end of middle school. I also like the way the math standards are written; bullet points seem rather ridiculous. For instance, PS1.A, 3rd bullet point down and 5th bullet point down... that is hard to talk about in a collaboration or to tag onto lesson plans and teacher made assessments. Make the format more user friendly (like math's format.) And break it up into what you expect 6th gr, 7th gr and 8th gr to teach. Each school district will be teaching different things and if a student changes schools, there will be huge gaps in their science education.	12/2/2015 11:01 PM
2	MS- PS1-6 cannot be assessed in an online testing format with the assurance that the students incorrect answers are directly caused by an inadequate knowledge of this strand.	12/1/2015 12:57 PM
3	I would like to see examples of how to assess some of the standards without assessing the background information that is left out of the standards.	11/30/2015 11:52 AM
4	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:15 AM
5	Assessing as written would be a nightmare.	11/24/2015 11:35 AM
6	can these standards be assessed on state assessments when models cannot be built as part of the assessment?	11/13/2015 10:56 AM
7	To understand how to navigate the new standards proposed to the state of Missouri it is important to recognize the work group's intention of providing local control to the districts. The standards are broken down into foundational umbrellas, which are to be distributed into courses and grade levels for, high school and middle school respectively, by the local school districts. This poses a need for DESE to recognize a reformation in how to assess the students' knowledge of the standards. Not every school district teaches Earth and Space Science or Physical Science. Thus, if DESE wants to adopt these standards, clear expectations of how EOCs are to be created for specific courses and which standards are required for those courses will need to be made available to school districts and the public.	11/13/2015 10:40 AM

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8	Without substandards to be addressed, it is impossible to know what should be addressed and how to assess these standards in the classroom and/or on a state assessment.	11/9/2015 4:28 PM
9	Many of these would be difficult to assess on a state assessment, online or paper pencil.	11/6/2015 8:59 AM
10	The standards can be assessed but it would depend on how the path was mapped out for the instructor per grade level .	11/4/2015 1:10 PM
11	Keep proposed standards as is for this strand. All the standards can be assessed and science should be assessed in this way.	10/31/2015 4:23 PM
12	All concepts can be assessed either in the classroom OR on a state assessment. There is no way to test lab skills on a state assessment. That is something that can only be observed in the classroom.	10/29/2015 1:15 PM

Q7 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	40.91% 9	4.55% 1	36.36% 8	18.18% 4	22	2.32

#	Suggested revisions for standards:	Date
1	Parents can NOT understand these standards as written. Some middle school science teachers cannot even understand the wording of the standards because many are not science majors. The wording sounds too lofty (as if someone is trying to impress the reader with fancy language but the wording is really ambiguous.) Students are definitely stakeholders, and these standards would have to be completely rewritten for an 11,12,13, or 14 year old to come close to knowing the learning target. Examples: "inert atoms" "extended structures with repeating subunits" "proportional to the avergae internal energy..." MUCH too wordy. We are capable of teaching science and problem solving skills without wading through such difficuly language in a learning standard.	12/2/2015 11:01 PM
2	What is meant by "inert" atoms? Clarification required. Standards (as written) seem to be written for teaching that would occur in a higher education institute.	12/1/2015 12:57 PM
3	Teachers will need to have PD in understanding how to read the NGSS. This is true for all strands stated.	12/1/2015 9:31 AM
4	compared to the GLE standards the proposed standards are not nearly specific enough. Half of my year's current GLEs are summed up in six standards. If these were the only standards that a new or inexperienced teacher were given, they would have a very difficult time knowing exactly what to teach. I think that a lot of the necessary background information that would be required to achieve the higher expectations the new standards expect are left out. Pertaining to all the standards as a whole, the wording is not very student friendly. I post our class objectives daily on the board from the GLEs and we discuss them prior to our lesson. The students know exactly what they are required to know in this format. The wording of the new strands would be very overwhelming to them, example, "construct an argument supported by empirical evidence....." I feel they would shut down as soon as they saw this terminology.	11/30/2015 11:52 AM
5	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:15 AM
6	Standards would be acceptable with more details and vocabulary expectations.	11/13/2015 1:38 PM

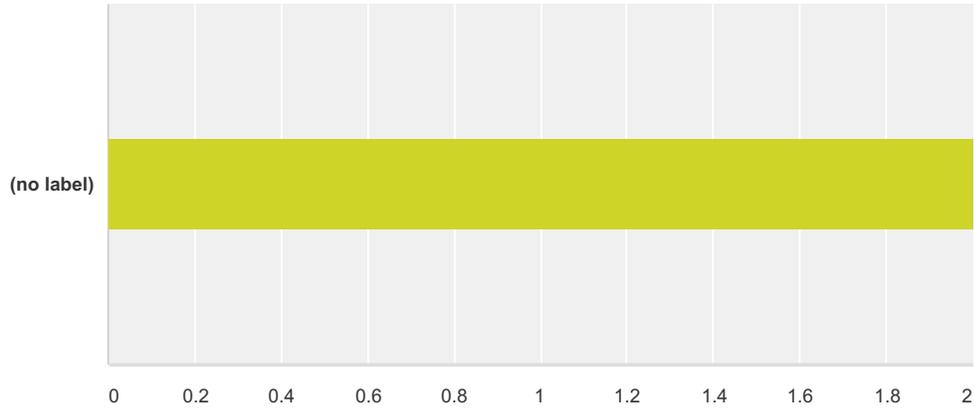
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7	These standards are more tedious to read, interpret and comprehend.	11/13/2015 10:56 AM
8	To understand how to navigate the new standards proposed to the state of Missouri it is important to recognize the work group's intention of providing local control to the districts. The standards are broken down into foundational umbrellas, which are to be distributed into courses and grade levels for, high school and middle school respectively, by the local school districts. This poses a need for DESE to recognize a reformation in how to assess the students' knowledge of the standards. Not every school district teaches Earth and Space Science or Physical Science. Thus, if DESE wants to adopt these standards, clear expectations of how EOCs are to be created for specific courses and which standards are required for those courses will need to be made available to school districts and the public.	11/13/2015 10:40 AM
9	This standard needs more detail, especially the substandards that need to be taught and assessed and the DOK to which it needs to be addressed.	11/9/2015 4:28 PM
10	The standards need objectives written to correspond to the standards. (Unpacked)	11/6/2015 8:59 AM
11	NO!!! Not sure i could explain everything that the strand would encompass to fellow colleagues!	11/4/2015 1:10 PM
12	No. They are vague and there is too much edubabble for parents to understand.	11/4/2015 1:06 PM
13	Keep proposed standards as is for this strand. These standards show key connections and make the practice of science evidence to all stakeholders. The crosscutting concepts also make the standards understandable to all. By making connections to concepts like "cause and effect," everyone can see the links between what students are learning and how they can transfer that knowledge to other courses and experiences.	10/31/2015 4:23 PM
14	Many standards are very time consuming to teach (ex: HS-PS1-8) where I have to teach the concept of a mole, balancing equations, writing equations, and stoichiometry in order to teach it adequately. This is hard to explain to students and administrators asking why I am spending a month on one topic. Maybe break down the standards or have substandards to make it easier for them to understand.	10/29/2015 1:15 PM

MS-PS1 Matter and its Interactions (6-8)

Q8 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 20 Skipped: 199



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	45.00% 9	15.00% 3	35.00% 7	5.00% 1	20	2.00

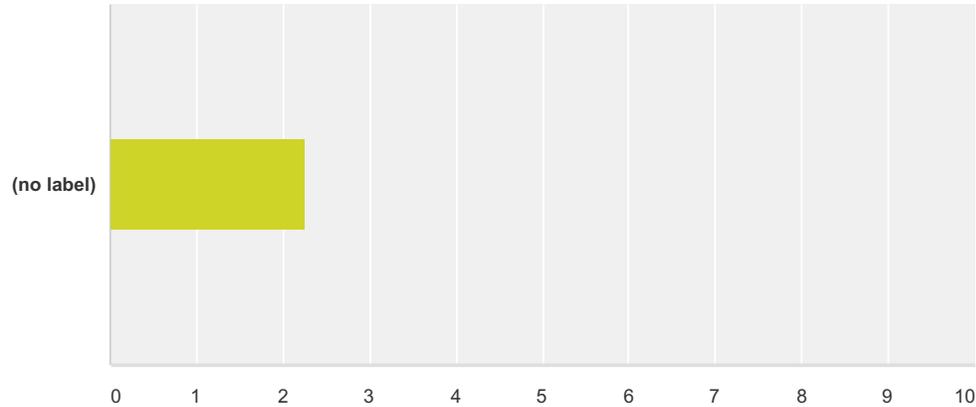
#	Suggested revisions for standards:	Date
1	If we move to year -round teaching in MO, I might have time to actually teach all of this to my students. Currently, too many high school science concepts are written into the middle school standards.	12/2/2015 11:01 PM
2	Standards for this grade level include content that is necessary to reach college and/or career readiness but is at an inappropriate grade level for this age group's cognitive development.	12/1/2015 12:57 PM
3	Engineering standards need to be added; this is true for all grade bands and strands.	12/1/2015 9:31 AM
4	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:15 AM
5	With edits.	11/13/2015 1:38 PM
6	To understand how to navigate the new standards proposed to the state of Missouri it is important to recognize the work group's intention of providing local control to the districts. The standards are broken down into foundational umbrellas, which are to be distributed into courses and grade levels for, high school and middle school respectively, by the local school districts. This poses a need for DESE to recognize a reformation in how to assess the students' knowledge of the standards. Not every school district teaches Earth and Space Science or Physical Science. Thus, if DESE wants to adopt these standards, clear expectations of how EOCs are to be created for specific courses and which standards are required for those courses will need to be made available to school districts and the public.	11/13/2015 10:40 AM
7	There is no detail about how to prepare students for college and career readiness in this standard.	11/9/2015 4:28 PM
8	Keep proposed standards as is for this strand. This new format for the standards mirrors the college and career readiness benchmarks for ACT and for advanced placement sciences, all of which are a way we measure college and career readiness.	10/31/2015 4:23 PM

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9	HS-PS1-6 and HS-PS1-7: The concept of equilibrium requires many subtopics not listed as standards (molarity, rate law, kinetics, Keq, Le Chatliers, etc.) to fully cover this standard. Many of these subtopics have no real life application and are unnecessary to teach in order for a student to be college and career ready. Either get rid of this standard or clarify better what should be taught.	10/29/2015 1:15 PM
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MS-PS1 Matter and its Interactions (6-8) **Q9 The standards in this strand are accurate and encompass the breadth of the content.**

Answered: 24 Skipped: 195



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	41.67% 10	16.67% 4	16.67% 4	25.00% 6	24	2.25

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:15 AM
2	Broad standards, few details.	11/13/2015 1:38 PM
3	To understand how to navigate the new standards proposed to the state of Missouri it is important to recognize the work group's intention of providing local control to the districts. The standards are broken down into foundational umbrellas, which are to be distributed into courses and grade levels for, high school and middle school respectively, by the local school districts. This poses a need for DESE to recognize a reformation in how to assess the students' knowledge of the standards. Not every school district teaches Earth and Space Science or Physical Science. Thus, if DESE wants to adopt these standards, clear expectations of how EOCs are to be created for specific courses and which standards are required for those courses will need to be made available to school districts and the public.	11/13/2015 10:40 AM
4	The standard needs more detail, the old GLE's were very specific as to what needed to be taught - with a substandard break down. This would be very difficult for a first year teacher in the subject level to know how much time to dedicate on the topic.	11/9/2015 4:28 PM
5	Not sure due to the vagueness of the written standard.	11/4/2015 1:10 PM
6	Keep proposed standards as is for this strand. Science is constantly changing. These proposed standards contain the content necessary for students to be scientifically literate but also provided the needed upgrade based upon advancements that have occurred in science since the last standards were adopted. They also include the format that research shows is best in terms of helping students to learn and understand science.	10/31/2015 4:23 PM
7	There is nothing about phase changes, gases, states of matter, or thermochemistry (besides bond energy). Bond energy is just randomly thrown in there and there is no correlation or cohesion with that standard with anything else.	10/29/2015 1:15 PM

Q10 Overall comments regarding the proposed standards for Matter and Its Interactions (MS-PS1):

Answered: 18 Skipped: 201

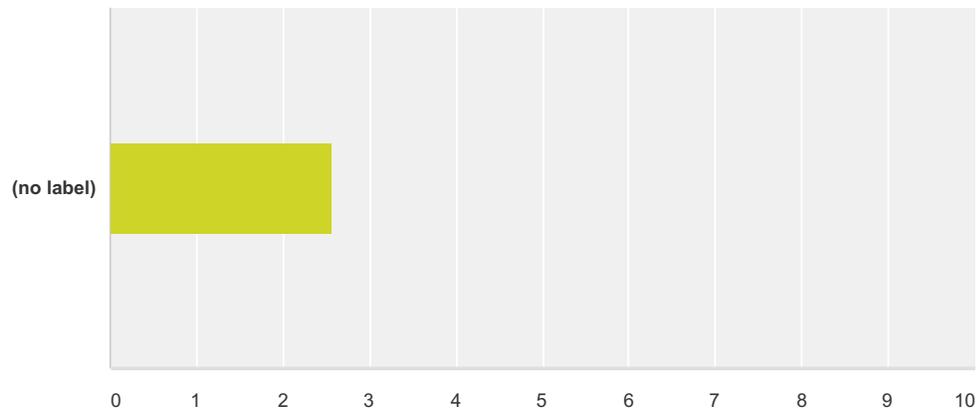
#	Responses	Date
1	Standards often have lofty wording which can be vague or interpreted differently depending on the teacher/school. I prefer more specific learning standards so I know exactly what MO expects me to teach and exactly what my students will be expected to know by the end of middle school. I also like the way the math standards are written; bullet points seem rather ridiculous. For instance, PS1.A, 3rd bullet point down and 5th bullet point down... that is hard to talk about in a collaboration or to tag onto lesson plans and teacher made assessments. Make the format more user friendly (like math's format.) And break it up into what you expect 6th gr, 7th gr and 8th gr to teach. Each school district will be teaching different things and if a student changes schools, there will be huge gaps in their science education.	12/2/2015 11:01 PM
2	Wonderful...I think the new standards as written are a big jump from what we currently have. I also appreciate that while we stay current with what is going on nation wide we made sure to make our standards our own. The writers of the secondary standards did an incredible job and should be congratulated. I would suggest that instead of creating so many tests with every discipline having a different exam, the state takes a look at a comprehensive exam which includes all of the main groups of classes being tested (like the ACT). It would be less expensive, less time consuming and reflects what goes on in the 'real world'. This comprehensive test could be taken at different grade levels and would inspire more cohesion among academics. We could also ensure that our students are more prepared for the ACT (now a requirement). Great Job!!	12/2/2015 1:51 PM
3	These opinions are from two sixth grade science teachers.	12/1/2015 3:04 PM
4	There is no mention of ENGINEERING in any of the grade levels K-12; if we are to prepare our students for STEM and being able to compete with other states/countries, it is vital that we embed engineering into our standards.	12/1/2015 9:31 AM
5	I know the workgroups came together to just work on their specific grade levels/subjects, but did ALL of the subjects come together for one grade level to see the load that was added to the school year? Did the workgroups take into consideration that the teachers have been writing curriculum to the current standards and they will VERY QUICKLY have to update/revise the curriculum to the new standards? Most schools just purchased new books/materials to match the current standards and that was thousands of dollars that they may not be able to use anymore. Missouri needs some consistency in education, and I think we are headed there - but in the meantime, there are frustrated teachers, administrators, and parents who are tired of going back and forth, changing, adding, updating... I appreciate the time each work group put into developing our new standards - I know it took a lot of your time and effort. I hope that you all read and evaluate every comment that is presented during this comment period to make our standards the best they can be.	11/30/2015 1:33 PM
6	I am a current sixth grade teacher, teaching science for the past 15 years. Looking over the proposed standards I feel very overwhelmed. First, compared to the GLE standards the proposed standards are not nearly specific enough. Half of my year's current GLEs are summed up in six standards. If these were the only standards that a new or inexperienced teacher were given, they would have a very difficult time knowing exactly what to teach. I think that a lot of the necessary background information that would be required to achieve the higher expectations the new standards expect are left out. I feel that the required background information and anything pertaining to the scientific method and variables is information that is necessary, but is missing from these standards, is it being assumed that we would just include this information on our own? I would include it in my plans for the year, but a new teacher would never know to do this. I feel this is potentially setting ourselves up for a lot of future gaps of knowledge. It is very confusing to follow as to where the "addressed elsewhere" standards are found; addressed elsewhere under a different strand or grade? It is not made clear. Looking at the sixth grade standards, I don't see where much content area has been removed, some is unclear if it is removed or not, but several units under physics have been added. I feel that in order for my students to understand what I am teaching, this is too much for sixth grade. Finally, pertaining to all the standards as a whole, the wording is not very student friendly. I post our class objectives daily on the board from the GLEs and we discuss them prior to our lesson. The students know exactly what they are required to know in this format. The wording of the new strands would be very overwhelming to them, example, "construct an argument supported by empirical evidence....." I feel they would shut down as soon as they saw this terminology. I feel the addition to the sixth grade curriculum without having other standards removed is too overwhelming. MS-PS4-2 is unclear if all the standards underneath are not addressed anymore.	11/30/2015 11:52 AM

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7	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 11:00 AM
8	These standards should be adopted as they are written.	11/27/2015 9:06 PM
9	The standards require clarity. Give teachers more information concerning each standard (I.E. K-5 standards include a story line for each section). Provide detailed examples of suggested models and devices.	11/20/2015 3:17 PM
10	As an 8th grade Science educator I feel like these standards are written at a much higher level than junior high students typically are in real life. They do not seem to be written in the language that teachers would use, such as inert.	11/16/2015 10:35 AM
11	meh	11/13/2015 1:38 PM
12	Standards need to be assigned to a specific grade level. Each school district should be responsible for obtaining the necessary scientific equipment needed to perform all tasks.	11/13/2015 11:08 AM
13	The science standards compared to other subject areas appear to need more work in assigning standards to specific grade levels. The standards encompass too much skill and performance. These appear to be an exact copy of New Generation Science Standards without grade specific assignments.	11/13/2015 10:56 AM
14	To understand how to navigate the new standards proposed to the state of Missouri it is important to recognize the work group's intention of providing local control to the districts. The standards are broken down into foundational umbrellas, which are to be distributed into courses and grade levels for, high school and middle school respectively, by the local school districts. This poses a need for DESE to recognize a reformation in how to assess the students' knowledge of the standards. Not every school district teaches Earth and Space Science or Physical Science. Thus, if DESE wants to adopt these standards, clear expectations of how EOCs are to be created for specific courses and which standards are required for those courses will need to be made available to school districts and the public.	11/13/2015 10:40 AM
15	Please take into consideration the format that the K-5 Science committee used. They were very specific in which grade should teach certain standards. Grades 6-12 is a large span. It would help if there were suggested standards listed for all grade levels or courses. If I were to give the Biology EOC test, I will not have a set of standards to follow for that specific course. ALOT of time will be taken by our teachers to determine which standards are taught at certain grade levels or in certain courses. Improving this will help several districts.	11/6/2015 1:51 PM
16	This is a general comment on the science standards that are being proposed, not just this particular strand. So far I have read through the middle school physical science standards, and they look an awful lot like the Next Generation Science Standards. In fact, some of them are copied word for word. It would be worth looking into whether or not the state would be violating any copyright laws that they NGSS could have associated with them.	11/5/2015 1:43 PM
17	Keep as proposed. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	10/31/2015 4:23 PM
18	There is nothing about phase changes, gases, states of matter, or thermochemistry (besides bond energy). Bond energy is just randomly thrown in there and there is no correlation or cohesion with that standard with anything else. Most standards are very vague. Is this on purpose?	10/29/2015 1:15 PM

Q12 The standards in this strand are developmentally appropriate.

Answered: 25 Skipped: 194



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	20.00% 5	16.00% 4	52.00% 13	12.00% 3	25	2.56

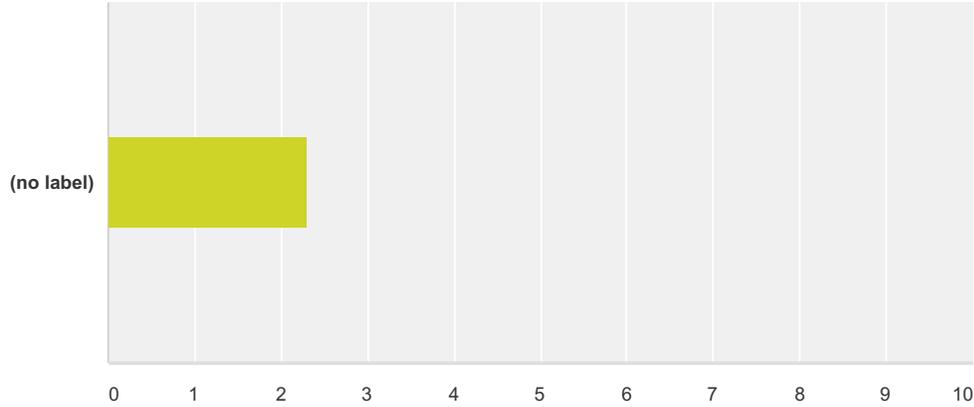
#	Suggested revisions for standards:	Date
1	"investigations within the scope of the classroom, outdoor environment, and museums and other public facilities with available resources" Have you seen public school budgets? What does this even mean??? ... teach what you possibly can where and when you possibly can? This wording is totally inappropriate. "arbitrarily" ??? Really poor choice of wording in a science standard where we teach students not to trust whims, assumptions, nor erratic change. Give clear expectations for exact learner outcomes. Wording is too ambiguous and cannot be judged according to developmentally appropriate.	12/2/2015 9:55 PM
2	PS2.A Disciplinary Core Ideas- third bullet point, the word arbitrarily needs to be omitted, junior high students are still fairly concrete, we have to define the reference point for them, doesn't need to arbitrary in the standard.	12/1/2015 6:57 PM
3	ps2-3 If you are teaching this strand in 6th grade most math students will not know how to write proportions and most will not know how to do algebraic expressions. Most of these standards I feel are not developmentally appropriate. I feel as if they are more 9th grade /10th grade level. When finishing these standards I hope they will be more specific.	12/1/2015 3:55 PM
4	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:16 AM
5	MS PS 2 -1 Which physics principles specifically apply to help in the solution design for a collision force reduction?	11/24/2015 12:57 PM
6	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:15 AM
7	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:22 AM

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8	Yes, but the current version is less rigorous. Too specific	11/11/2015 5:11 PM
9	Standard is developmentally appropriate, BUT there needs to be a scope and sequence to suggest when this should be taught.	11/9/2015 4:32 PM
10	MS-PS2-4 Understand concept not sure how that translates into graph with so many different variables.	11/9/2015 4:26 PM
11	MS-PS2-4 Not clear about what is should be on the graph. Is this going to be a two variable graph or using 2 different graphs. In the clarification the standard does not use the word graph but chart instead this makes more sense.	11/9/2015 4:22 PM
12	Reading through standard MS-PS2-1 it says that Students will be able to apply physics principles to design a solution...What? Middle students don't know what physics is, they learn about forces and motion, but why introduce the term physics at this point. This standard needs much clarification and several examples.	11/6/2015 9:28 AM
13	The proposed standards are research-based and are developmentally appropriate.	10/31/2015 6:01 PM

Q13 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 24 Skipped: 195

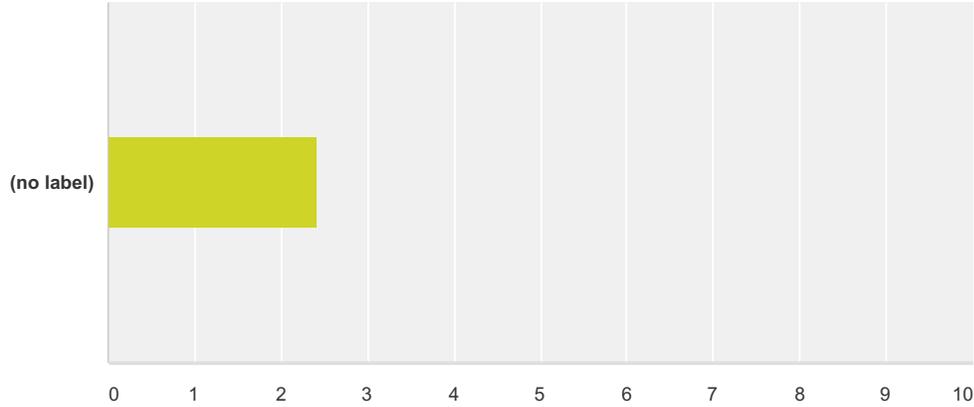


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	33.33% 8	16.67% 4	37.50% 9	12.50% 3	24	2.29

#	Suggested revisions for standards:	Date
1	Designate what will be taught in 6th, 7th and 8th grade. Do NOT let individual teachers/schools/districts decide how to break these standards up among grade levels. There will be gaps in the education of students that move to a new school. Write standards more like the math standards are written... concise and straight to the point of the expected learner outcome.	12/2/2015 9:55 PM
2	In our school we do not teach a life science, physical science, or earth science class. We teach by the suggested Missouri Learning Standards. Seems to me like they are pushing for this to go away and teach a specific content. I feel like these standards are really choppy if a school doesn't decide to do that.	12/1/2015 3:55 PM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:16 AM
4	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:15 AM
5	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:22 AM
6	The standard needs more detail, the old GLE's were very specific as to what needed to be taught - with a substandard break down. This would be very difficult for a first year teacher in the subject level to know how much time to dedicate on the topic.	11/9/2015 4:32 PM
7	The proposed standards demonstrate coherence and are based upon learning progressions.	10/31/2015 6:01 PM

Q14 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 24 Skipped: 195



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	29.17% 7	12.50% 3	45.83% 11	12.50% 3	24	2.42

#	Suggested revisions for standards:	Date
1	"investigations within the scope of the classroom, outdoor environment, and museums and other public facilities with available resources" Have you seen public school budgets? What does this even mean??? ... teach what you possibly can where and when you possibly can? This wording is totally inappropriate. "arbitrarily" ??? Really poor choice of wording in a science standard where we teach students not to trust whims, assumptions, nor erratic change. Give clear expectations for exact learner outcomes. Standards are rigorous but completely ambiguous to the reader of the standards. The written standards can be interpreted many different ways.	12/2/2015 9:55 PM
2	I feel like this is a very rigorous path, I would feel overwhelmed as teacher trying to get kids to understand when their brains can not comprehend what you are teaching them. They sound like they are written for a gifted program.	12/1/2015 3:55 PM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:16 AM
4	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:15 AM
5	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:22 AM
6	This version is too specific and is less rigorous than expected in the Science Frameworks.	11/11/2015 5:11 PM

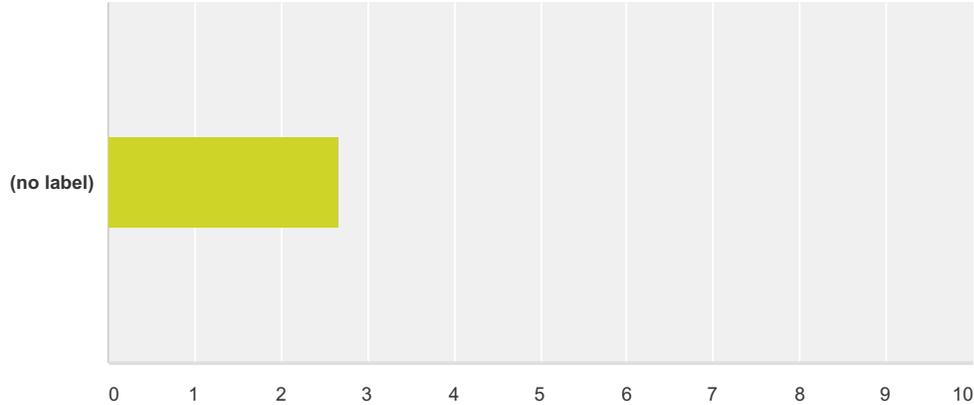
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7	The standard MS-PS2-4 is written as: Create and analyze a graph to use as evidence to support the claim that gravitational interactions depend on the mass of interacting objects. In NGSS MS-PS2-4 is written as: Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. I feel that this is lowering the bar for students. It limits assessment of the standard to just analyzing a graph.	11/11/2015 4:25 PM
8	This standard needs more detail, specifically what DOK the standard (and the substandards that need to be identified) should be covered.	11/9/2015 4:32 PM
9	The depth of knowledge these standards promote will provide rigor based upon complexity driven by the much needed incorporation of the practices of science with the content.	10/31/2015 6:01 PM

MS-PS2 Motion and Stability: Forces and Interactions (6-8)

Q15 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 25 Skipped: 194



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	20.00% 5	16.00% 4	40.00% 10	24.00% 6	25	2.68

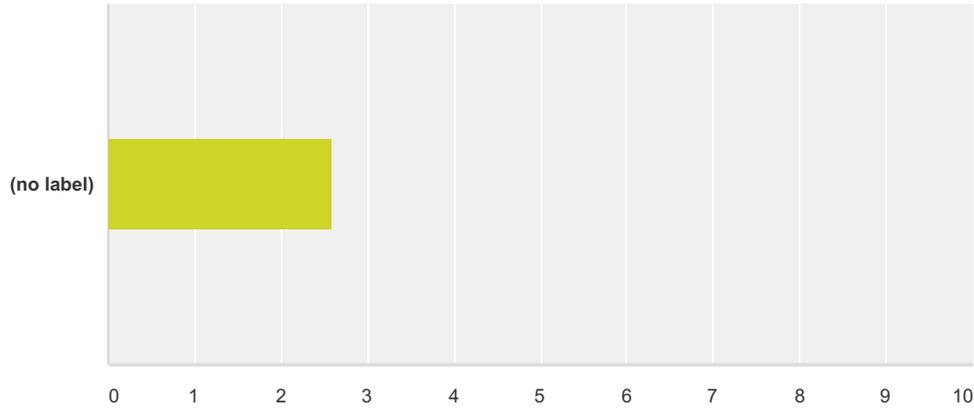
#	Suggested revisions for standards:	Date
1	Wording needs to be more specific (like math's standards)	12/2/2015 9:55 PM
2	Under this standard the majority of the words are "plan, conduct, create, collect data" I do not see how this will be testable on a state assessment. Students cannot be taking a 5 or 6 hour or longer science test to conduct multiple investigations.	12/1/2015 6:57 PM
3	A dynamic testing format would be needed to test MS-PS2-5 in an online format. The assessment boundary does not align nor does it carry the same rigor as the standard.	12/1/2015 4:05 PM
4	When one of them says can be investigated in an outdoor environment, and museums, and other public facilities how would you assess that?? "The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that is likely to limit possible solutions. What does that even mean???? How would you assess that??	12/1/2015 3:55 PM
5	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:16 AM
6	So students will be developing models on state assessment (I seriously doubt that will happen), describe what type of model do you want students to build? mathematical, draw, 3D?	11/13/2015 11:15 AM
7	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:22 AM
8	Without substandards to be addressed, it is impossible to know what should be addressed and how to assess these standards in the classroom and/or on a state assessment.	11/9/2015 4:32 PM

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9	MS-SPS-2 Concerned about how the state will assess application of these concepts. These can be assessed in the classroom, not sure how they will be able to do this on a computerized assessment.	11/9/2015 4:26 PM
10	Edits to improve would be to give more examples or ideas for assessment. (I understand that these can be found in the practices too, but the more the better I think)	11/6/2015 9:28 AM
11	Some of the practices could be slightly modified to provide more flexibility with assessments. For example, at the state assessment level, students could simply be expected to "Plan" an experiment versus "Plan and conduct" at the local level (MS-PS2-2). Another example would be to simply allow students to engage in argumentation rather than narrowing the evidence to analyzing a graph (MS-PS2-4).	10/31/2015 6:01 PM

Q16 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 24 Skipped: 195



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	25.00% 6	8.33% 2	50.00% 12	16.67% 4	24	2.58

#	Suggested revisions for standards:	Date
1	wording is ambiguous and unable to be understood by parents, students, and many middle school educators	12/2/2015 9:55 PM
2	As an educator, teaching science for 7 years, in one of the top districts in the state, I struggle with the verbiage of the standards. I do not believe that parents could easily pick up the standards and understand the principles trying to be taught, nor could help their child.	12/1/2015 6:57 PM
3	MS-PS2-1 collision is not the correct word for this standard. "during an interaction" if that is the purpose of the word collision would be best. Collision makes teachers think there needs to be a large force involved which is not required for Newton's third law. MS-PS2-2 "arbitrarily chosen reference frame" is not clear for teacher understanding. Please clarify and elaborate.	12/1/2015 4:05 PM
4	"The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that is likely to limit possible solutions. What does that even mean???? The way they are written most normal people looking at the website will have no idea what you are talking about. As a teacher, its really hard to explain to a lot of parents why we are teaching their students this information.	12/1/2015 3:55 PM
5	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:16 AM
6	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:15 AM

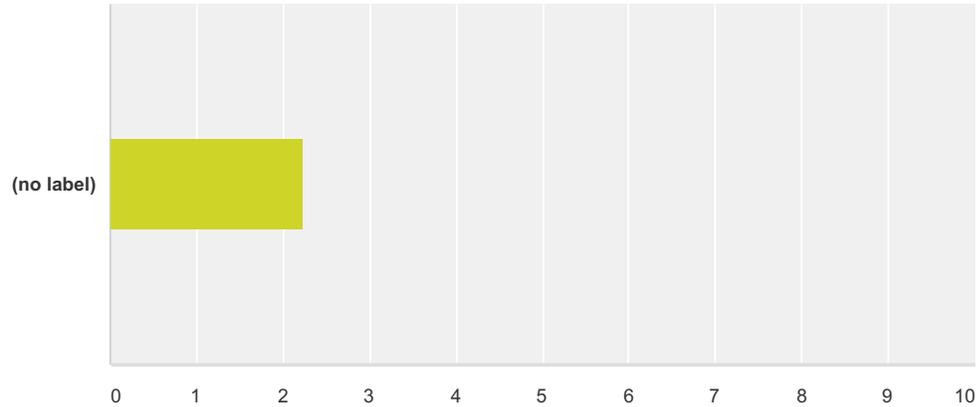
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7	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:22 AM
8	This standard needs more detail, especially the substandards that need to be taught and assessed and the DOK to which it needs to be addressed.	11/9/2015 4:32 PM
9	Not sure how the state could assess the engineering piece on a computerized test and pay for the grading. Much like the performance event	11/9/2015 4:22 PM
10	I feel like they shouldn't need so much clarification if the standards were written more "user friendly." If they are going to stay like they are, then clarification is very important.	11/6/2015 9:28 AM
11	PS2-1 could be reworded to "Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects" to read more clearly but overall the two standards are still assessing the same information.	10/31/2015 6:01 PM

MS-PS2 Motion and Stability: Forces and Interactions (6-8)

Q17 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 22 Skipped: 197



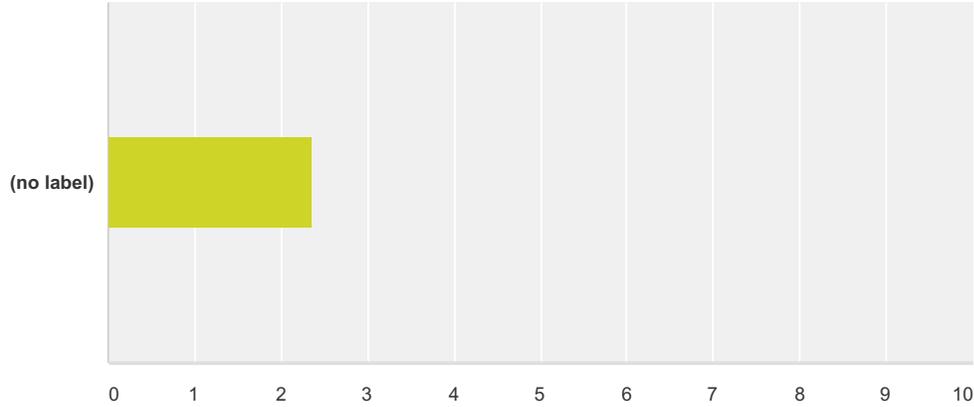
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	36.36% 8	18.18% 4	31.82% 7	13.64% 3	22	2.23

#	Suggested revisions for standards:	Date
1	How about High school readiness instead of college. Most 6th graders have no idea what they are going to do. Some of the Math required in the engineering portion of this is way over the top. Most 8th grade students won't have some of this math until high school.	12/1/2015 3:55 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:16 AM
3	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:15 AM
4	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:22 AM
5	There is no detail about how to prepare students for college and career readiness in this standard.	11/9/2015 4:32 PM
6	The incorporation of the science and engineering practices certainly promote college and career readiness by encouraging problem solving and the development of critical thinking skills.	10/31/2015 6:01 PM

MS-PS2 Motion and Stability: Forces and Interactions (6-8)

Q18 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 23 Skipped: 196



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	30.43% 7	17.39% 4	39.13% 9	13.04% 3	23	2.35

#	Suggested revisions for standards:	Date
1	divide into specific standards for 6th, 7th and 8th grade	12/2/2015 9:55 PM
2	MS-PS2-4 Gravitational interactions depend not only on the mass of the interacting objects but also on the distance between the objects.	12/1/2015 4:05 PM
3	Some of this goes into great detail which is great and then other aspects are very vague and only touch on the subject. Electricity.....very limited info.	12/1/2015 3:55 PM
4	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:16 AM
5	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:15 AM
6	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:22 AM
7	The standard needs more detail, the old GLE's were very specific as to what needed to be taught - with a substandard break down. This would be very difficult for a first year teacher in the subject level to know how much time to dedicate on the topic.	11/9/2015 4:32 PM
8	The amount of content is appropriate to allow for deeper understanding.	10/31/2015 6:01 PM

MS-PS2 Motion and Stability: Forces and Interactions (6-8)

Q19 Overall comments regarding the proposed standards for Motion and Stability; Forces and Interactions (MS-PS2):

Answered: 19 Skipped: 200

#	Responses	Date
1	Really poor choice of wording in a science standard where we teach students not to trust whims, assumptions, nor erratic change. Give clear expectations for exact learner outcomes. Wording is too ambiguous and cannot be judged consistently for the expected learner outcome	12/2/2015 9:55 PM
2	These standards can seem very cumbersome at times. I as an educator had to read and re-read some multiple times to understand what is going to be required to be taught.	12/1/2015 6:57 PM
3	I do not understand how GLE 1.1.D.a (6th grade) is encompassed in strand MS-PS4-2 as stated in the cross walks. They do not align. Strand MS-PS2-2 does not seem to connect well with the GLE's that are aligned to it in the crosswalks (specifically 2.2.Fa-e). Also, sum of forces needs to be clarified as teachers have not ever used sum of forces. They have used net forces to determine direction of movement. MS-PS2-1 does not align to GLE 2.1.A.a (7th) and 2.1.A.c (7th) as stated in the crosswalks	12/1/2015 4:05 PM
4	The wording is written in the most complicated way. Break it down into smaller more clear pieces of information. Don't overwhelm the teachers who are trying to teach the information, make it easier for them to understand what you are trying to get across. See Spot Run!!	12/1/2015 3:55 PM
5	I am a current sixth grade teacher, teaching science for the past 15 years. Looking over the proposed standards I feel very overwhelmed. First, compared to the GLE standards the proposed standards are not nearly specific enough. Half of my year's current GLEs are summed up in six standards. If these were the only standards that a new or inexperienced teacher were given, they would have a very difficult time knowing exactly what to teach. I think that a lot of the necessary background information that would be required to achieve the higher expectations the new standards expect are left out. I feel that the required background information and anything pertaining to the scientific method and variables is information that is necessary, but is missing from these standards, is it being assumed that we would just include this information on our own? I would include it in my plans for the year, but a new teacher would never know to do this. I feel this is potentially setting ourselves up for a lot of future gaps of knowledge. It is very confusing to follow as to where the "addressed elsewhere" standards are found; addressed elsewhere under a different strand or grade? It is not made clear. Looking at the sixth grade standards, I don't see where much content area has been removed, some is unclear if it is removed or not, but several units under physics have been added. I feel that in order for my students to understand what I am teaching, this is too much for sixth grade. Finally, pertaining to all the standards as a whole, the wording is not very student friendly. I post our class objectives daily on the board from the GLEs and we discuss them prior to our lesson. The students know exactly what they are required to know in this format. The wording of the new strands would be very overwhelming to them, example, "construct an argument supported by empirical evidence....." I feel they would shut down as soon as they saw this terminology.	11/30/2015 11:53 AM
6	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 11:01 AM
7	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:16 AM
8	These standards should be adopted as they are written.	11/27/2015 9:11 PM

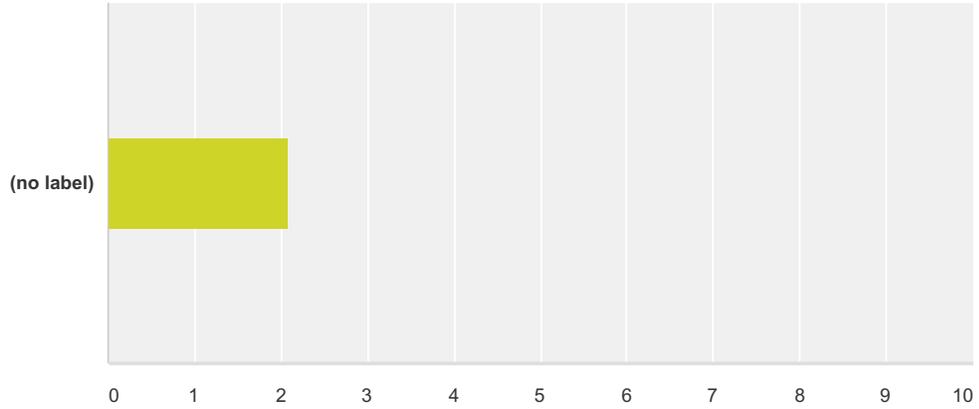
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9	As a teacher holding a BS with a science major and science minor, I am not sure what we actually want the students to know. I think all the standards as written contain a lot of fluff language. I think standards should be written as objectives. Objectives are clear and concise and easier to assess.	11/24/2015 11:36 AM
10	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:15 AM
11	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:22 AM
12	Change to: Construct and present arguments to support the evidence..... This is a higher expectation. It appears that "construct and present arguments" is not present in the new standards. This is an important skill that reflects the nature of science and aligns with the ELA standards.	11/11/2015 5:11 PM
13	MS-PS 2-4 is less rigorous than what the NGSS had listed.	11/11/2015 5:08 PM
14	MS-PS 2-4 is less rigorous than the NGSS.	11/11/2015 5:07 PM
15	PS2 -1 and PS2-3 are more specific and narrow than NGSS. PS2-4 is less vigorous than NGSS.	11/11/2015 5:07 PM
16	Has less rigor than NGSS.	11/11/2015 5:06 PM
17	Overall I am more concerned on what will actually be tested, when will it be tested (ex. grade span at 8th grade or will each grade level be tested?) & how will "application" of concepts be tested.	11/9/2015 4:26 PM
18	I like the engineering piece and the lab based investigations	11/9/2015 4:22 PM
19	Keep as proposed. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	10/31/2015 6:01 PM

MS-PS3 Energy (6-8)

Q21 The standards in this strand are developmentally appropriate.

Answered: 13 Skipped: 206



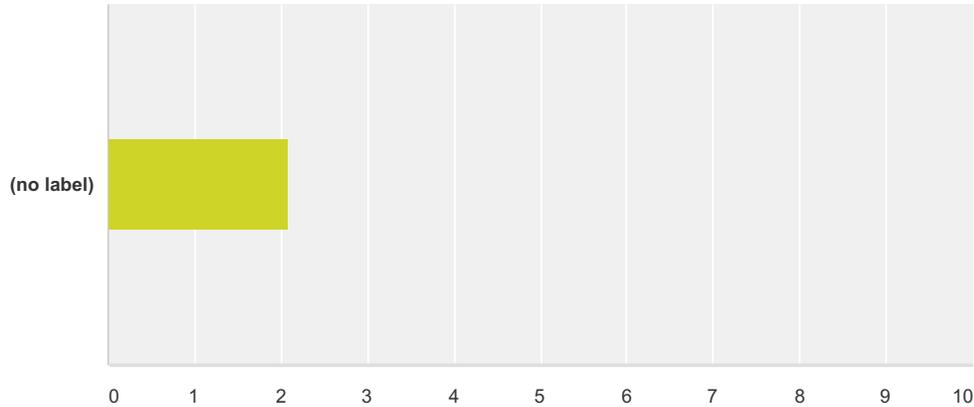
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	7.69% 1	38.46% 5	7.69% 1	13	2.08

#	Suggested revisions for standards:	Date
1	Reword to get straight to the point of the learner outcomes in middle school. Divide standards by 6,7,& 8th grade. Do not use ambiguous wording.	12/2/2015 10:07 PM
2	For 6th Grade, I don't care for the MS-PS3-3 standard. It seems okay, but I don't time could be better spent with other standards.	12/2/2015 10:50 AM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:16 AM
4	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:38 AM
5	Standard is developmentally appropriate, BUT there needs to be a scope and sequence to suggest when this should be taught.	11/9/2015 4:38 PM
6	The proposed standards are research-based and are developmentally appropriate.	10/31/2015 6:39 PM

MS-PS3 Energy (6-8)

Q22 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 13 Skipped: 206

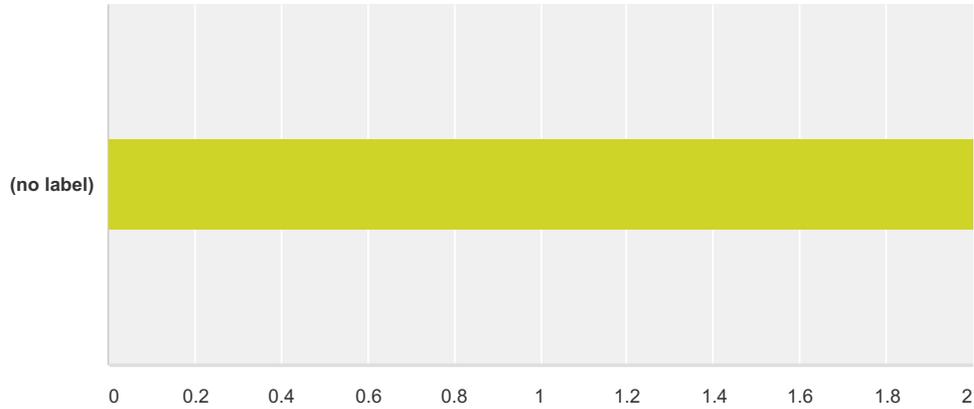


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	15.38% 2	23.08% 3	15.38% 2	13	2.08

#	Suggested revisions for standards:	Date
1	divide into grade levels so each school teaches the same content at each grade level	12/2/2015 10:07 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:16 AM
3	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:38 AM
4	MS-PS3-5 when changing kinetic energy to other types will this only be addressing changing kinetic energy to thermal and motion or into other types of energy.	11/9/2015 4:39 PM
5	The standard needs more detail, the old GLE's were very specific as to what needed to be taught - with a substandard break down. This would be very difficult for a first year teacher in the subject level to know how much time to dedicate on the topic.	11/9/2015 4:38 PM
6	The proposed standards demonstrate coherence and are based upon learning progressions.	10/31/2015 6:39 PM

Q23 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 13 Skipped: 206



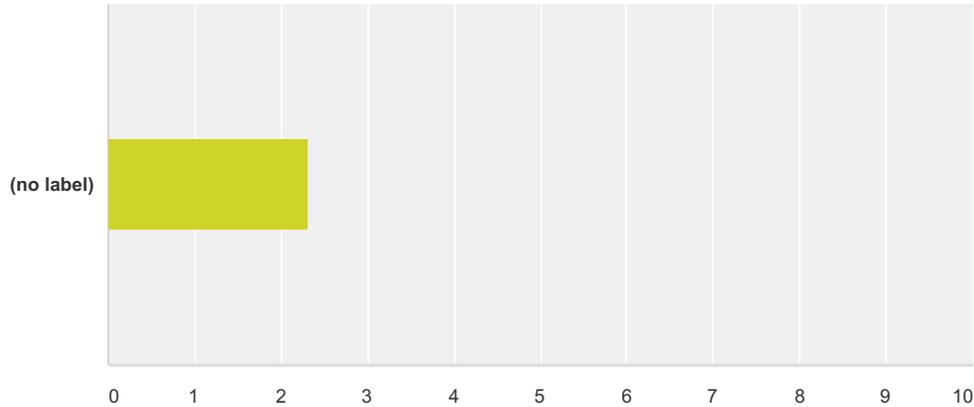
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	53.85% 7	7.69% 1	23.08% 3	15.38% 2	13	2.00

#	Suggested revisions for standards:	Date
1	Reword to get straight to the point of the learner outcomes in middle school. Divide standards by 6,7,& 8th grade. Do not use ambiguous wording.	12/2/2015 10:07 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:16 AM
3	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:38 AM
4	This standard needs more detail, specifically what DOK the standard (and the substandards that need to be identified) should be covered.	11/9/2015 4:38 PM
5	The depth of knowledge these standards promote will provide rigor based upon complexity driven by the much needed incorporation of the practices of science with the content.	10/31/2015 6:39 PM

MS-PS3 Energy (6-8)

Q24 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 13 Skipped: 206



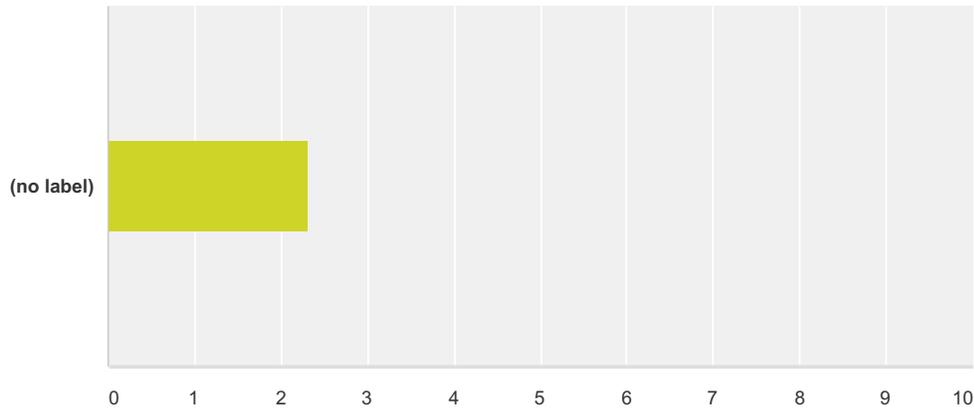
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	0.00% 0	30.77% 4	23.08% 3	13	2.31

#	Suggested revisions for standards:	Date
1	Reword to get straight to the point of the learner outcomes in middle school. Divide standards by 6,7,& 8th grade. Do not use ambiguous wording.	12/2/2015 10:07 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:16 AM
3	I cannot imagine a concise and objective way to assess standards when models are used.	11/24/2015 11:38 AM
4	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:38 AM
5	Without substandards to be addressed, it is impossible to know what should be addressed and how to assess these standards in the classroom and/or on a state assessment.	11/9/2015 4:38 PM
6	I'm not sure how some of the standards would be assessed. More suggestions or examples would be good.	11/6/2015 9:06 AM
7	The practice for MS-PS3-4 could be slightly modified to provide more flexibility with assessments. For example, at the state assessment level, students could simply be expected to "Plan" an experiment versus "Plan and conduct" at the local level.	10/31/2015 6:39 PM

MS-PS3 Energy (6-8)

Q25 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 13 Skipped: 206



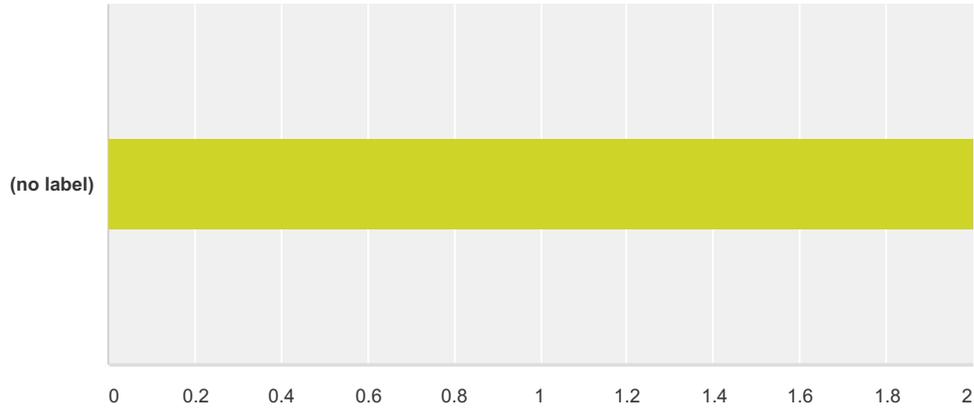
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	38.46% 5	15.38% 2	23.08% 3	23.08% 3	13	2.31

#	Suggested revisions for standards:	Date
1	No. PS3.B 3rd bullet - ridiculous way to really say that heat (thermal energy) always moves from hotter toward colder regions. ETS1.A - is just soooooo wordy. Focus on the necessary and get straight to the point of the learner outcome. Don't write middle school standards on a high school or collegiate level. ETS1.B - Simplify by saying "Analyze all variables and limit the experiment to one independent variable and one dependent variable."	12/2/2015 10:07 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:16 AM
3	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:38 AM
4	MS-PS3-1 seems a little confusing. So, the students need to know how speed changes Kinetic energy and how mass changes Kinetic energy but not when both speed and mass are changed at the same time?	11/9/2015 4:39 PM
5	This standard needs more detail, especially the substandards that need to be taught and assessed and the DOK to which it needs to be addressed.	11/9/2015 4:38 PM
6	Standards are not understandable for educators. I've been teaching energy for years and I have to really concentrate to understand what its asking for. I can't imagine explaining it to parents. The construct, use and present arguments part to MS PS3-5 is not clear. Terms like emperical evidence are confusing to me, I know parents wouldn't understand.	11/6/2015 9:06 AM

MS-PS3 Energy (6-8)

Q26 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 13 Skipped: 206



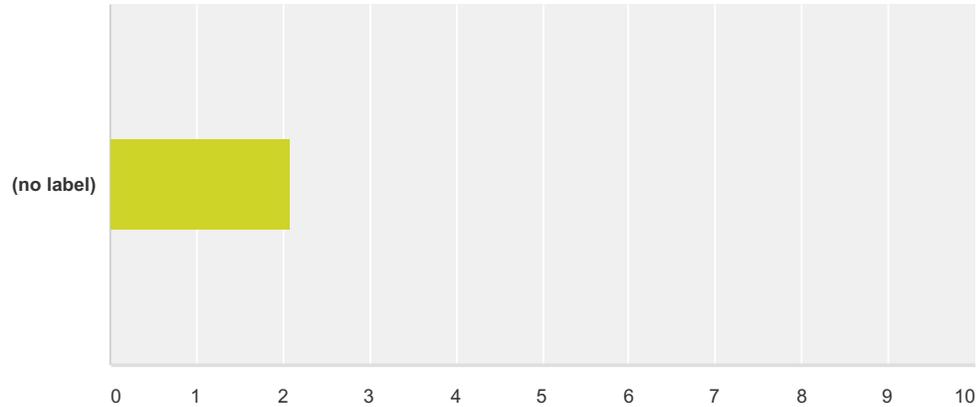
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	53.85% 7	7.69% 1	23.08% 3	15.38% 2	13	2.00

#	Suggested revisions for standards:	Date
1	Reword to get straight to the point of the learner outcomes in middle school. Divide standards by 6,7,& 8th grade	12/2/2015 10:07 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:16 AM
3	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:38 AM
4	There is no detail about how to prepare students for college and career readiness in this standard.	11/9/2015 4:38 PM
5	The incorporation of the science and engineering practices certainly promote college and career readiness by encouraging problem solving and the development of critical thinking skills.	10/31/2015 6:39 PM

MS-PS3 Energy (6-8)

Q27 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 13 Skipped: 206



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	15.38% 2	23.08% 3	15.38% 2	13	2.08

#	Suggested revisions for standards:	Date
1	Reword to get straight to the point of the learner outcomes in middle school. Divide standards by 6,7,& 8th grade	12/2/2015 10:07 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:16 AM
3	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:38 AM
4	are we going to be talking about the other types of energy like chemical, nuclear, electrical during the energy piece or just when they are brought up in other parts of of the standards?	11/9/2015 4:39 PM
5	The standard needs more detail, the old GLE's were very specific as to what needed to be taught - with a substandard break down. This would be very difficult for a first year teacher in the subject level to know how much time to dedicate on the topic.	11/9/2015 4:38 PM
6	The amount of content is appropriate to allow for deeper understanding.	10/31/2015 6:39 PM

Q28 Overall comments regarding the proposed standards for Energy (MS-PS3):

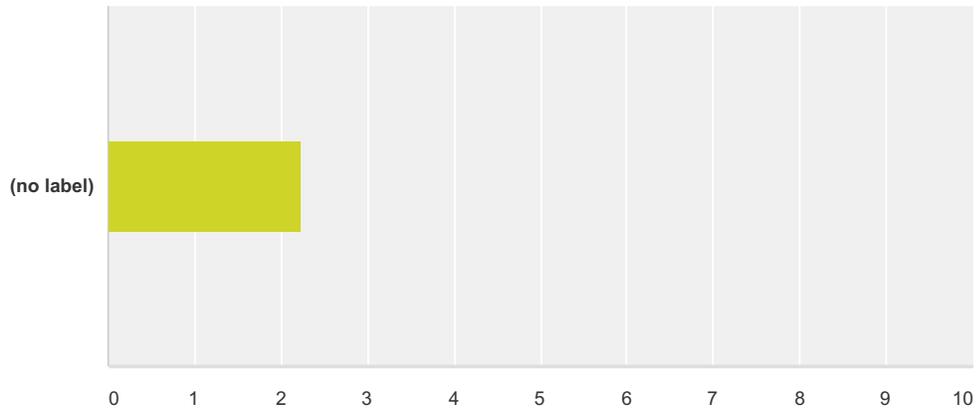
Answered: 9 Skipped: 210

#	Responses	Date
1	Reword to get straight to the point of the learner outcomes in middle school. Divide standards by 6,7,& 8th grade	12/2/2015 10:07 PM
2	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 11:01 AM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:16 AM
4	These standards should be adopted as they are written.	11/27/2015 9:12 PM
5	Once again, I object to the apparent overuse of the word "model". Using that word does not indicate a clear end result to asses understanding. I also do not like the investigation that is proposed. I think labs and experiments should be at the discretion of the instructor	11/24/2015 11:38 AM
6	As an 8th grade Science educator I feel like these standards are written at a much higher level than junior high students typically are in real life. They do not seem to be written in the language that teachers would use, such as spontaneously. The use of the term motion energy should be changed to mechanical energy. Also the students at 8th grade level can understand the specific forms of energy such as CEMENTS. Chemical, Electrical, Mechanical, Electromagnetic, Nuclear, Thermal and Sound.	11/16/2015 10:40 AM
7	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:38 AM
8	My overall comments for all the standards are to make clear things that don't make sense by reading through it. Teachers shouldn't have to study the standards just to see what they say, it should make sense and be clear upon first reading. I think what helps me most are examples. I won't understand what the standard is saying at all upon first reading, but when I read the examples, I'm like, "oh yeah. That's what that means."	11/6/2015 9:06 AM
9	Keep as proposed. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	10/31/2015 6:39 PM

MS-PS4 Waves and their Applications in Technologies for Information Transfer (6-8)

Q30 The standards in this strand are developmentally appropriate.

Answered: 13 Skipped: 206



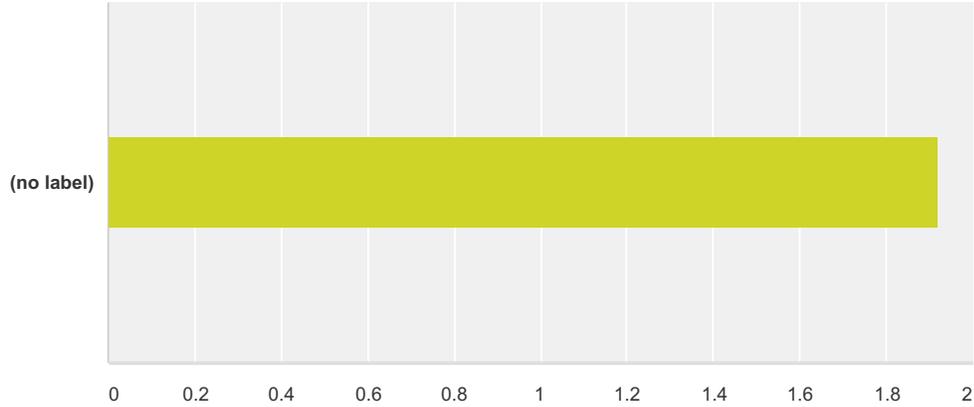
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	0.00% 0	38.46% 5	15.38% 2	13	2.23

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:17 AM
2	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:53 AM
3	The proposed standards are research-based and are developmentally appropriate.	10/31/2015 6:47 PM
4	HS-PS4-2 and HS-PS4-1: Students in high school are just developing their abstract reasoning skills. Describing energy and matter as both a particle and having wavelength is a concept my college chemistry students can barely grasp. General chemistry students probably do not have the abstract ability to understand this. HS-PS4-2 and HS-PS4-1: Students in high school are just developing their abstract reasoning skills. Describing energy and matter as both a particle and having wavelength is a concept my college chemistry students can barely grasp. General chemistry students probably do not have the abstract ability to understand this.	10/29/2015 1:18 PM

MS-PS4 Waves and their Applications in Technologies for Information Transfer (6-8)

Q31 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 12 Skipped: 207



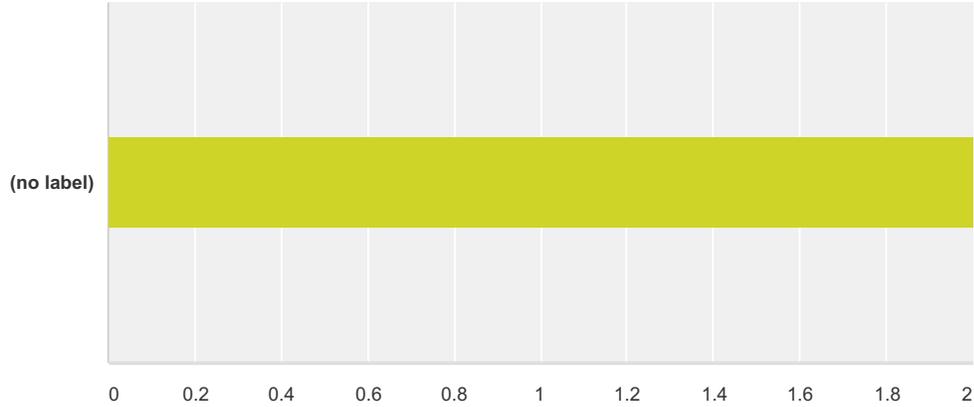
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	58.33% 7	0.00% 0	33.33% 4	8.33% 1	12	1.92

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:17 AM
2	The proposed standards demonstrate coherence and are based upon learning progressions.	10/31/2015 6:47 PM

MS-PS4 Waves and their Applications in Technologies for Information Transfer (6-8)

Q32 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 12 Skipped: 207



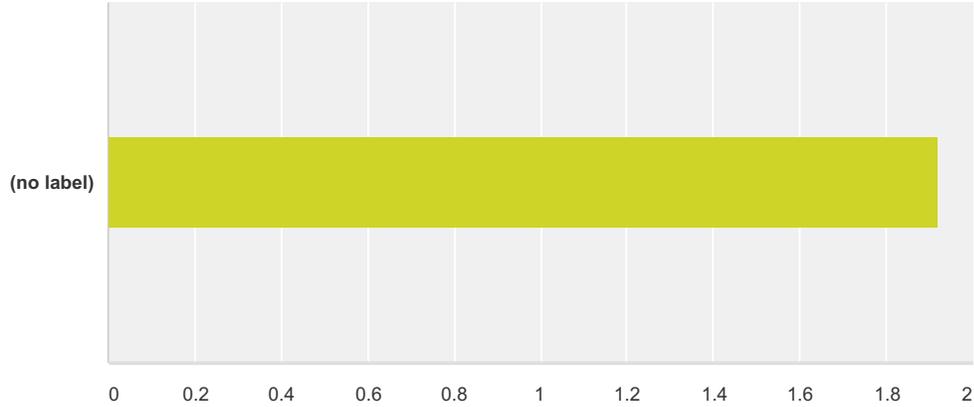
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 6	8.33% 1	33.33% 4	8.33% 1	12	2.00

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:17 AM
2	The depth of knowledge these standards promote will provide rigor based upon complexity driven by the much needed incorporation of the practices of science with the content.	10/31/2015 6:47 PM

MS-PS4 Waves and their Applications in Technologies for Information Transfer (6-8)

Q33 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 12 Skipped: 207

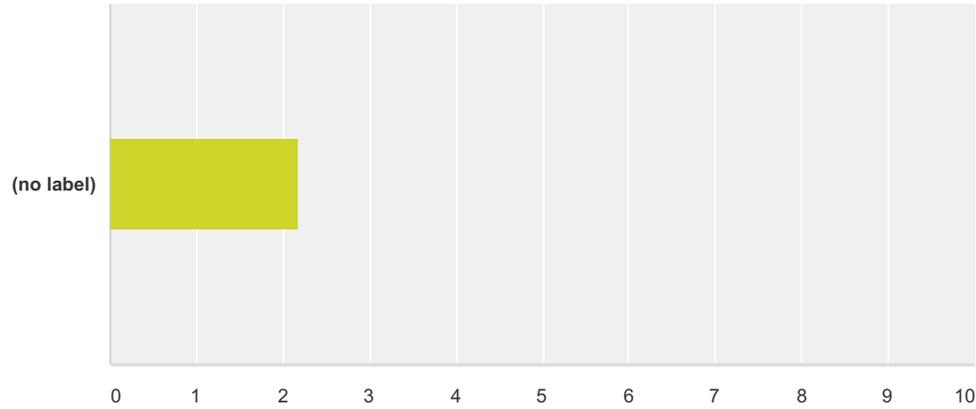


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	58.33% 7	0.00% 0	33.33% 4	8.33% 1	12	1.92

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:17 AM

Q34 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 12 Skipped: 207



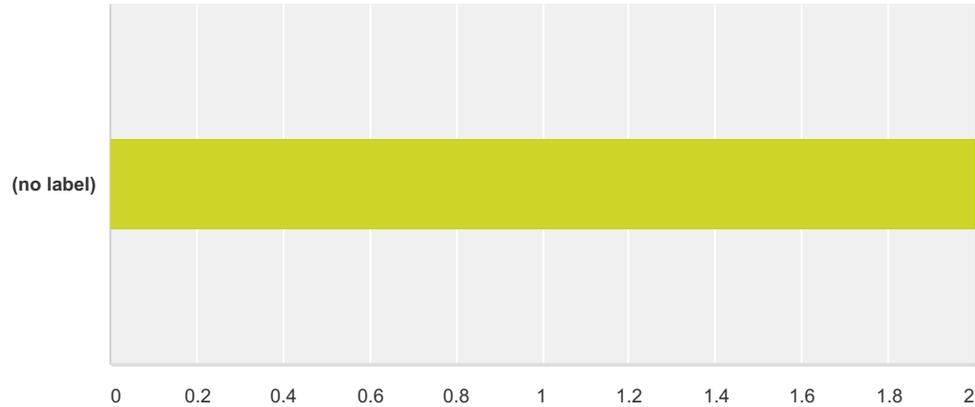
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	41.67% 5	8.33% 1	41.67% 5	8.33% 1	12	2.17

#	Suggested revisions for standards:	Date
1	Some stakeholders will struggle with wording. But this strand is written better than most middle school strands.	12/2/2015 10:16 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:17 AM
3	HS-PS4-2 and HS-PS4-1: Students in high school are just developing their abstract reasoning skills. Describing energy and matter as both a particle and having wavelength is a concept my college chemistry students can barely grasp. General chemistry students probably do not have the abstract ability to understand this. Same with parents. HS-PS4-2 and HS-PS4-1: Students in high school are just developing their abstract reasoning skills. Describing energy and matter as both a particle and having wavelength is a concept my college chemistry students can barely grasp. General chemistry students probably do not have the abstract ability to understand this. Same with parents.	10/29/2015 1:18 PM

MS-PS4 Waves and their Applications in Technologies for Information Transfer (6-8)

Q35 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 12 Skipped: 207

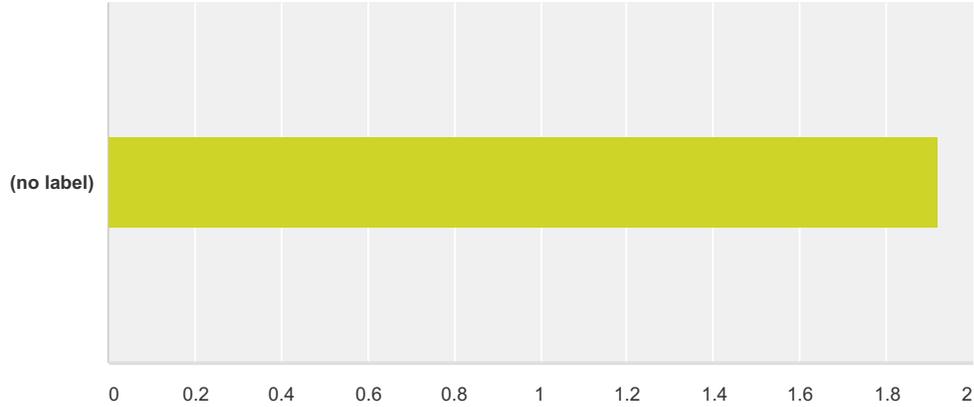


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 6	8.33% 1	33.33% 4	8.33% 1	12	2.00

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:17 AM
2	The incorporation of the science and engineering practices certainly promote college and career readiness by encouraging problem solving and the development of critical thinking skills.	10/31/2015 6:47 PM
3	HS-PS4-2 and HS-PS4-1: Students in high school are just developing their abstract reasoning skills. Describing energy and matter as both a particle and having wavelength is a concept my college chemistry students can barely grasp. General chemistry students probably do not have the abstract ability to understand this. HS-PS4-2 and HS-PS4-1: Students in high school are just developing their abstract reasoning skills. Describing energy and matter as both a particle and having wavelength is a concept my college chemistry students can barely grasp. General chemistry students probably do not have the abstract ability to understand this. There is no reason to teach this concept to students. It will not make them career ready and most colleges do not expect them to have this information. It's nice, but not necessary.	10/29/2015 1:18 PM

Q36 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 12 Skipped: 207



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 6	16.67% 2	25.00% 3	8.33% 1	12	1.92

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:17 AM
2	The amount of content is appropriate to allow for deeper understanding; however, a suggestion is made in the overall comments to add a standard for how our science knowledge has advanced in this area. For the digital age in which we live, it is important for students to understand the science behind the technology they use and that is such an integral part of our society and information transfer.	10/31/2015 6:47 PM

MS-PS4 Waves and their Applications in Technologies for Information Transfer (6-8)

Q37 Overall comments regarding the proposed standards for Waves and Applications in Technology for Information Transfers (MS-PS4):

Answered: 9 Skipped: 210

#	Responses	Date
1	Divide standards by 6,7,& 8th grades	12/2/2015 10:16 PM
2	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 12:31 PM
3	Physical Science Concerns: I feel the addition to the sixth grade curriculum without having other standards removed is too overwhelming. MS-PS4-2 is unclear if all the standards underneath are not addressed anymore. I am a current sixth grade teacher, teaching science for the past 15 years. Looking over the proposed standards I feel very overwhelmed. First, compared to the GLE standards the proposed standards are not nearly specific enough. Half of my year's current GLEs are summed up in six standards. If these were the only standards that a new or inexperienced teacher were given, they would have a very difficult time knowing exactly what to teach. I think that a lot of the necessary background information that would be required to achieve the higher expectations the new standards expect are left out. I feel that the required background information and anything pertaining to the scientific method and variables is information that is necessary, but is missing from these standards, is it being assumed that we would just include this information on our own? I would include it in my plans for the year, but a new teacher would never know to do this. I feel this is potentially setting ourselves up for a lot of future gaps of knowledge. It is very confusing to follow as to where the "addressed elsewhere" standards are found; addressed elsewhere under a different strand or grade? It is not made clear. Looking at the sixth grade standards, I don't see where much content area has been removed, some is unclear if it is removed or not, but several units under physics have been added. I feel that in order for my students to understand what I am teaching, this is too much for sixth grade. Finally, pertaining to all the standards as a whole, the wording is not very student friendly. I post our class objectives daily on the board from the GLEs and we discuss them prior to our lesson. The students know exactly what they are required to know in this format. The wording of the new strands would be very overwhelming to them, example, "construct an argument supported by empirical evidence....." I feel they would shut down as soon as they saw this terminology.	11/30/2015 11:54 AM
4	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 11:02 AM
5	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:17 AM

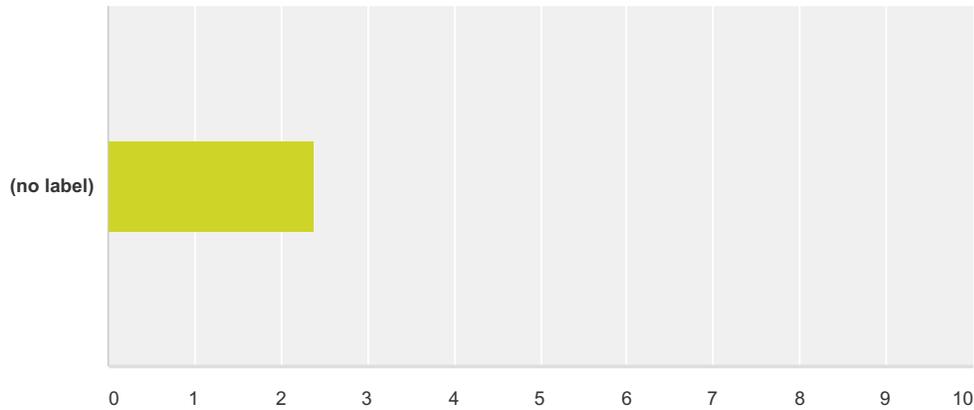
HB1490 Work Group - Science 6-12

6	These standards should be adopted as they are written.	11/27/2015 9:12 PM
7	"Develop and use a model" yet again??????? Is that the new catch phrase that makes it a good standard? Vague and not easy to assess. This is science. Let's try to be as objective as we can as opposed to subjective. I would have no idea how to teach as written. Objectives are something I can teach from.	11/24/2015 11:39 AM
8	Technological advancements in waves and their applications has progressed since the last adoption of standards in Missouri. There should be a standard that recognizes the digital age we live so students actually understand the science behind all the devices they use and that others use to transfer information. Students should investigate the claim that digitized signals are a more reliable way to encode and transmit information than analog signals. Keep as proposed with addition noted above. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	10/31/2015 6:47 PM
9	There is no reason to include strands HS-PS4-2 and HS-PS4-1. Students, except those in a college class, do not have enough abstract knowledge or development to be able to fully understand this issue.	10/29/2015 1:18 PM

MS-LS1 From Molecules to Organisms: Structures and Processes (6-8)

Q39 The standards in this strand are developmentally appropriate.

Answered: 27 Skipped: 192



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	33.33% 9	7.41% 2	48.15% 13	11.11% 3	27	2.37

#	Suggested revisions for standards:	Date
1	Why not teach "natural selection?" Students can understand this concept which is widely accepted in science	12/2/2015 10:12 PM
2	MS-LS1-2, MS-LS1-3, MS-LS1-4 We feel these might be best for 8th grade. While we understand there is not a set pacing guide, we hope to get some direction from the state. The sixth grade teachers giving their opinions about these standards currently teach a "variety" of the GLE's. They teach a little bit of everything. There is thought in our district that it might be best to change our science program to include: life, physical and earth at different grade levels. If this is done then these standards would be in 6th grade. Because of this the teachers think these three standards are a little too rigorous for a 6th grader.	12/1/2015 2:53 PM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
4	MS LS1-6 Is this genetic variation?	11/24/2015 12:59 PM
5	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 1:14 PM
6	Concerns: The standards as written will be too vague for new teachers. The standards also suggest a lot of model building. I am not opposed to models, but where will the materials come from? 13 models are listed for the middle school standards. If each class has 24 students that would be at least 8 groups. Any group above 3 per person ends up with a student or 2 not doing anything. That would be materials for 104 models per year for one 6th, one 7th, and one 8th grade class. The cost is a concern. Positives: It appears that there is a move to make 6th grade one subject, 7th grade one subject, and 8th grade one subject. If that is the case, I like that. I would however like to know which grade level is going to be paired with which subject. For example: 6th grade physical science, 7th grade life science and 8th grade Earth science. That could be a good change.	11/13/2015 11:12 AM

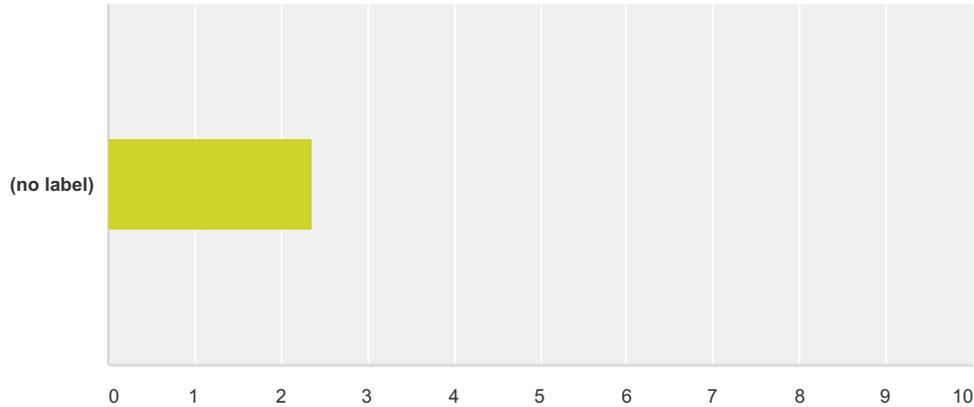
HB1490 Work Group - Science 6-12

7	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:54 AM
8	MS-LS1-6 This standard would be better aligned with the "Ecosystems: Interactions, Energy and Dynamics" as it is similar to MS-LS2-1 in terms of resources and resource usage. New proposed standards does not include genetics so this standard requires knowledge of "genetic factors". MS-LS1-5 This standard would be better aligned with the "Biological Evolution: Unity and Diversity" as it is similar to MS-LS4-2 in terms of genetic variations, natural selection, and adaptations	11/12/2015 1:14 PM
9	Photosynthesis is essential in developing the concept of energy flow through living organisms. It represents the receiver of the energy from the sun that is then transferred through food chains and food webs.	11/11/2015 4:50 PM
10	Photosynthesis knowledge is necessary for students to understand cycling of matter and the flow of energy.	11/11/2015 4:49 PM
11	There is no mention of photosynthesis in this area which is needed for students to understand the cycle of matter and how energy flows. Photosynthesis is the beginning of understanding of food chains and food webs,.	11/11/2015 4:49 PM
12	There is no mention of photosynthesis. Knowledge concept is necessary, or at least helpful, to understand how matter is recycle and how energy flows through Earth's systems.	11/11/2015 4:48 PM
13	Please include "photosynthesis." This information is crucial for the understanding of energy.....food chains....food webs.....systems, etc.	11/11/2015 4:48 PM
14	Not sure due to the vagueness of the standard.	11/4/2015 2:01 PM
15	THE clarification statements are helpful to guide teachers' instruction of topics.	11/4/2015 1:11 PM
16	I love the systems approach. The cross cutting concepts are one of my favorite parts of NGSS. However, I do not think you should only teach the systems. How do you teach human body systems without teaching organs or "body parts"? Stick with the NGSS as written.	11/4/2015 7:56 AM
17	The proposed standards are research-based and are developmentally appropriate.	10/31/2015 8:04 PM

MS-LS1 From Molecules to Organisms: Structures and Processes (6-8)

Q40 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 26 Skipped: 193



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	30.77% 8	15.38% 4	42.31% 11	11.54% 3	26	2.35

#	Suggested revisions for standards:	Date
1	Reword to get straight to the point of the learner outcomes in middle school. Divide standards by 6,7,& 8th grade. Do not use ambiguous wording.	12/2/2015 10:12 PM
2	Glancing through, it appeared that cells content was taught in 6th grade, but not included in the HS biology component. To me, cells would be the basic beginning of a biology class.	11/30/2015 11:57 AM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
4	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 1:14 PM
5	Concerns: The standards as written will be too vague for new teachers. The standards also suggest a lot of model building. I am not opposed to models, but where will the materials come from? 13 models are listed for the middle school standards. If each class has 24 students that would be at least 8 groups. Any group above 3 per person ends up with a student or 2 not doing anything. That would be materials for 104 models per year for one 6th, one 7th, and one 8th grade class. The cost is a concern. Positives: It appears that there is a move to make 6th grade one subject, 7th grade one subject, and 8th grade one subject. If that is the case, I like that. I would however like to know which grade level is going to be paired with which subject. For example: 6th grade physical science, 7th grade life science and 8th grade Earth science. That could be a good change.	11/13/2015 11:12 AM
6	Add	11/11/2015 4:50 PM
7	Photosynthesis knowledge is necessary for students to understand cycling of matter and the flow of energy.	11/11/2015 4:49 PM

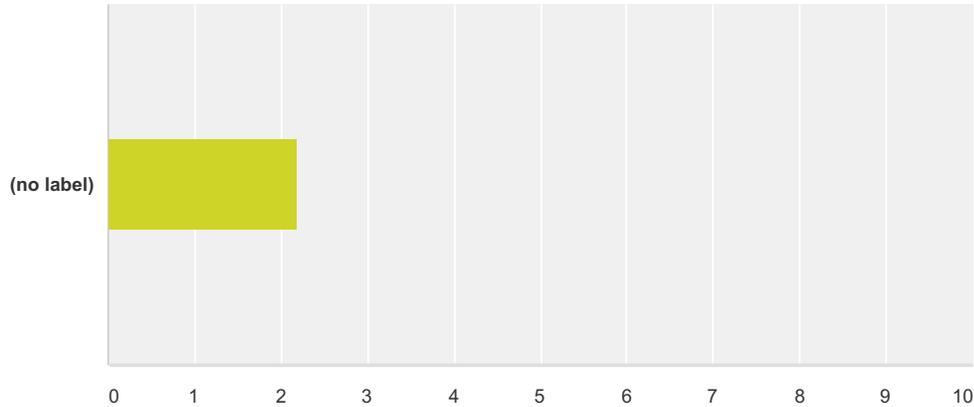
HB1490 Work Group - Science 6-12

8	There is no mention of photosynthesis in this area which is needed for students to understand the cycle of matter and how energy flows.	11/11/2015 4:49 PM
9	There is no mention of photosynthesis. Knowledge concept is necessary, or at least helpful, to understand how matter is recycle and how energy flows through Earth's systems.	11/11/2015 4:48 PM
10	Please include "photosynthesis." This information is crucial for the understanding of energy.....food chains....food webs....systems, etc. Removing photosynthesis waters down the standard.	11/11/2015 4:48 PM
11	There is no coherent path for the grade levels to follow.	11/4/2015 2:01 PM
12	The standards are not aligned to specific grade levels but to a grade span therefore it is difficult to see a coherent path. It would be helpful to have a recommended grade to teach each concept and also a map as to which topics to teach and in what order if you start with a certain topic.	11/4/2015 1:11 PM
13	No grade levels are mentioned, just middle school. 8th graders are able to go further into the material and master the material better than 6th graders.	11/4/2015 1:11 PM
14	Keep as written in the NGSS. You don't need to rewrite anything until the next rewrite of the standards.	11/4/2015 7:56 AM
15	Middle school students should be exposed to a conceptual understanding of photosynthesis and cellular respiration in terms of the cycling of matter and the flow of energy in and out of organisms as well as the purpose of each process. They do not need to go into specifics and assessment does not need to include the details of the chemical reactions for photosynthesis and cellular respiration. Assessment does not need to include the biochemical mechanisms. The other standards are fine in terms of coherence.	10/31/2015 8:04 PM

MS-LS1 From Molecules to Organisms: Structures and Processes (6-8)

Q41 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 26 Skipped: 193



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	34.62% 9	19.23% 5	38.46% 10	7.69% 2	26	2.19

#	Suggested revisions for standards:	Date
1	Reword to get straight to the point of the learner outcomes in middle school. Divide standards by 6,7,& 8th grade. Do not use ambiguous wording.	12/2/2015 10:12 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
3	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 1:14 PM
4	Concerns: The standards as written will be too vague for new teachers. The standards also suggest a lot of model building. I am not opposed to models, but where will the materials come from? 13 models are listed for the middle school standards. If each class has 24 students that would be at least 8 groups. Any group above 3 per person ends up with a student or 2 not doing anything. That would be materials for 104 models per year for one 6th, one 7th, and one 8th grade class. The cost is a concern. Positives: It appears that there is a move to make 6th grade one subject, 7th grade one subject, and 8th grade one subject. If that is the case, I like that. I would however like to know which grade level is going to be paired with which subject. For example: 6th grade physical science, 7th grade life science and 8th grade Earth science. That could be a good change.	11/13/2015 11:12 AM
5	Removing photosynthesis decreases the rigor of this standard.	11/11/2015 4:50 PM
6	Taking out photosynthesis decreases the rigor of this standard.	11/11/2015 4:49 PM
7	Taking out photosynthesis decreases the rigor in this unit.	11/11/2015 4:49 PM

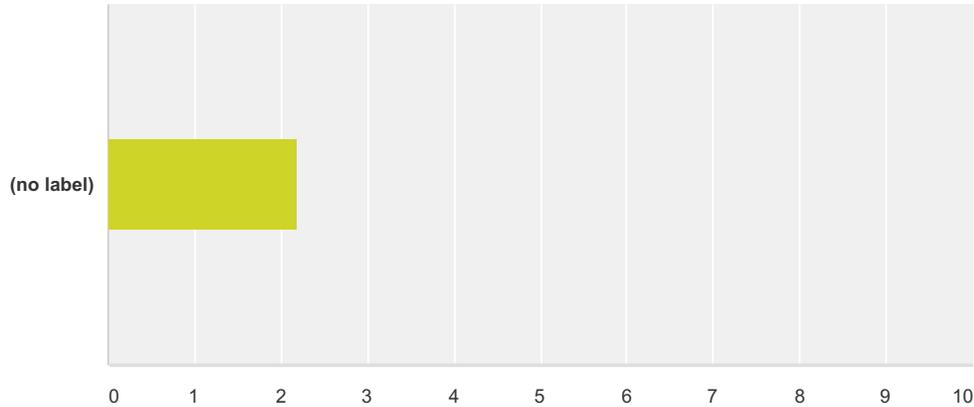
HB1490 Work Group - Science 6-12

8	Taking out photosynthesis decreases the rigor of this standard.	11/11/2015 4:48 PM
9	Due to how general this standard is, there is no rigorous path to follow for the grade levels.	11/4/2015 2:01 PM
10	Again the standards are very rigorous for 6th graders but may be not be as rigorous for 8th graders based on their level of preparedness.	11/4/2015 1:11 PM
11	No grade levels are mentioned, just middle school. 8th graders are able to go further into the material and master the material better than 6th graders.	11/4/2015 1:11 PM
12	These standards are watered down. With the performance standards set like this, everyone should make an A, at least.	11/4/2015 7:56 AM
13	The depth of knowledge these standards promote will provide rigor based upon complexity driven by the much needed incorporation of the practices of science with the content.	10/31/2015 8:04 PM

MS-LS1 From
Molecules to
Organisms: Structures
and Processes (6-8)

Q42 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 26 Skipped: 193



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	34.62% 9	15.38% 4	46.15% 12	3.85% 1	26	2.19

#	Suggested revisions for standards:	Date
1	Reword to get straight to the point of the learner outcomes in middle school. Divide standards by 6,7,& 8th grade. Do not use ambiguous wording.	12/2/2015 10:12 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
3	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 1:14 PM
4	Concerns: The standards as written will be too vague for new teachers. The standards also suggest a lot of model building. I am not opposed to models, but where will the materials come from? 13 models are listed for the middle school standards. If each class has 24 students that would be at least 8 groups. Any group above 3 per person ends up with a student or 2 not doing anything. That would be materials for 104 models per year for one 6th, one 7th, and one 8th grade class. The cost is a concern. Positives: It appears that there is a move to make 6th grade one subject, 7th grade one subject, and 8th grade one subject. If that is the case, I like that. I would however like to know which grade level is going to be paired with which subject. For example: 6th grade physical science, 7th grade life science and 8th grade Earth science. That could be a good change.	11/13/2015 11:12 AM
5	The standards can be assessed but it depends on how they are made more specific by teacher and district.	11/4/2015 2:01 PM
6	I believe some of these standards will be difficult to assess on a state assessment without written statements from students.	11/4/2015 1:11 PM

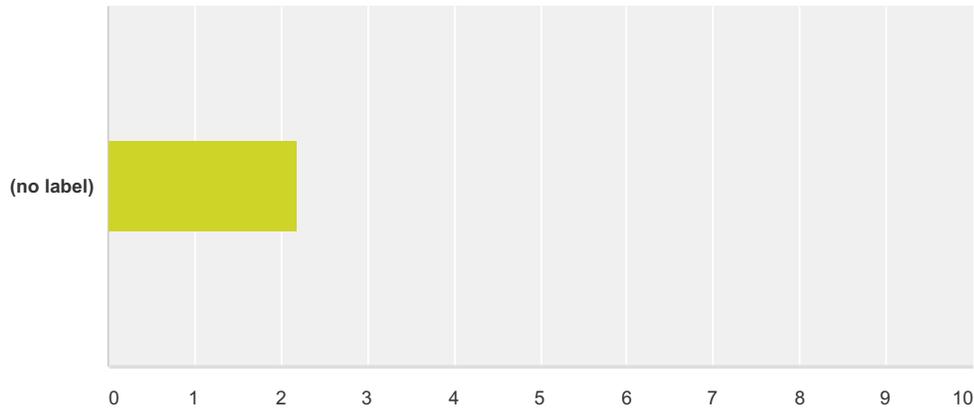
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7	No problem here. The state of MO should look great! Our scores will be off the chart. Colleges and companies will be after our kids. Well, maybe not. the standards need to remain as written in NGSS.	11/4/2015 7:56 AM
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MS-LS1 From
Molecules to
Organisms: Structures
and Processes (6-8)

Q43 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 26 Skipped: 193



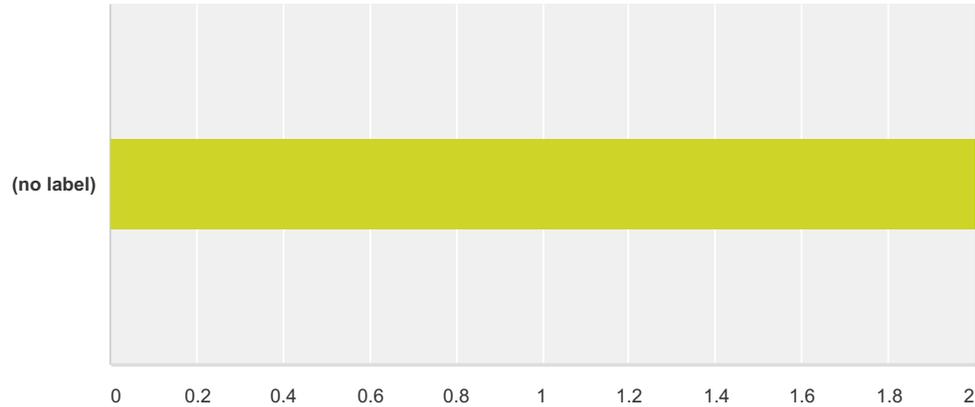
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	42.31% 11	3.85% 1	46.15% 12	7.69% 2	26	2.19

#	Suggested revisions for standards:	Date
1	Not understandable to all stakeholders. Reword to get straight to the point of the learner outcomes in middle school. Divide standards by 6,7,& 8th grade. Do not use ambiguous wording.	12/2/2015 10:12 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
3	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 1:14 PM
4	Concerns: The standards as written will be too vague for new teachers. The standards also suggest a lot of model building. I am not opposed to models, but where will the materials come from? 13 models are listed for the middle school standards. If each class has 24 students that would be at least 8 groups. Any group above 3 per person ends up with a student or 2 not doing anything. That would be materials for 104 models per year for one 6th, one 7th, and one 8th grade class. The cost is a concern. Positives: It appears that there is a move to make 6th grade one subject, 7th grade one subject, and 8th grade one subject. If that is the case, I like that. I would however like to know which grade level is going to be paired with which subject. For example: 6th grade physical science, 7th grade life science and 8th grade Earth science. That could be a good change.	11/13/2015 11:12 AM
5	No due how general the standards are written.	11/4/2015 2:01 PM
6	NGSS were already understandable to educators and explainable to parents and stakeholders. Put back what has been left out.	11/4/2015 7:56 AM

MS-LS1 From Molecules to Organisms: Structures and Processes (6-8)

Q44 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 25 Skipped: 194



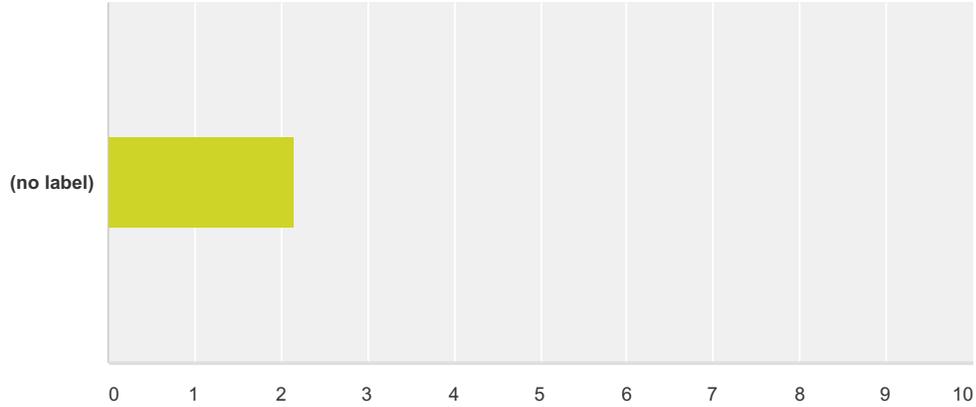
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	44.00% 11	16.00% 4	36.00% 9	4.00% 1	25	2.00

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:18 AM
2	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 1:14 PM
3	Concerns: The standards as written will be too vague for new teachers. The standards also suggest a lot of model building. I am not opposed to models, but where will the materials come from? 13 models are listed for the middle school standards. If each class has 24 students that would be at least 8 groups. Any group above 3 per person ends up with a student or 2 not doing anything. That would be materials for 104 models per year for one 6th, one 7th, and one 8th grade class. The cost is a concern. Positives: It appears that there is a move to make 6th grade one subject, 7th grade one subject, and 8th grade one subject. If that is the case, I like that. I would however like to know which grade level is going to be paired with which subject. For example: 6th grade physical science, 7th grade life science and 8th grade Earth science. That could be a good change.	11/13/2015 11:12 AM
4	Photosynthesis is an important concept that transfers to other standards.	11/11/2015 4:48 PM
5	Nope.	11/4/2015 7:56 AM
6	The incorporation of the science and engineering practices certainly promote college and career readiness by encouraging problem solving and the development of critical thinking skills.	10/31/2015 8:04 PM

MS-LS1 From Molecules to Organisms: Structures and Processes (6-8)

Q45 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 26 Skipped: 193



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	34.62% 9	19.23% 5	42.31% 11	3.85% 1	26	2.15

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
2	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 1:14 PM
3	Concerns: The standards as written will be too vague for new teachers. The standards also suggest a lot of model building. I am not opposed to models, but where will the materials come from? 13 models are listed for the middle school standards. If each class has 24 students that would be at least 8 groups. Any group above 3 per person ends up with a student or 2 not doing anything. That would be materials for 104 models per year for one 6th, one 7th, and one 8th grade class. The cost is a concern. Positives: It appears that there is a move to make 6th grade one subject, 7th grade one subject, and 8th grade one subject. If that is the case, I like that. I would however like to know which grade level is going to be paired with which subject. For example: 6th grade physical science, 7th grade life science and 8th grade Earth science. That could be a good change.	11/13/2015 11:12 AM
4	The deletion of photosynthesis causes the standard to not address the breadth of the content.	11/11/2015 4:50 PM
5	Missing photosynthesis	11/11/2015 4:48 PM
6	To vague	11/4/2015 2:01 PM
7	There are not many specifics. Some could completely skip certain parts of the curriculum that relate to the standard if they are not specifically mentioned in the standards.	11/4/2015 1:11 PM

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8	Include all NGSS standards. Way too watered down.	11/4/2015 7:56 AM
9	MS-LS1-1 needs revising. The way the performance expectation is currently worded leads to a misconception. This wording establishes a misconception. The portion that states "a single cell must carry out all of the basic functions of life" is inaccurate. At maturity, not all cells fit that definition (i.e., a red blood cell). A better wording of the standard would be "Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. The clarification statement is fine.	10/31/2015 8:04 PM

MS-LS1 From
Molecules to
Organisms: Structures
and Processes (6-8)

**Q46 Overall comments regarding the
proposed standards for From Molecules to
Organisms: Structures and Process (MS-
LS1):**

Answered: 17 Skipped: 202

#	Responses	Date
1	This strand is worded better than most of the other middle school standards. Need to divide standards by grade level.	12/2/2015 10:12 PM
2	These opinions are from two sixth grade science teachers.	12/1/2015 2:53 PM
3	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 12:32 PM
4	I am a current sixth grade teacher, teaching science for the past 15 years. Looking over the proposed standards I feel very overwhelmed. First, compared to the GLE standards the proposed standards are not nearly specific enough. Half of my year's current GLEs are summed up in six standards. If these were the only standards that a new or inexperienced teacher were given, they would have a very difficult time knowing exactly what to teach. I think that a lot of the necessary background information that would be required to achieve the higher expectations the new standards expect are left out. I feel that the required background information and anything pertaining to the scientific method and variables is information that is necessary, but is missing from these standards, is it being assumed that we would just include this information on our own? I would include it in my plans for the year, but a new teacher would never know to do this. I feel this is potentially setting ourselves up for a lot of future gaps of knowledge. It is very confusing to follow as to where the "addressed elsewhere" standards are found; addressed elsewhere under a different strand or grade? It is not made clear. Looking at the sixth grade standards, I don't see where much content area has been removed, some is unclear if it is removed or not, but several units under physics have been added. I feel that in order for my students to understand what I am teaching, this is too much for sixth grade. Finally, pertaining to all the standards as a whole, the wording is not very student friendly. I post our class objectives daily on the board from the GLEs and we discuss them prior to our lesson. The students know exactly what they are required to know in this format. The wording of the new strands would be very overwhelming to them, example, "construct an argument supported by empirical evidence....." I feel they would shut down as soon as they saw this terminology. Life Science Specific Concerns: I think that if you are addressing the structures of the plant cell and the functions that the body systems that they are used to carry out that you would have to address photosynthesis and cellular respiration. I don't think that needs to be removed. The MS-LS4-3 examples of GMOs as new technology that has changed the way desired traits are passed on in organisms is too advanced for 6th grade. That would be an example for the same standard in 8th grade (where no example is listed for this strand). Without having a prior knowledge of farming or genetics that would be a hard concept to grasp in a meaningful manner.	11/30/2015 11:57 AM
5	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
6	These standards should be adopted as they are written.	11/27/2015 9:12 PM
7	At least "develop and use a model" is used only once here. I would not use the terminology when teaching about cells and their organelles, though.	11/24/2015 11:41 AM

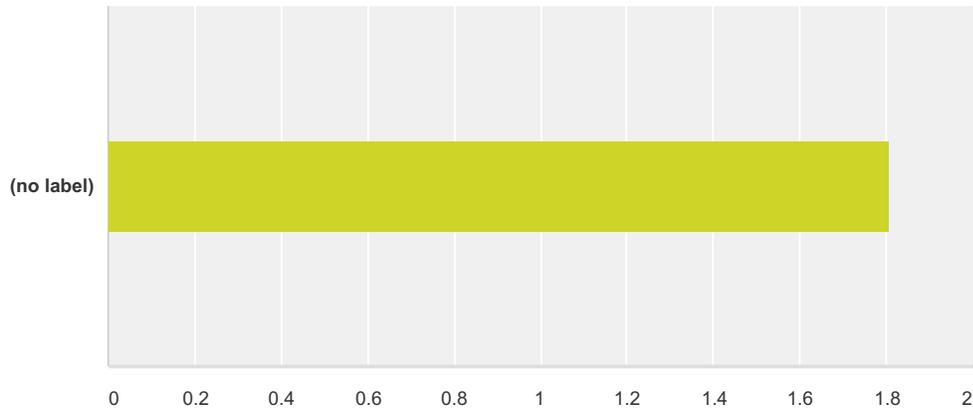
HB1490 Work Group - Science 6-12

8	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 1:14 PM
9	Concerns: The standards as written will be too vague for new teachers. The standards also suggest a lot of model building. I am not opposed to models, but where will the materials come from? 13 models are listed for the middle school standards. If each class has 24 students that would be at least 8 groups. Any group above 3 per person ends up with a student or 2 not doing anything. That would be materials for 104 models per year for one 6th, one 7th, and one 8th grade class. The cost is a concern. Positives: It appears that there is a move to make 6th grade one subject, 7th grade one subject, and 8th grade one subject. If that is the case, I like that. I would however like to know which grade level is going to be paired with which subject. For example: 6th grade physical science, 7th grade life science and 8th grade Earth science. That could be a good change.	11/13/2015 11:12 AM
10	Add: Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. [Clarification Statement: Emphasis is on tracing movement of matter and flow of energy.] [Assessment Boundary: Assessment does not include the biochemical mechanisms of photosynthesis.]	11/11/2015 4:50 PM
11	Photosynthesis knowledge is necessary for students to understand cycling of matter and the flow of energy. Taking out photosynthesis decreases the rigor of this standard.	11/11/2015 4:49 PM
12	Please notice comments above.	11/11/2015 4:49 PM
13	There is no mention of photosynthesis in this document. The role of photosynthesis is important in so many other concepts in the Missouri Learning Standards (cycling of matter and how energy flows). The NGSS standard for this concept follows: MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. [Clarification Statement: Emphasis is on tracing movement of matter and flow of energy.] [Assessment Boundary: Assessment does not include the biochemical mechanisms of photosynthesis.] This needs be addressed!	11/11/2015 4:48 PM
14	There is no mention of photosynthesis. Knowledge concept is necessary, or at least helpful, to understand how matter is recycle and how energy flows through Earth's systems.	11/11/2015 4:48 PM
15	Please include "photosynthesis." This information is crucial for the understanding of energy....food chains....food webs....systems, etc.	11/11/2015 4:48 PM
16	The content here is appropriate for this age level of student if time is allowed for them to grasp a deep understanding of the content.	11/4/2015 1:11 PM
17	The crosswalk to the current MLS states that the previous standards that covers diseases are no longer addressed but that is incorrect. The PE (MS-LS1-6) that deals with environmental and genetic factors on growth and development actually covers this information. The crosswalk lists that PE as a new standard but that information is incorrect. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	10/31/2015 8:04 PM

MS-LS2 Ecosystems:
Interactions, Energy, and
Dynamics (6-8)

Q48 The standards in this strand are developmentally appropriate.

Answered: 16 Skipped: 203



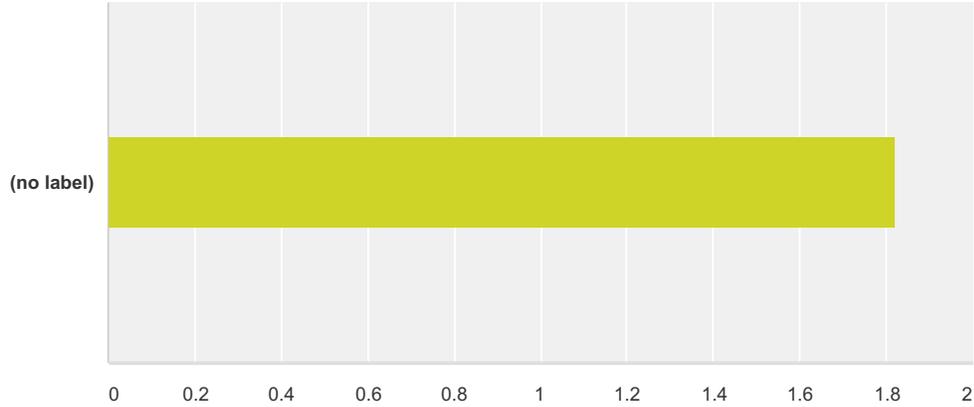
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 8	25.00% 4	18.75% 3	6.25% 1	16	1.81

#	Suggested revisions for standards:	Date
1	MS-LS2-5 This standard is too high for 6th grade.	12/1/2015 2:59 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
3	MS LS2-5 Too wordy on this standard with benefits and limitations of differing design solutions for maintaining an ecosystem. Is this more of a valuation of reasonableness.	11/24/2015 12:59 PM
4	There are no grade levels listed for each of the standards. The concepts are only listed as middle school with no grade levels attached. Some of the material is inappropriate for 6th grade because it deals with heredity which is not covered in the 6th grade. Also this section, MSLS4-2. Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. [Clarification Statement: Emphasis is on using simple probability statements and proportional reasoning to construct explanations.] is referring to information about genetics which there are no standards for this topic. MS-LS3 Heredity: Inheritance and Variation of Traits There are no Middle School Standards for this Section. standards for middle school.	11/4/2015 1:18 PM
5	The proposed standards are research-based and are developmentally appropriate.	10/31/2015 10:27 PM

MS-LS2 Ecosystems:
Interactions, Energy, and
Dynamics (6-8)

Q49 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 17 Skipped: 202



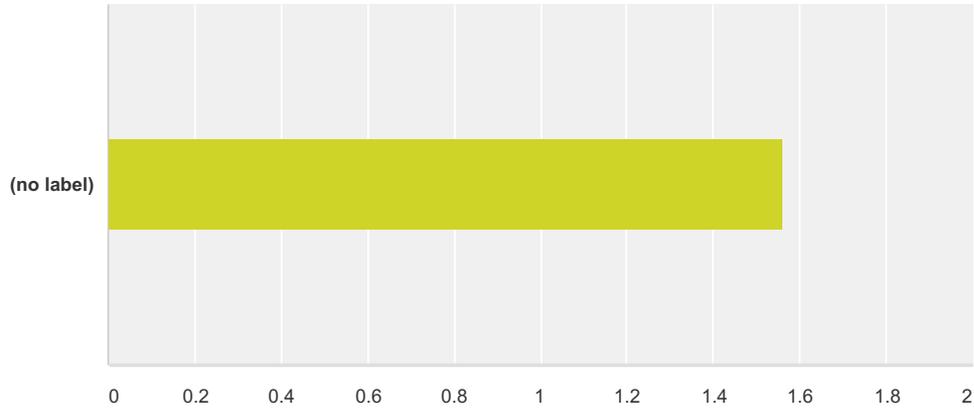
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	52.94% 9	23.53% 4	11.76% 2	11.76% 2	17	1.82

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
2	MS-LS1 and 2 These strands have been moved from HS biology to ONLY be covered in MS. In the HS strands, most concepts (protein synthesis etc.) will REQUIRE us to go over all of these strands as well. These strands should be placed back in HS-LS1.	11/9/2015 4:43 PM
3	There are no grade levels defined for the concepts in this area.	11/4/2015 1:18 PM
4	There is no suggestion for grade levels so it's hard to determine if the standards follow a coherent path through the grade levels.	11/4/2015 1:08 PM
5	Keep proposed standards as is for this strand. They are based upon years of research and learning progressions for how students best learn and understand science.	10/31/2015 10:27 PM

MS-LS2 Ecosystems:
Interactions, Energy, and
Dynamics (6-8)

Q50 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 16 Skipped: 203



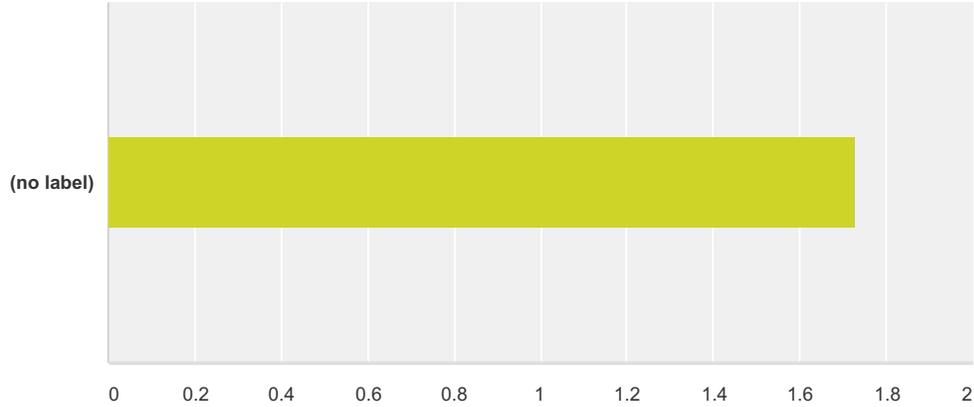
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	68.75% 11	12.50% 2	12.50% 2	6.25% 1	16	1.56

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
2	Many of the topics in this section are not addressed at a 6th grade level.	11/4/2015 1:18 PM
3	Keep proposed standards as is for this strand. By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	10/31/2015 10:27 PM

MS-LS2 Ecosystems:
Interactions, Energy,
and Dynamics (6-8)

Q51 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 15 Skipped: 204



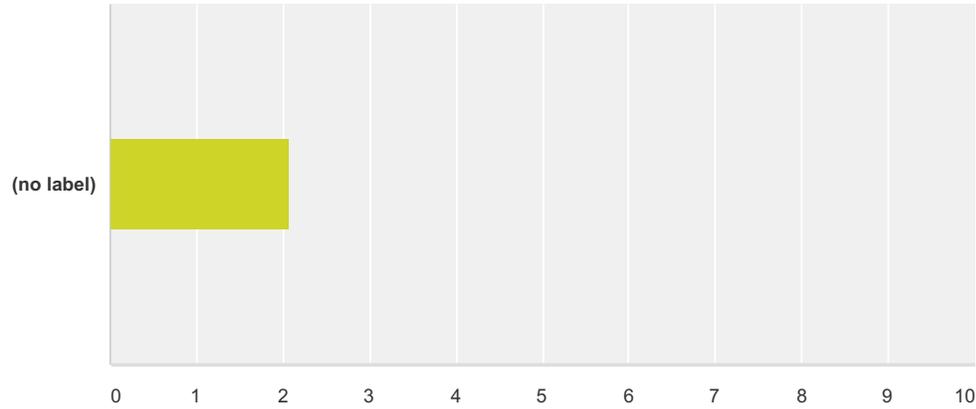
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	66.67% 10	6.67% 1	13.33% 2	13.33% 2	15	1.73

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
2	It would be helpful to see example of questions that would appear on a test to help guide the direction of teaching the material.	11/4/2015 1:18 PM
3	Keep proposed standards as is for this strand. All the standards can be assessed and science should be assessed in this way.	10/31/2015 10:27 PM

MS-LS2 Ecosystems:
Interactions, Energy, and
Dynamics (6-8)

Q52 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 16 Skipped: 203



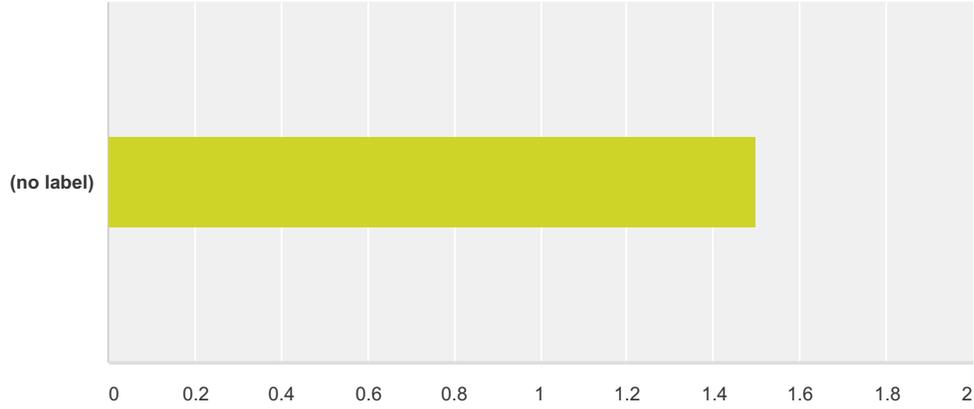
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 8	12.50% 2	18.75% 3	18.75% 3	16	2.06

#	Suggested revisions for standards:	Date
1	MS-LS2-1 The standard tells students to analyze and interpret data. Teachers want to know "what kind of data?" We want more details. MS-LS2-2 This standard starts with, "construct an explanation"... Could it say something about the effects of changes within an ecosystem? MS-LS2-3 This standard says, "Develop a model..." Is this the same as a diagram? MS-LS2-4 Is this meant to be a standard that would be a good performance event?	12/1/2015 2:59 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
3	My 6th grade students would not be able to understand what these standards are saying, nor would parents. It seems like all of the standards are written in such sophisticated language that it takes me some time to figure out what I am suppose to teach according to this standard.	11/4/2015 1:16 PM
4	Having the old standards was helpful because they are simpler and broken down farther.	11/4/2015 1:08 PM
5	Keep proposed standards as is for this strand. These standards show key connections and make the practice of science evidence to all stakeholders. The crosscutting concepts also make the standards understandable to all. By making connections to concepts like "cause and effect," everyone can see the links between what students are learning and how they can transfer that knowledge to other courses and experiences.	10/31/2015 10:27 PM

MS-LS2 Ecosystems:
Interactions, Energy, and
Dynamics (6-8)

Q53 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 16 Skipped: 203



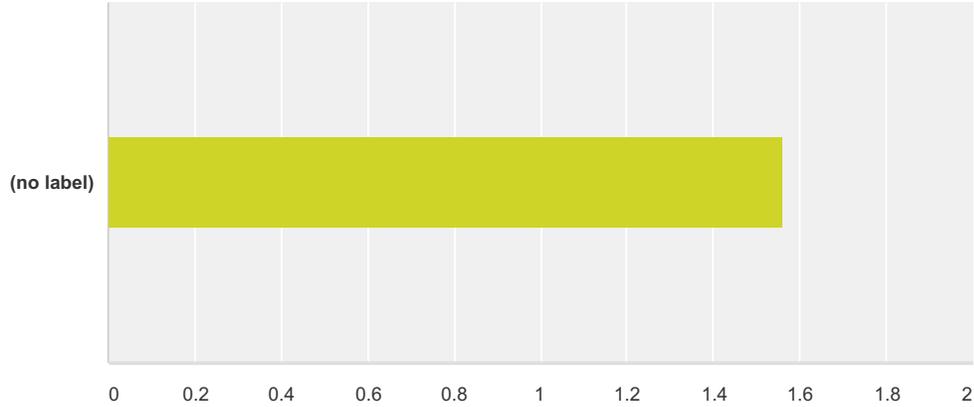
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	68.75% 11	18.75% 3	6.25% 1	6.25% 1	16	1.50

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:18 AM
2	Keep proposed standards as is for this strand. This new format for the standards mirrors the college and career readiness benchmarks for ACT and for advanced placement sciences, all of which are a way we measure college and career readiness.	10/31/2015 10:27 PM

MS-LS2 Ecosystems:
Interactions, Energy,
and Dynamics (6-8)

Q54 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 16 Skipped: 203



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	62.50% 10	25.00% 4	6.25% 1	6.25% 1	16	1.56

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:18 AM
2	Keep proposed standards as is for this strand. Science is constantly changing. These proposed standards contain the content necessary for students to be scientifically literate but also provided the needed upgrade based upon advancements that have occurred in science since the last standards were adopted. They also include the format that research shows is best in terms of helping students to learn and understand science.	10/31/2015 10:27 PM

MS-LS2 Ecosystems:
Interactions, Energy,
and Dynamics (6-8)

**Q55 Overall comments regarding the
proposed standards for Ecosystems:
Interactions, Energy, and Dynamics (MS-
LS2):**

Answered: 8 Skipped: 211

#	Responses	Date
1	Would like to see a Pro Agricultural Influence in this area with emphasis on responsible use of environmental resources but not from the view point of humans as a hazard to the environment.	12/2/2015 5:40 PM
2	These opinions were written by two sixth grade science teachers.	12/1/2015 2:59 PM
3	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 12:32 PM
4	I am a current sixth grade teacher, teaching science for the past 15 years. Looking over the proposed standards I feel very overwhelmed. First, compared to the GLE standards the proposed standards are not nearly specific enough. Half of my year's current GLEs are summed up in six standards. If these were the only standards that a new or inexperienced teacher were given, they would have a very difficult time knowing exactly what to teach. I think that a lot of the necessary background information that would be required to achieve the higher expectations the new standards expect are left out. I feel that the required background information and anything pertaining to the scientific method and variables is information that is necessary, but is missing from these standards, is it being assumed that we would just include this information on our own? I would include it in my plans for the year, but a new teacher would never know to do this. I feel this is potentially setting ourselves up for a lot of future gaps of knowledge. It is very confusing to follow as to where the "addressed elsewhere" standards are found; addressed elsewhere under a different strand or grade? It is not made clear. Looking at the sixth grade standards, I don't see where much content area has been removed, some is unclear if it is removed or not, but several units under physics have been added. I feel that in order for my students to understand what I am teaching, this is too much for sixth grade. Finally, pertaining to all the standards as a whole, the wording is not very student friendly. I post our class objectives daily on the board from the GLEs and we discuss them prior to our lesson. The students know exactly what they are required to know in this format. The wording of the new strands would be very overwhelming to them, example, "construct an argument supported by empirical evidence....." I feel they would shut down as soon as they saw this terminology. Life Science Specific Concerns: I think that if you are addressing the structures of the plant cell and the functions that the body systems that they are used to carry out that you would have to address photosynthesis and cellular respiration. I don't think that needs to be removed. The MS-LS4-3 examples of GMOs as new technology that has changed the way desired traits are passed on in organisms is too advanced for 6th grade. That would be an example for the same standard in 8th grade (where no example is listed for this strand). Without having a prior knowledge of farming or genetics that would be a hard concept to grasp in a meaningful manner.	11/30/2015 11:57 AM
5	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:18 AM
6	These standards should be adopted as they are written.	11/27/2015 9:13 PM
7	Why would I "Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem." when part of this is done while interpreting a food web. Students would not be developing the model. They would be using and interpreting a model.	11/24/2015 11:42 AM

HB1490 Work Group - Science 6-12

8	<p>Keep as proposed. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.</p>	10/31/2015 10:27 PM
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Q57 There are no proposed standards for Heredity and Inheritance: Variation of Traits (MS-LS3). Comment:

Answered: 18 Skipped: 201

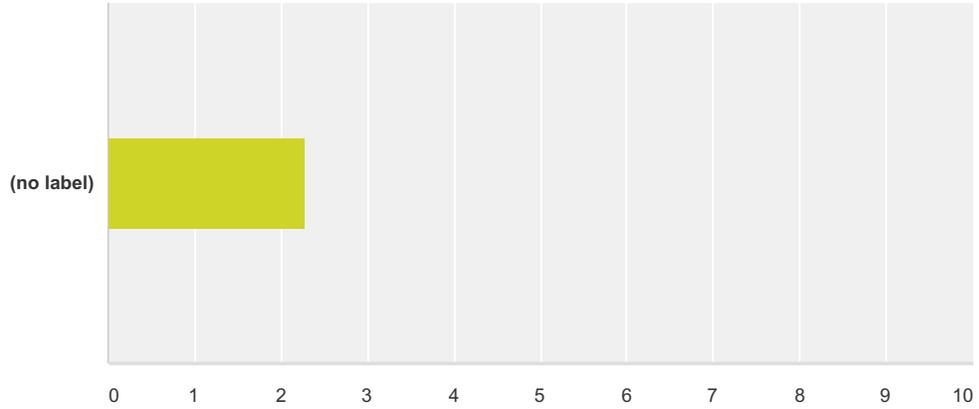
#	Responses	Date
1	Sad we lost the introductory portion of this part of LS	12/2/2015 10:19 PM
2	We need to talk about genetics and aspects of genetics in order to teach some of our standards, so why not just have a genetics standard?	12/2/2015 2:42 PM
3	There should be genetics! This is in NGSS and it makes no sense why it is omitted.	11/30/2015 8:46 AM
4	Why wouldn't simple genetic inheritance (Mendelian genetics) be discussed?	11/24/2015 9:45 AM
5	The removal of this strand represents a massive change in our Middle School curriculum. We currently spend a full quarter of our curriculum year learning about cell division (mitosis, meiosis), heredity, genes, and DNA.	11/16/2015 2:36 PM
6	The elimination of these standards creates a drastic change to the current curriculum. Please reconsider this change as these concepts are presented at the middle school level to introduce students to the material before HS biology.	11/16/2015 2:35 PM
7	Heredity and Inheritance is a big portion of the discussion used for evolution and natural selection. This is a building block for biology that warrants an introduction at the middle school level.	11/16/2015 2:17 PM
8	There may not be any proposed standards for this but there needs to be. Having an understanding of heredity helps with the understanding of evolution. There are so many basics that are being missed for students to be successful in science in the state of Missouri.	11/16/2015 1:58 PM
9	The standards for Heredity and Inheritance need to be added to the middle school standards. Students need a background in these concepts to study natural selection.	11/11/2015 4:40 PM
10	This information is needed for students' understanding of natural selection.	11/11/2015 4:40 PM
11	This is necessary background information for understanding natural selection.	11/11/2015 4:39 PM
12	This is necessary background information for understanding natural selection.	11/11/2015 4:39 PM
13	This is necessary information for teaching natural selection.	11/11/2015 4:39 PM
14	I love the new application of the science standards. It is great how they are based off the NGSS and focus on application of science concepts. I am currently teaching life science. My one grievance is that the standards say there are NO middle school standards under inheritance and variation of traits. The NGSS clearly lays out the standards for this section AND our current GLES have standards in this section. I feel that it is unreasonable to just drop a whole section of study from our curriculum (especially one so important). And yet, there are still 3-4 other standards in other strands that talk about genetic variation, except the whole strand where we guide them through variation of traits is gone! This makes absolutely no sense. For instance: the following standards talks about influencing how traits are inherited, but our students will have no knowledge of Punnett squares, genes, and inheritance. If I am going to have to teach the background knowledge anyway, why don't we have those standards? Please consider adding the variation of traits strand back into the section for 6-8 standards. MS- Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. [Clarification LS4-3. Statement: Emphasis is on synthesizing information from reliable sources about the influence of humans on genetic outcomes in artificial selection (such as genetic modification, animal husbandry, and farming practices).]	11/9/2015 7:02 AM
15	There should be standards for heredity and inheritance because students are expected to explain concepts in biodiversity and unity by having prior knowledge about heredity.	11/4/2015 1:13 PM
16	Heredity needs to be addressed, even briefly, for students to better understand Biological Evolution.	11/4/2015 1:13 PM
17	Thank God above for the "genius bill" which allows highly intelligent individuals to come to our country with no problems. If not for that, our country would be doomed. Why would you want to hold kids back? Are you afraid your own kids will not do well? I am not being flippant. I just do not understand your thinking process.	11/4/2015 7:41 AM

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18	<p>To eliminate the entire disciplinary core idea of Heredity: Inheritance and Variation of Traits will not only interfere with coherence and developing deep understanding of other concepts but it will also remove one of the key biological big ideas from the middle school curriculum. An understanding of genetics and heredity is essential for life science. Students should not wait until high school to begin developing their knowledge base in this subject area given all the relevant issues connected to the big idea. Students should learn to distinguish between asexual and sexual reproduction and the impact each type has on the transfer of genetic information to offspring. Students should have a conceptual understanding of genes and how they control the production of proteins which affects traits expressed in an organism. Students should understand that mutations can be helpful, harmful, or have no effect. Students should understand the importance of variation. They should also develop a basic understanding of heredity and inheritance.</p>	11/1/2015 6:29 AM
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Q59 The standards in this strand are developmentally appropriate.

Answered: 22 Skipped: 197



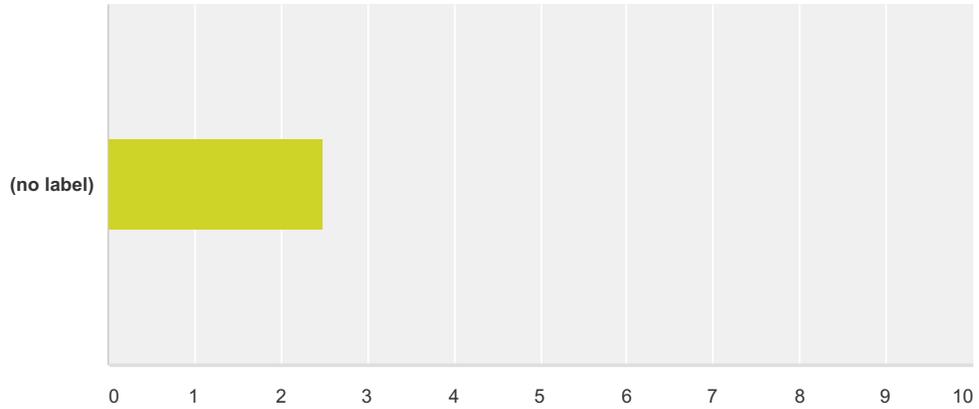
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	40.91% 9	4.55% 1	40.91% 9	13.64% 3	22	2.27

#	Suggested revisions for standards:	Date
1	SO now we WANT to teach Natural Selection? Because in MS-LS1-5 you say not to assess Nat Select. Keep it consistent please. This is crazy that different strands say different things about expected assessment of intertwined scientific concepts. You have deleted and variation of traits from MS standards (MS-LS3) but in this strand you are asking me to assess traits specific determine by genes passed on to offspring LS4.B, LS4.C. This strand (while I think it is well written) cannot be taught while completely deleting the inheritance strand mentioned above, therefore it cannot be developmentally appropriate in the scope and sequence.	12/2/2015 10:37 PM
2	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students.	11/16/2015 2:28 PM
3	Follow NGSS. The entire standards are well developed and will help prepare our students for the demands of the scientific career field. Watering down standards is not going to help our students.	11/16/2015 2:25 PM
4	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:56 AM
5	Standards should have a more distinct developmentally path as they progress from grade level to grade level.	11/4/2015 1:17 PM
6	So, have we put heredity into evolution? Must have been some Ag folks in the groups, thank goodness. At least the Ag kids will get some genetics. Artificial selection is important to agribusiness, of course. Leave the NGSS as written.	11/4/2015 8:08 AM
7	Checked Keep Proposed As Is with modifications under a few other categories in the survey. The proposed standards are research-based and are developmentally appropriate.	11/1/2015 7:14 AM

MS-LS4 Biological
Evolution: Unity and
Diversity (6-8)

Q60 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 21 Skipped: 198

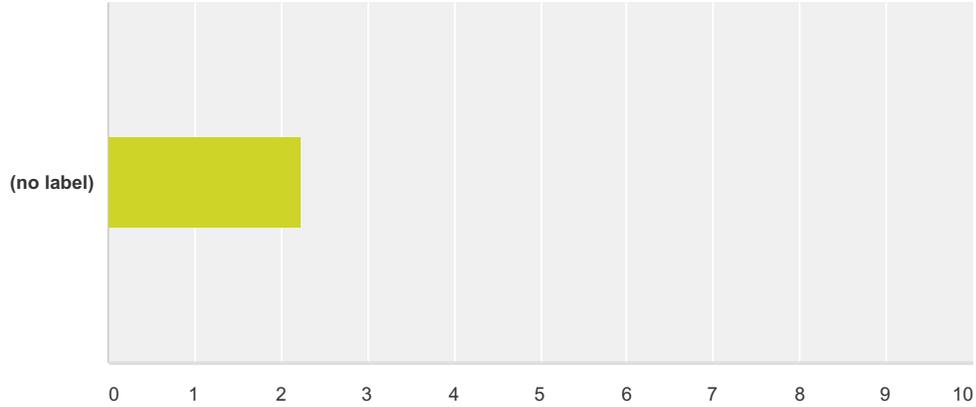


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	33.33% 7	4.76% 1	42.86% 9	19.05% 4	21	2.48

#	Suggested revisions for standards:	Date
1	Not a coherent path... see comment above about genes and traits in this strand though the Inheritance strand has been deleted at middle school level	12/2/2015 10:37 PM
2	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students.	11/16/2015 2:28 PM
3	Follow NGSS. The entire standards are well developed and will help prepare our students for the demands of the scientific career field. Watering down standards is not going to help our students.	11/16/2015 2:25 PM
4	A standard that allows students to analyze and interpret patterns in other evidences to be able to construct an argument that leads to an explanation for MS-LS4-2 is needed. Students should not be using the fossil record alone as evidence. Part of this practice is encouraging students to examine multiple lines of evidence.	11/1/2015 7:14 AM

Q61 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 22 Skipped: 197



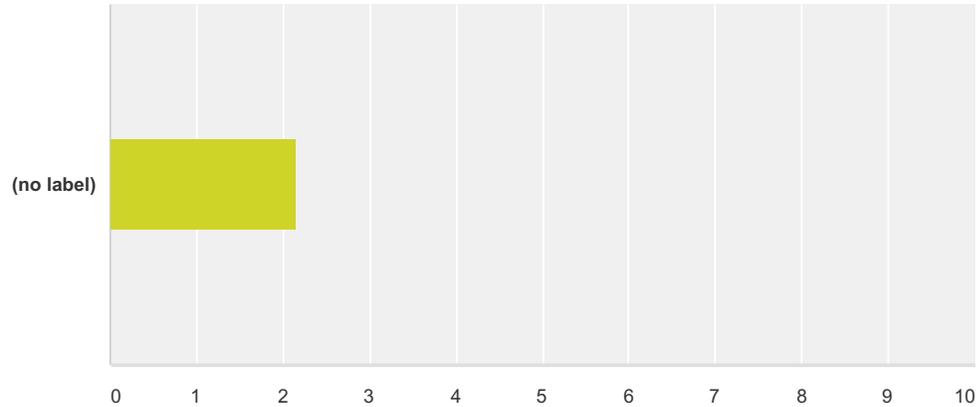
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	45.45% 10	4.55% 1	31.82% 7	18.18% 4	22	2.23

#	Suggested revisions for standards:	Date
1	if we re-implement MS-LS3	12/2/2015 10:37 PM
2	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students.	11/16/2015 2:28 PM
3	Follow NGSS. The entire standards are well developed and will help prepare our students for the demands of the scientific career field. Watering down standards is not going to help our students.	11/16/2015 2:25 PM
4	Keep proposed standards as is for this strand. By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	11/1/2015 7:14 AM

MS-LS4 Biological
Evolution: Unity and
Diversity (6-8)

Q62 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 22 Skipped: 197



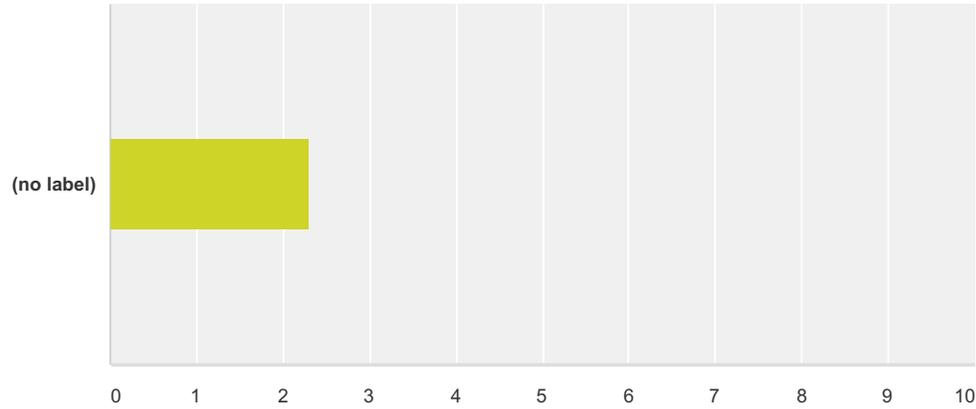
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	45.45% 10	9.09% 2	31.82% 7	13.64% 3	22	2.14

#	Suggested revisions for standards:	Date
1	see comment above	12/2/2015 10:37 PM
2	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students.	11/16/2015 2:28 PM
3	Follow NGSS. The entire standards are well developed and will help prepare our students for the demands of the scientific career field. Watering down standards is not going to help our students.	11/16/2015 2:25 PM
4	Easy Peasy.	11/4/2015 8:08 AM
5	All the standards can be assessed and science should be assessed in this way.	11/1/2015 7:14 AM

MS-LS4 Biological
Evolution: Unity and
Diversity (6-8)

Q63 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 21 Skipped: 198



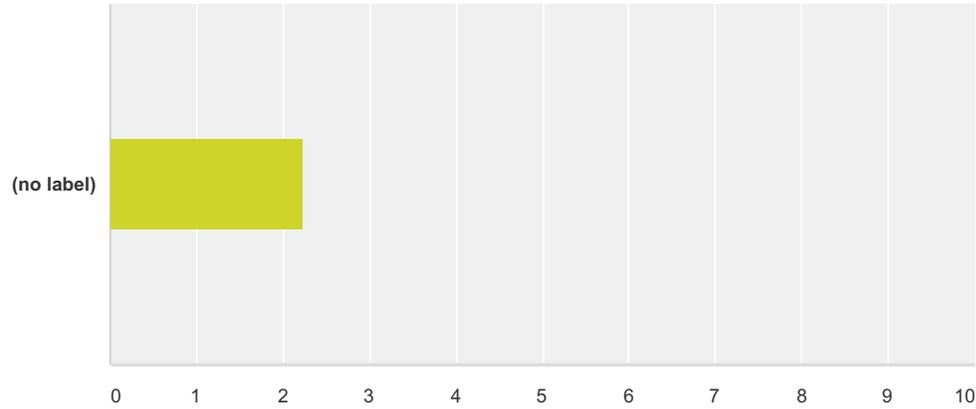
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	38.10% 8	4.76% 1	47.62% 10	9.52% 2	21	2.29

#	Suggested revisions for standards:	Date
1	only sci teachers can understand most of this wording	12/2/2015 10:37 PM
2	MS-LS4-2 The standard states: "Construct an explanation based on evidence"... Teachers want to know, "what evidence are you thinking???"	12/1/2015 3:01 PM
3	While teaching in Missouri, I have been verbally assaulted by parents about evolution-like topics.	11/24/2015 11:42 AM
4	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students.	11/16/2015 2:28 PM
5	Needs more depth.	11/16/2015 2:25 PM
6	Keep proposed standards as is for this strand. These standards show key connections and make the practice of science evidence to all stakeholders. The crosscutting concepts also make the standards understandable to all. By making connections to concepts like "cause and effect," everyone can see the links between what students are learning and how they can transfer that knowledge to other courses and experiences. There should be a better inclusion of patterns as suggested in other categories of this portion of the survey.	11/1/2015 7:14 AM

MS-LS4 Biological
Evolution: Unity and
Diversity (6-8)

Q64 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 22 Skipped: 197



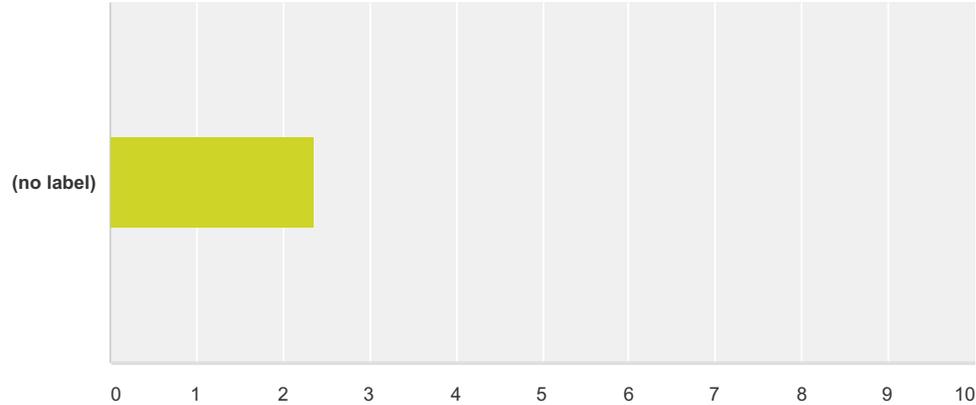
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	45.45% 10	4.55% 1	31.82% 7	18.18% 4	22	2.23

#	Suggested revisions for standards:	Date
1	if inheritance strand is brought back	12/2/2015 10:37 PM
2	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students.	11/16/2015 2:28 PM
3	Follow NGSS. The entire standards are well developed and will help prepare our students for the demands of the scientific career field. Watering down standards is not going to help our students.	11/16/2015 2:25 PM
4	Some students might want to go to college. Believe in the theory of evolution, or not, at least understand what it is about within the subject area. I may not believe the theories of communism or socialism, but I can sure study them and make up my own mind.	11/4/2015 8:08 AM
5	Gene therapy should be added to MS-LS4-3. This is yet another way that genetic disease can be addressed in the curriculum. These topics are not only engaging for students but they are also important for them to understand from a bioethics perspective. Students need to be informed so they will be able to make decisions as they become adults and as they eventually exercise their responsibilities as citizens. Graphs should not be the only evidence to support this explanation. The standard (MS-LS4-4) should be changed to "Use and interpret mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. [Clarification statement: Emphasis is on using mathematical models, probability statements, and proportional reasoning to support explanations of trends in changes to populations over time.] [Assessment Boundary: Assessment does not include Hardy-Weinberg calculations.] By eliminating the probability and proportional reasoning elements, the standard that is proposed reduces interdisciplinary opportunities between math and science. Science provides context for applications of math. It is essential to make these connections whenever possible. These simple mathematical representations also illustrate and provide evidence for the explanation, helping students understand the scientific principle.	11/1/2015 7:14 AM

MS-LS4 Biological
Evolution: Unity and
Diversity (6-8)

Q65 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	40.91% 9	4.55% 1	31.82% 7	22.73% 5	22	2.36

#	Suggested revisions for standards:	Date
1	Must bring back MS-LS3 to encompass ALL this content	12/2/2015 10:37 PM
2	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students.	11/16/2015 2:28 PM
3	Follow NGSS. The entire standards are well developed and will help prepare our students for the demands of the scientific career field. Watering down standards is not going to help our students.	11/16/2015 2:25 PM
4	Students should know the age of the Earth and the relative amount of time that life and humans have been part of Earth's history.	11/11/2015 5:00 PM
5	A standard that allows students to analyze and interpret patterns in other evidences to be able to construct an argument that leads to an explanation for MS-LS4-2 is needed. Students should not be using the fossil record alone as evidence. Part of this practice is encouraging students to examine multiple lines of evidence. Gene therapy should be added to MS-LS4-3. This is yet another way that genetic disease can be addressed in the curriculum. These topics are not only engaging for students but they are also important for them to understand from a bioethics perspective. Students need to be informed so they will be able to make decisions as they become adults and as they eventually exercise their responsibilities as citizens. Graphs should not be the only evidence to support this explanation. The standard (MS-LS4-4) should be changed to "Use and interpret mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. [Clarification statement: Emphasis is on using mathematical models, probability statements, and proportional reasoning to support explanations of trends in changes to populations over time.] [Assessment Boundary: Assessment does not include Hardy-Weinberg calculations.] By eliminating the probability and proportional reasoning elements, the standard that is proposed reduces interdisciplinary opportunities between math and science. Science provides context for applications of math. It is essential to make these connections whenever possible. These simple mathematical representations also illustrate and provide evidence for the explanation, helping students understand the scientific principle.	11/1/2015 7:14 AM

MS-LS4 Biological
Evolution: Unity
and Diversity (6-8)

**Q66 Overall comments regarding the
proposed standards for Biological
Evolution: Unity and Diversity (MS-LS4):**

Answered: 12 Skipped: 207

#	Responses	Date
1	well written strand, but without MS-LS3 it cannot be taught effectively Divide standards by 6,7,& 8th grade.	12/2/2015 10:37 PM
2	These opinions were written by two sixth grade teachers.	12/1/2015 3:01 PM
3	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 2:13 PM
4	I am a current sixth grade teacher, teaching science for the past 15 years. Looking over the proposed standards I feel very overwhelmed. First, compared to the GLE standards the proposed standards are not nearly specific enough. Half of my year's current GLEs are summed up in six standards. If these were the only standards that a new or inexperienced teacher were given, they would have a very difficult time knowing exactly what to teach. I think that a lot of the necessary background information that would be required to achieve the higher expectations the new standards expect are left out. I feel that the required background information and anything pertaining to the scientific method and variables is information that is necessary, but is missing from these standards, is it being assumed that we would just include this information on our own? I would include it in my plans for the year, but a new teacher would never know to do this. I feel this is potentially setting ourselves up for a lot of future gaps of knowledge. It is very confusing to follow as to where the "addressed elsewhere" standards are found; addressed elsewhere under a different strand or grade? It is not made clear. Looking at the sixth grade standards, I don't see where much content area has been removed, some is unclear if it is removed or not, but several units under physics have been added. I feel that in order for my students to understand what I am teaching, this is too much for sixth grade. Finally, pertaining to all the standards as a whole, the wording is not very student friendly. I post our class objectives daily on the board from the GLEs and we discuss them prior to our lesson. The students know exactly what they are required to know in this format. The wording of the new strands would be very overwhelming to them, example, "construct an argument supported by empirical evidence....." I feel they would shut down as soon as they saw this terminology. Life Science Specific Concerns: I think that if you are addressing the structures of the plant cell and the functions that the body systems that they are used to carry out that you would have to address photosynthesis and cellular respiration. I don't think that needs to be removed. The MS-LS4-3 examples of GMOs as new technology that has changed the way desired traits are passed on in organisms is too advanced for 6th grade. That would be an example for the same standard in 8th grade (where no example is listed for this strand). Without having a prior knowledge of farming or genetics that would be a hard concept to grasp in a meaningful manner.	11/30/2015 11:58 AM
5	These standards should be adopted as they are written.	11/27/2015 9:13 PM
6	NGSS provides a rigorous test for our students, and SHOULD be followed without major changes such as these...the new MO standards are a slap in the face to Science educators and our students...	11/16/2015 2:28 PM
7	Follow NGSS. The entire standards are well developed and will help prepare our students for the demands of the scientific career field. Watering down standards is not going to help our students.	11/16/2015 2:25 PM
8	All evidence for evolution was removed except the fossil evidence. In order for students to fully understand evolution, they must also learn about embryological and anatomical similarities and differences.	11/11/2015 4:56 PM

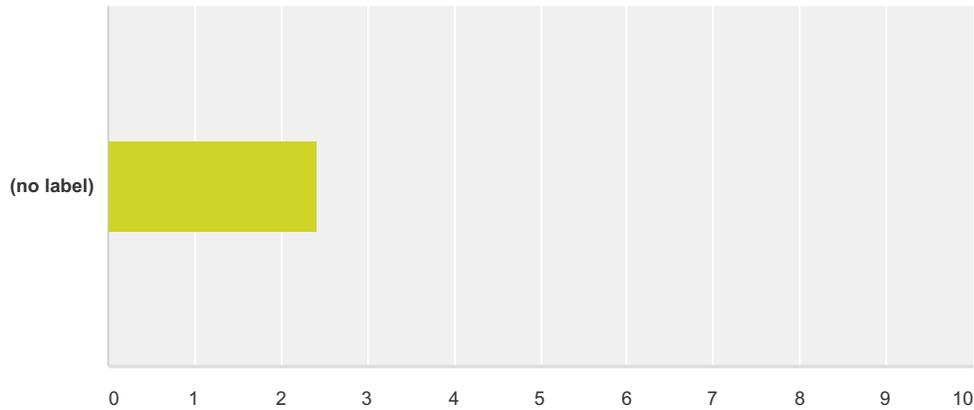
HB1490 Work Group - Science 6-12

9	<p>Add: Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. [Clarification Statement: Emphasis is on explanations of the evolutionary relationships among organisms in terms of similarity or differences of the gross appearance of anatomical structures.] Add: Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.</p>	11/11/2015 4:56 PM
10	<p>All evidence for evolution was removed except the fossil evidence. In order for students to fully understand evolution, they must also learn about embryological and anatomical differences and similarities.</p>	11/11/2015 4:55 PM
11	<p>There is no evidence of evolution other than the fossil record. In order for students to understand evolution, they must also investigate embryological and anatomical similarities and differences.</p>	11/11/2015 4:54 PM
12	<p>This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards along with the suggested modifications reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.</p>	11/1/2015 7:14 AM

MS-ESS1 Earth's Place in the Universe (6-8)

Q68 The standards in this strand are developmentally appropriate.

Answered: 23 Skipped: 196



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	30.43% 7	4.35% 1	56.52% 13	8.70% 2	23	2.43

#	Suggested revisions for standards:	Date
1	MSESS2-1 This standard is too broad and needs to be 8th grade. We have no pacing or timeline that suggests grade levels for standards in 6-8. Right now school districts in the state of Missouri follow their own guidelines. We hope for a suggested outline and pacing guide for grades 6-8. Some school districts still follow a textbook series that provides life science in 6th grade, physical science in 7th grade and earth science in 8th grade. While this makes sense for some, our testing at the end of 8th grade makes it hard to remember everything that happened in 6th grade. Therefore, other school districts follow the outline of the GLE's and split everything across 6th, 7th and 8th. Will the state of Missouri give any direction as to what they think is best? MSESS2-3 Great for 6th grade!	12/1/2015 2:41 PM
2	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 11:59 AM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:19 AM
4	To remove the mechanisms which drive atmospheric conditions, such as cloud-types and Coriolis Effect "dumb down" the Atmosphere section. Students need the rudimentary understanding of cloud types and what helps make those clouds as well as the weather created for a complete understanding of our weather. To not know what clouds produce what weather (if any) is a disservice to middle school education. Understanding the type of cloud, which precipitation occurs (if any), and how that type of cloud forms is paramount to an understanding of the atmospheric layers...	11/16/2015 2:25 PM
5	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:23 AM

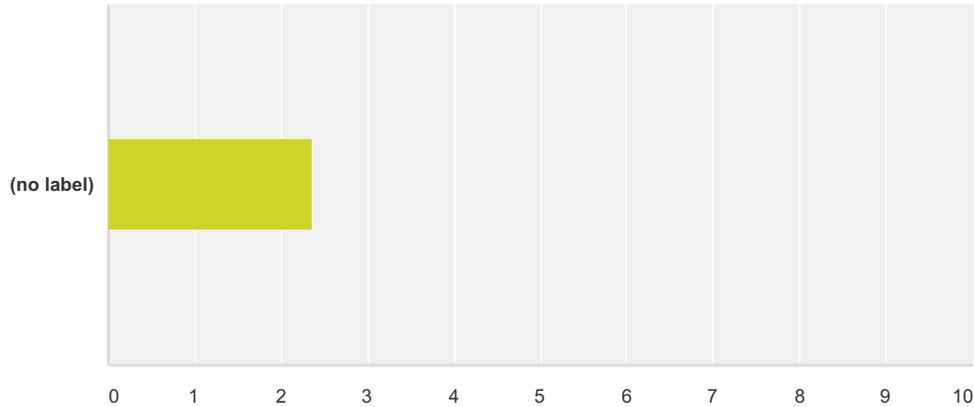
HB1490 Work Group - Science 6-12

6	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:56 AM
7	There needs to be further explanation as to what the proposed standard wants taught. It is also hard to determine whether or not it is appropriate for grade level because it is not clear as to when it is supposed to be taught (6th, 7th or 8th grade).	11/9/2015 4:37 PM
8	Standard is developmentally appropriate, BUT there needs to be a scope and sequence to suggest when this should be taught.	11/9/2015 4:14 PM
9	They are very vague, it would be helpful if they were broken down into smaller chunks. This would make it easier for teachers to teach and for students to learn.	11/4/2015 1:14 PM
10	Keep proposed standards as is for this strand. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students.	11/1/2015 9:23 AM

MS-ESS1 Earth's
Place in the
Universe (6-8)

Q69 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	31.82% 7	9.09% 2	50.00% 11	9.09% 2	22	2.36

#	Suggested revisions for standards:	Date
1	MSESS1-3 - I think it would be difficult to model the effects of gravity on motion of objects. I would prefer allowing students to explain or represent the effects of gravity on the motion of objects rather than requiring students to develop and use a model.	12/2/2015 2:55 PM
2	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 11:59 AM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:19 AM
4	See above...	11/16/2015 2:25 PM
5	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:23 AM
6	There is no coherent path because there is nothing stating when they need to be taught.	11/9/2015 4:37 PM
7	The standard needs more detail, the old GLE's were very specific as to what needed to be taught - with a substandard break down. This would be very difficult for a first year teacher in the subject level to know how much time to dedicate on the topic.	11/9/2015 4:14 PM
8	Make sure clarification statements are included in the final product.	11/4/2015 1:14 PM

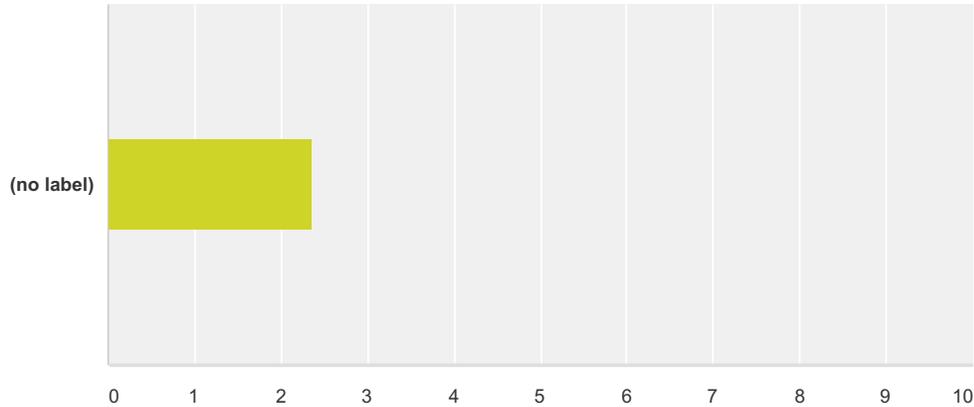
HB1490 Work Group - Science 6-12

9	Keep proposed standards as is for this strand. They are based upon years of research and learning progressions for how students best learn and understand science.	11/1/2015 9:23 AM
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MS-ESS1 Earth's Place in the Universe (6-8)

Q70 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	36.36% 8	4.55% 1	45.45% 10	13.64% 3	22	2.36

#	Suggested revisions for standards:	Date
1	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 11:59 AM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:19 AM
3	See above, and we are truly taking NGSS, and gutting the rigor of middle school Earth Science. We would prefer NOT to follow Kansas' model of education...	11/16/2015 2:25 PM
4	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:23 AM
5	A model can be a high level DOK but it can also be very low. It will not allow students to achieve a higher level because the expectations are not clear. One of the standards states to create a model including Earth's tilt but students (and even beginning teachers) would never know from only what was written to include an explanation for why life would be favorable on Earth.	11/9/2015 4:37 PM
6	This standard needs more detail, specifically what DOK the standard (and the substandards that need to be identified) should be covered.	11/9/2015 4:14 PM
7	The standard provides a certain rigor for the students, but does not follow any path whatsoever.	11/4/2015 1:14 PM

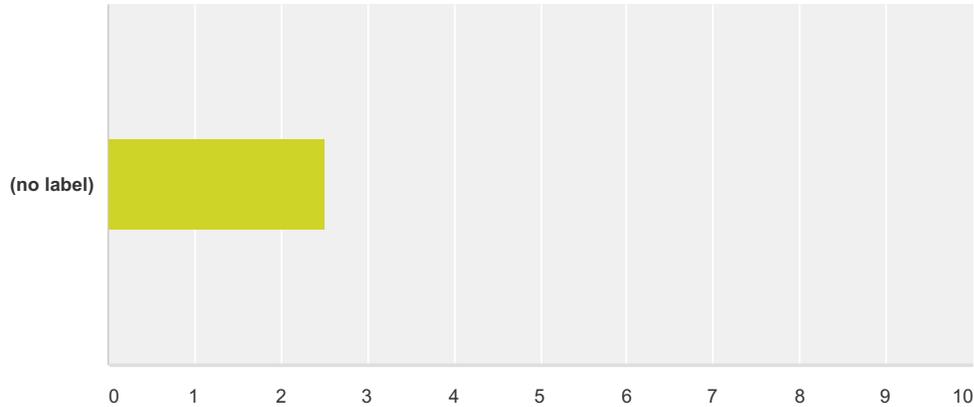
HB1490 Work Group - Science 6-12

8	Keep proposed standards as is for this strand. By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	11/1/2015 9:23 AM
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MS-ESS1 Earth's Place in the Universe (6-8)

Q71 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	31.82% 7	4.55% 1	45.45% 10	18.18% 4	22	2.50

#	Suggested revisions for standards:	Date
1	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 11:59 AM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:19 AM
3	The "develop and use a model" concept is far too difficult to assess.	11/24/2015 11:44 AM
4	Yes, but ONLY on a superficial level, which is truly a disservice to ur educators and students...	11/16/2015 2:25 PM
5	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Can you assess developing a model on a state assessment? Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:23 AM
6	The topic can be assessed but it is a guessing game as to what specifics will be addressed for each topic.	11/9/2015 4:37 PM
7	Without substandards to be addressed, it is impossible to know what should be addressed and how to assess these standards in the classroom and/or on a state assessment.	11/9/2015 4:14 PM
8	The use of conceptual models during assessment should be limited. A student's understanding of science should be based on a graphic model rather than a concept map. A student not being able to read a concept map doesn't necessarily mean a student doesn't understand the science going on in the concept map.	11/4/2015 1:14 PM

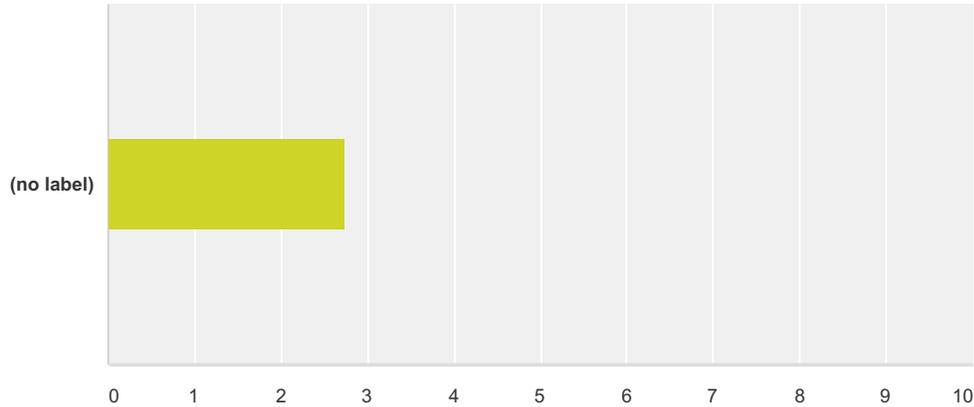
HB1490 Work Group - Science 6-12

9	They can be assessed in the classroom, but would need to be broken down into smaller chunks and not one large, vague concept.	11/4/2015 1:14 PM
10	Keep proposed standards as is for this strand. All the standards can be assessed and science should be assessed in this way.	11/1/2015 9:23 AM

MS-ESS1 Earth's Place in the Universe (6-8)

Q72 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	22.73% 5	4.55% 1	50.00% 11	22.73% 5	22	2.73

#	Suggested revisions for standards:	Date
1	The emphasis on developing and using a model on a variety of the standards is too much. I like models, but I don't think it's good to have students developing this many models without giving other opportunities to demonstrate their understanding.	12/2/2015 2:55 PM
2	MSESS1-5 This standard as written is too broad/general. Can something be done to make it more specific?	12/1/2015 2:41 PM
3	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 11:59 AM
4	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:19 AM
5	Yes they are understandable, but not TEACHABLE...this is a disservice to the middle school Science education.	11/16/2015 2:25 PM
6	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:23 AM
7	These are so vague that there is far too much room for interpretation from teacher to teacher. If I am an Earth science expert I will be able to address many of these topics. If I am a life science expert I would not be familiar enough on the topic to include information past surface level. With the prior GLE's teachers had clear expectations for each topic. If there are not clear understanding among teachers, there will not be clear communication, and therefore, large confusion among the stakeholders. That kind of confusion often leads to rejection by that group.	11/9/2015 4:37 PM

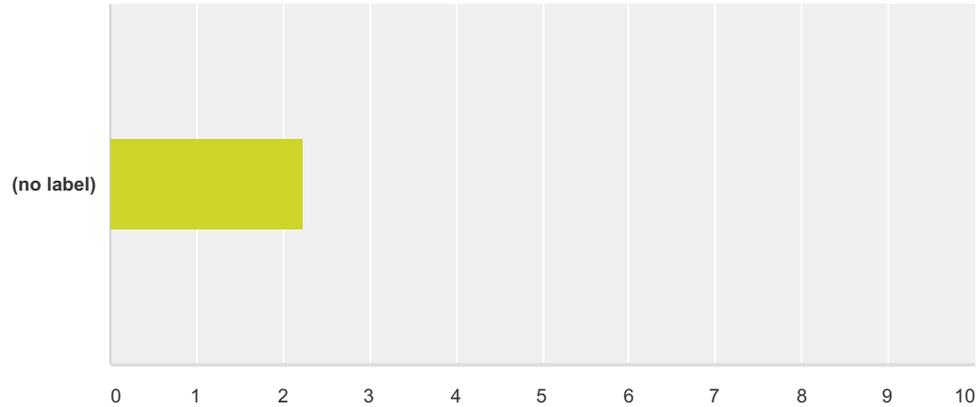
HB1490 Work Group - Science 6-12

8	This standard needs more detail, especially the substandards that need to be taught and assessed and the DOK to which it needs to be addressed.	11/9/2015 4:14 PM
9	The difference between the new standards and the detail-oriented GLEs is astounding. I'm not sure how educators are supposed to understand all of the detail of a standard without the crosswalk document. There is no way that parents are going to understand all of the scientific details encompassed in the very broad new standard.	11/4/2015 1:14 PM
10	I do not believe presenting these standards to any of my parents would be something understandable for them. Also, one educator could look at this standard and choose to present it completely different from another educator. Students across the board would be getting different bits of information.	11/4/2015 1:14 PM
11	Keep proposed standards as is for this strand. These standards show key connections and make the practice of science evidence to all stakeholders. The crosscutting concepts also make the standards understandable to all. By making connections to concepts like "cause and effect," everyone can see the links between what students are learning and how they can transfer that knowledge to other courses and experiences.	11/1/2015 9:23 AM

MS-ESS1 Earth's Place in the Universe (6-8)

Q73 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 22 Skipped: 197



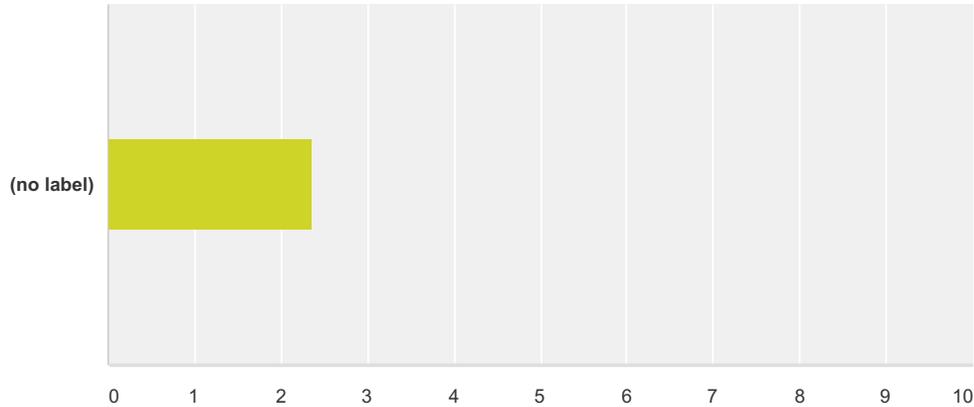
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	40.91% 9	4.55% 1	45.45% 10	9.09% 2	22	2.23

#	Suggested revisions for standards:	Date
1	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 11:59 AM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:19 AM
3	Absolutely NOT. Our students already complain of not being ready for College-level Science classes. We do NOT need to further dilute Science at the Secondary Level.	11/16/2015 2:25 PM
4	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:23 AM
5	There are no DOK expectations so this could potentially not prepare the students if not taught a a deeper level.	11/9/2015 4:37 PM
6	There is no detail about how to prepare students for college and career readiness in this standard.	11/9/2015 4:14 PM
7	Middle school students would not be college or career ready after meeting any of their standards.	11/4/2015 1:14 PM
8	Keep proposed standards as is for this strand. This new format for the standards mirrors the college and career readiness benchmarks for ACT and for advanced placement sciences, all of which are a way we measure college and career readiness.	11/1/2015 9:23 AM

MS-ESS1 Earth's Place
in the Universe (6-8)

Q74 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	36.36% 8	4.55% 1	45.45% 10	13.64% 3	22	2.36

#	Suggested revisions for standards:	Date
1	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 11:59 AM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:19 AM
3	There IS no breadth of content! It is fluff which anyone could teach!	11/16/2015 2:25 PM
4	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:23 AM
5	They are too broad because there are, again, no expectations set for specifics or DOK levels. It does make it very hard to determine a timeline for how long to spend on each topic.	11/9/2015 4:37 PM
6	The standard needs more detail, the old GLE's were very specific as to what needed to be taught - with a substandard break down. This would be very difficult for a first year teacher in the subject level to know how much time to dedicate on the topic.	11/9/2015 4:14 PM
7	They don't encompass the breadth of any content. It gives you the basics, but leaves out the ways understand the whole concept.	11/4/2015 1:14 PM

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8	Keep proposed standards as is for this strand. Science is constantly changing. These proposed standards contain the content necessary for students to be scientifically literate but also provided the needed upgrade based upon advancements that have occurred in science since the last standards were adopted. They also include the format that research shows is best in terms of helping students to learn and understand science.	11/1/2015 9:23 AM
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**Q75 Overall comments regarding the
proposed standards for Earth's Place in the
Universe (MS-ESS1):**

Answered: 18 Skipped: 201

#	Responses	Date
1	Divide standards by 6,7,& 8th grade.	12/2/2015 10:39 PM
2	These comments were provided by two sixth grade science teachers in Southwest Missouri.	12/1/2015 2:41 PM
3	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 2:14 PM
4	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 11:59 AM
5	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:19 AM
6	Once again, the use of "develop and use a model" makes this sound like original research. Students would be using model already in existance	11/24/2015 11:44 AM
7	This is a ridiculous dumbing-down of the NGSS standards..we need to make our standards MORE rigorous!	11/16/2015 2:25 PM
8	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 11:23 AM
9	In MS-ESS1-5, the concept that the Earth is 4.6 billion years old has been removed. This was present in the NGSS standards. This needs to be written back into the Missouri Learning Standards.	11/11/2015 5:01 PM
10	Must add in: Organize Earth's 4.6-billion-year-old history.	11/11/2015 5:01 PM
11	Students should be taught the age of the Earth.	11/11/2015 5:01 PM
12	Students need to know how old the Earth actually is.	11/11/2015 4:58 PM
13	Students need to know the age of the earth.	11/11/2015 4:58 PM
14	There needs to be specific information to encourage continuity between educators. There also needs to be expectations for each grade level. There are some districts that might teach certain topics at one grade level and another district address it at a different level. If students transfer between these two districts there will be an entire year of learning lost. Therefore, what do we do to address the missed learning when it comes to the MAP test?	11/9/2015 4:37 PM
15	The standard needs more detail, the old GLE's were very specific as to what needed to be taught - with a substandard break down. This would be very difficult for a first year teacher in the subject level to know how much time to dedicate on the topic.	11/9/2015 4:14 PM

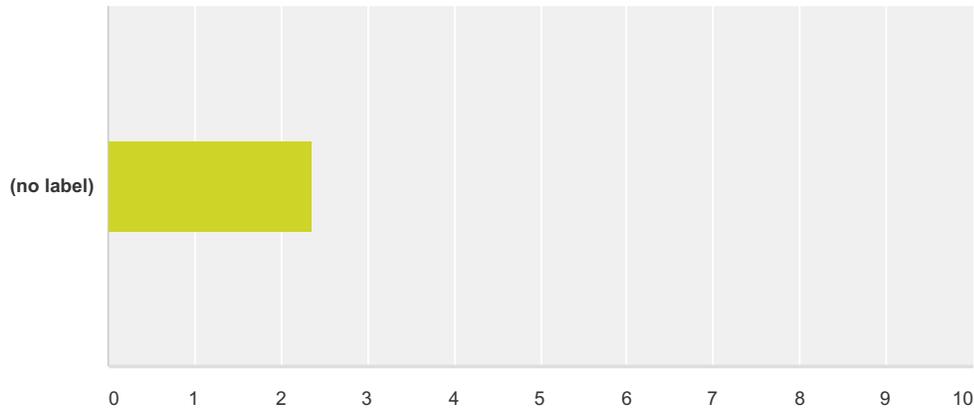
HB1490 Work Group - Science 6-12

16	I'm not sure I understand the deletion of the details that the GLEs provided. I get the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting concepts. I just don't understand why the details from the GLEs have been removed. It really helps teachers know what specific information to focus on.	11/4/2015 1:14 PM
17	I think the standards are very broad and vague. It leaves the possibility of so many mistakes to arise.	11/4/2015 1:14 PM
18	<p>Keep as proposed. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.</p>	11/1/2015 9:23 AM

Q77 The standards in this strand are developmentally appropriate.

MS-ESS2 Earth's Systems
(6-8)

Answered: 23 Skipped: 196



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	30.43% 7	17.39% 4	39.13% 9	13.04% 3	23	2.35

#	Suggested revisions for standards:	Date
1	Language is too lofty and ambiguous in some standards	12/2/2015 10:54 PM
2	My concerns on the Earth Science standards are that it is not divided into 6th, 7th, and 8th grade sections like the previous GLE's. This is making it difficult for my colleague and I to decipher what is changed and where it has changed to in regards to the new standards.	11/30/2015 2:15 PM
3	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 12:00 PM
4	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:20 AM
5	Include the rock cycle and properties of rocks and minerals since they have been removed form the high school level. Include Paleomagnetic anomalies.	11/16/2015 2:34 PM
6	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students. Paleomagnetism and Plate Tectonic movement are FUNDAMENTAL to the understanding of how our Earth was formed, and lends credence to the theories we have on hand...it is absolutely NECESSARY that we include these to fully understand the concepts. Not teaching the rock cycle further dilutes the NGSS, which is not acceptable.	11/16/2015 2:33 PM
7	We should be using the NGSS. Why not use a more cohesive plan that is more specific and already available. Why reinvent the wheel?	11/13/2015 10:26 AM
8	Standard is developmentally appropriate, BUT there needs to be a scope and sequence to suggest when this should be taught.	11/9/2015 4:35 PM
9	Clarification of Design and create model. This is mentioned several times and the audience need to be aware that this can be met in a quite a variety of ways.	11/6/2015 8:48 AM
10	The standards are too short. Need more clarification.	11/4/2015 1:13 PM

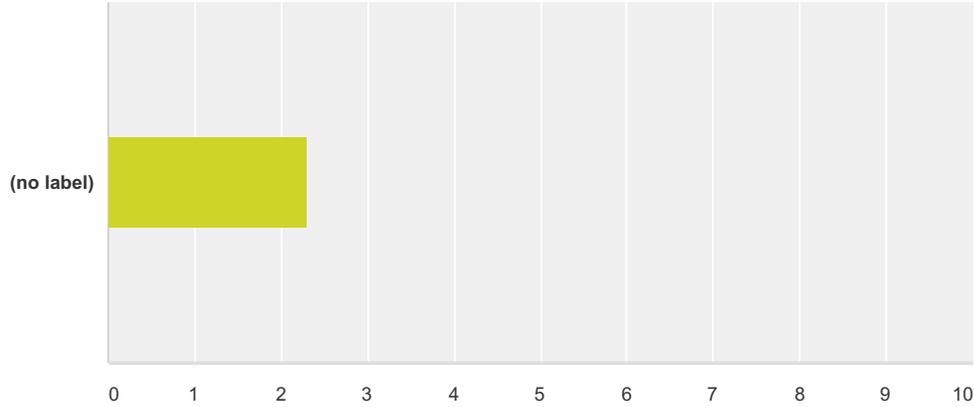
HB1490 Work Group - Science 6-12

11	The proposed standards are research-based and are developmentally appropriate.	11/1/2015 9:34 AM
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MS-ESS2 Earth's Systems (6-8)

Q78 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 23 Skipped: 196

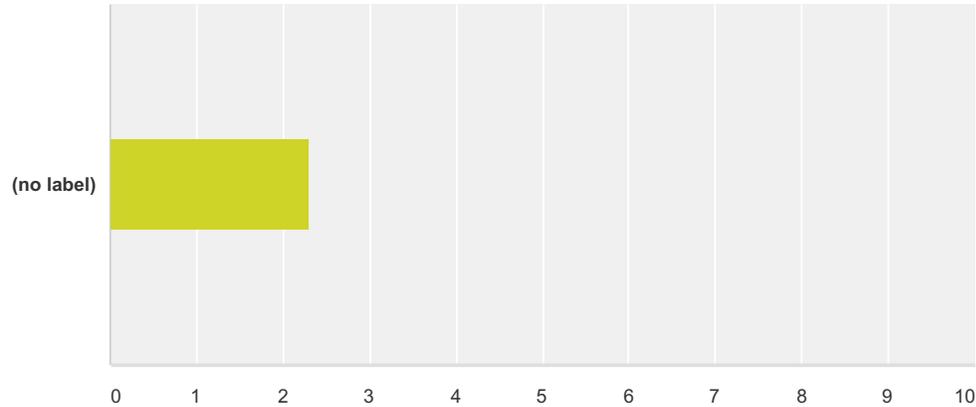


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	30.43% 7	21.74% 5	34.78% 8	13.04% 3	23	2.30

#	Suggested revisions for standards:	Date
1	divide into 6,7,8 grade standards so I know what you really expect me to teach	12/2/2015 10:54 PM
2	My concerns on the Earth Science standards are that it is not divided into 6th, 7th, and 8th grade sections like the previous GLE's. This is making it difficult for my colleague and I to decipher what is changed and where it has changed to in regards to the new standards.	11/30/2015 2:15 PM
3	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 12:00 PM
4	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:20 AM
5	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students. Paleomagnetism and Plate Tectonic movement are FUNDAMENTAL to the understanding of how our Earth was formed, and lends credence to the theories we have on hand...it is absolutely NECESSARY that we include these to fully understand the concepts. Not teaching the rock cycle further dilutes the NGSS, which is not acceptable.	11/16/2015 2:33 PM
6	We should be using the NGSS. Why not use a more cohesive plan that is more specific and already available.	11/13/2015 10:26 AM
7	The standard needs more detail, the old GLE's were very specific as to what needed to be taught - with a substandard break down. This would be very difficult for a first year teacher in the subject level to know how much time to dedicate on the topic.	11/9/2015 4:35 PM
8	There needs to be a way to look at what each grade level is teaching and how the standard is being constructed over the years.	11/4/2015 1:13 PM
9	Keep proposed standards as is for this strand. They are based upon years of research and learning progressions for how students best learn and understand science.	11/1/2015 9:34 AM

Q79 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 23 Skipped: 196



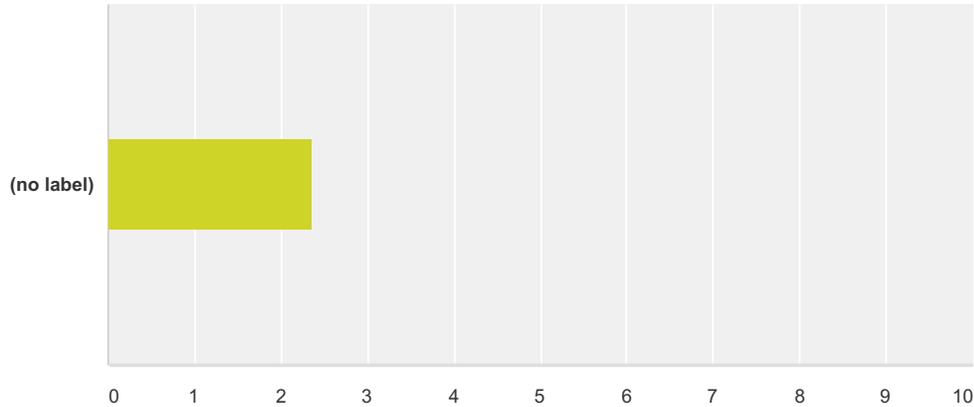
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	34.78% 8	13.04% 3	39.13% 9	13.04% 3	23	2.30

#	Suggested revisions for standards:	Date
1	divide into 6,7,8 grade standards so I know what you really expect me to teach	12/2/2015 10:54 PM
2	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 12:00 PM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:20 AM
4	Include the rock cycle and properties of rocks and minerals since they have been removed form the high school level. Include Paleomagnetic anomalies.	11/16/2015 2:34 PM
5	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students. Paleomagnetism and Plate Tectonic movement are FUNDAMENTAL to the understanding of how our Earth was formed, and lends credence to the theories we have on hand...it is absolutely NECESSARY that we include these to fully understand the concepts. Not teaching the rock cycle further dilutes the NGSS, which is not acceptable.	11/16/2015 2:33 PM
6	Would like to use the NGSS.	11/13/2015 10:26 AM
7	This standard needs more detail, specifically what DOK the standard (and the substandards that need to be identified) should be covered.	11/9/2015 4:35 PM
8	Suggestions on what we can do to ensure that learning is taking place. Examples of activities.	11/4/2015 1:13 PM
9	Keep proposed standards as is for this strand. By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	11/1/2015 9:34 AM

MS-ESS2 Earth's Systems (6-8)

Q80 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 22 Skipped: 197



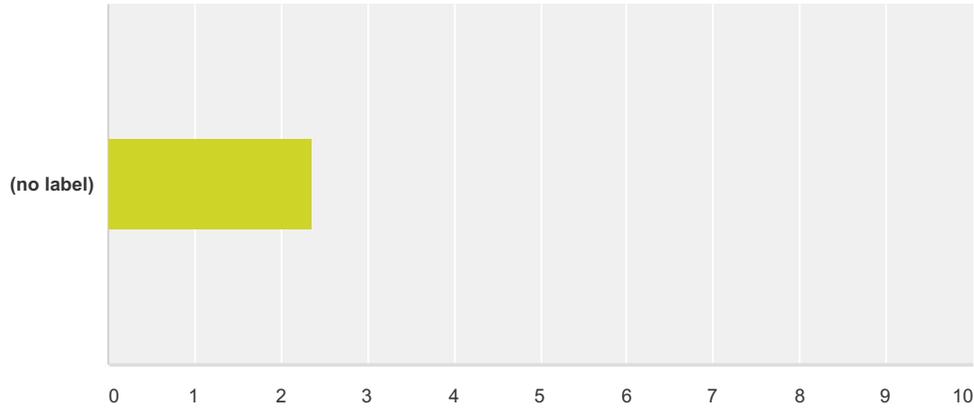
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	31.82% 7	13.64% 3	40.91% 9	13.64% 3	22	2.36

#	Suggested revisions for standards:	Date
1	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 12:00 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:20 AM
3	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students. Paleomagnetism and Plate Tectonic movement are FUNDAMENTAL to the understanding of how our Earth was formed, and lends credence to the theories we have on hand...it is absolutely NECESSARY that we include these to fully understand the concepts. Not teaching the rock cycle further dilutes the NGSS, which is not acceptable.	11/16/2015 2:33 PM
4	Use the NGSS.	11/13/2015 10:26 AM
5	Without substandards to be addressed, it is impossible to know what should be addressed and how to assess these standards in the classroom and/or on a state assessment.	11/9/2015 4:35 PM
6	Need more clarification on assessments. Specific test to check for understanding.	11/4/2015 1:13 PM
7	By adding "design and develop a model," rather than simply "Develop a model," the standard (MS-ESS2-4) becomes more difficult to assess at the state level.	11/1/2015 9:34 AM

MS-ESS2 Earth's Systems (6-8)

Q81 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	27.27% 6	22.73% 5	36.36% 8	13.64% 3	22	2.36

#	Suggested revisions for standards:	Date
1	ESS2.D, second bullet: "probabilistically" Who do you think understands this word that is not a high level professional scientist? Get straight to the point and use understandable language with clear learner outcomes.	12/2/2015 10:54 PM
2	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 12:00 PM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:20 AM
4	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students. Paleomagnetism and Plate Tectonic movement are FUNDAMENTAL to the understanding of how our Earth was formed, and lends credence to the theories we have on hand...it is absolutely NECESSARY that we include these to fully understand the concepts. Not teaching the rock cycle further dilutes the NGSS, which is not acceptable.	11/16/2015 2:33 PM
5	Modify to say: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	11/11/2015 5:05 PM
6	This standard needs more detail, especially the substandards that need to be taught and assessed and the DOK to which it needs to be addressed.	11/9/2015 4:35 PM
7	I'd like a have a parent friendly version that restates the standards in more of an everyday language.	11/6/2015 8:48 AM

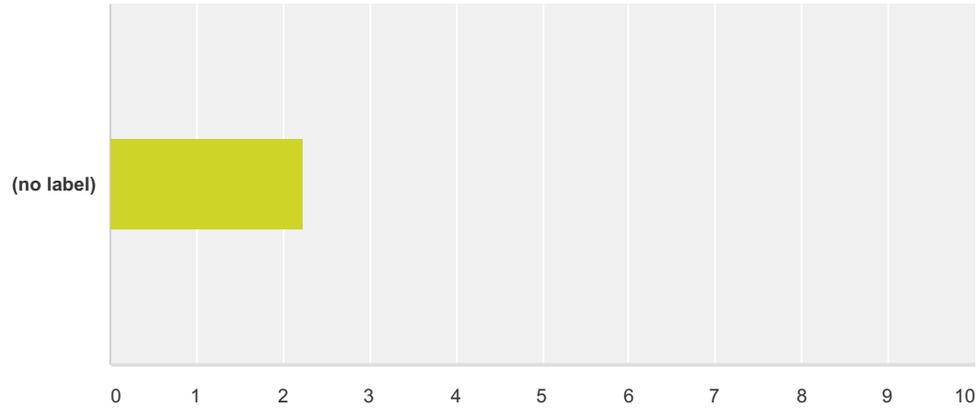
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8	<p>This standard (MS-ESS2-1) is verbose. The purpose of the clarification statement is to include the details and examples of what is meant by the standard. By putting all those components in the standard, the flexibility for assessment is affected. Perhaps simplify the standard and place the standard components in the clarification statement. "Develop and use a model to describe the cycling of Earth's materials and the flow of energy that drives this process. [Clarification Statement: Emphasis is on the processes of melting, crystallization, weathering, deformation, and sedimentation, which act together to form minerals and rocks through the cycling of Earth's materials.]</p> <p>[Assessment Boundary: Assessment does not include the identification and naming of mineral.]</p>	11/1/2015 9:34 AM
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MS-ESS2 Earth's Systems (6-8)

Q82 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 22 Skipped: 197

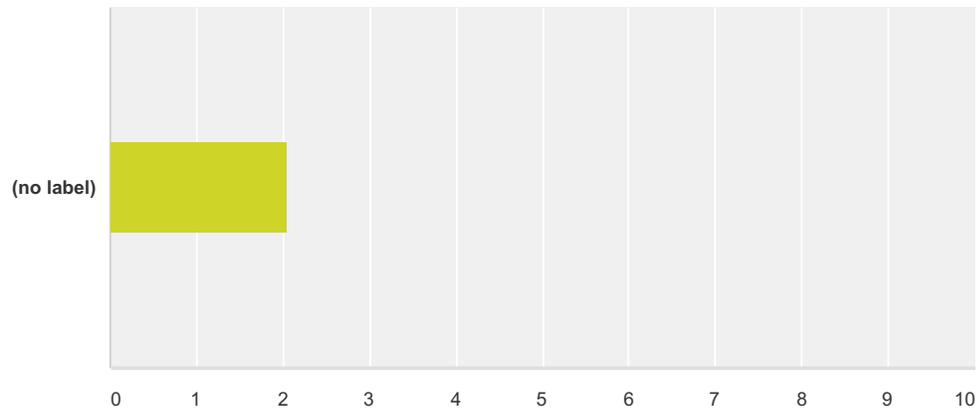


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	40.91% 9	9.09% 2	36.36% 8	13.64% 3	22	2.23

#	Suggested revisions for standards:	Date
1	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 12:00 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:20 AM
3	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students. Paleomagnetism and Plate Tectonic movement are FUNDAMENTAL to the understanding of how our Earth was formed, and lends credence to the theories we have on hand...it is absolutely NECESSARY that we include these to fully understand the concepts. Not teaching the rock cycle further dilutes the NGSS, which is not acceptable.	11/16/2015 2:33 PM
4	There is no detail about how to prepare students for college and career readiness in this standard.	11/9/2015 4:35 PM
5	How are we to asses college readiness?	11/4/2015 1:13 PM
6	Keep proposed standards as is for this strand. This new format for the standards mirrors the college and career readiness benchmarks for ACT and for advanced placement sciences, all of which are a way we measure college and career readiness.	11/1/2015 9:34 AM

Q83 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 20 Skipped: 199



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	45.00% 9	15.00% 3	30.00% 6	10.00% 2	20	2.05

#	Suggested revisions for standards:	Date
1	divide into 6,7,8 grade standards so I know what you really expect me to teach	12/2/2015 10:54 PM
2	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering.	11/30/2015 12:00 PM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:20 AM
4	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students. Paleomagnetism and Plate Tectonic movement are FUNDAMENTAL to the understanding of how our Earth was formed, and lends credence to the theories we have on hand...it is absolutely NECESSARY that we include these to fully understand the concepts. Not teaching the rock cycle further dilutes the NGSS, which is not acceptable.	11/16/2015 2:33 PM
5	The standard needs more detail, the old GLE's were very specific as to what needed to be taught - with a substandard break down. This would be very difficult for a first year teacher in the subject level to know how much time to dedicate on the topic.	11/9/2015 4:35 PM
6	Keep proposed standards as is for this strand. Our knowledge of science is constantly improving. These proposed standards contain the content necessary for students to be scientifically literate but also provided the needed upgrade based upon advancements that have occurred in science since the last standards were adopted. They also include the format that research shows is best in terms of helping students to learn and understand science.	11/1/2015 9:34 AM

Q84 Overall comments regarding the proposed standards for Earth's Systems (MS-ESS2):

Answered: 15 Skipped: 204

#	Responses	Date
1	MS-ESS2-1 is ridiculously written. Internal convection does not cause weathering of rocks on the surface of earth. Can we please just call this the rock cycle? Can we please use the words "water cycle"? divide into 6,7,8 grade standards so I know what you really expect me to teach	12/2/2015 10:54 PM
2	I'm noticing a pattern of development and use of models. I like models, but there are other methods that could also be used to demonstrate understanding.	12/2/2015 2:57 PM
3	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 2:15 PM
4	Earth Science Standards: The first two standards under the Earth Science is unclear if it is 6th, 7th or 8th grade covering. I am a current sixth grade teacher, teaching science for the past 15 years. Looking over the proposed standards I feel very overwhelmed. First, compared to the GLE standards the proposed standards are not nearly specific enough. Half of my year's current GLEs are summed up in six standards. If these were the only standards that a new or inexperienced teacher were given, they would have a very difficult time knowing exactly what to teach. I think that a lot of the necessary background information that would be required to achieve the higher expectations the new standards expect are left out. I feel that the required background information and anything pertaining to the scientific method and variables is information that is necessary, but is missing from these standards, is it being assumed that we would just include this information on our own? I would include it in my plans for the year, but a new teacher would never know to do this. I feel this is potentially setting ourselves up for a lot of future gaps of knowledge. It is very confusing to follow as to where the "addressed elsewhere" standards are found; addressed elsewhere under a different strand or grade? It is not made clear. Looking at the sixth grade standards, I don't see where much content area has been removed, some is unclear if it is removed or not, but several units under physics have been added. I feel that in order for my students to understand what I am teaching, this is too much for sixth grade. Finally, pertaining to all the standards as a whole, the wording is not very student friendly. I post our class objectives daily on the board from the GLEs and we discuss them prior to our lesson. The students know exactly what they are required to know in this format. The wording of the new strands would be very overwhelming to them, example, "construct an argument supported by empirical evidence....." I feel they would shut down as soon as they saw this terminology.	11/30/2015 12:00 PM
5	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:20 AM
6	Half of the standards utilize the "design and develop a model" language. I would prefer to have definite, concrete objectives in place. How can we communicate vague, subjective information to students?	11/24/2015 11:46 AM
7	Include the rock cycle and properties of rocks and minerals since they have been removed form the high school level. Include Paleomagnetic anomalies.	11/16/2015 2:34 PM
8	Follow NGSS the entire standards are well developed and will help prepare our students for the demands and rigor of the Scientific career field. Watering down of standards is NOT a re-write, it is a disservice to our educators and students. Paleomagnetism and Plate Tectonic movement are FUNDAMENTAL to the understanding of how our Earth was formed, and lends credence to the theories we have on hand...it is absolutely NECESSARY that we include these to fully understand the concepts. Not teaching the rock cycle further dilutes the NGSS, which is not acceptable.	11/16/2015 2:33 PM

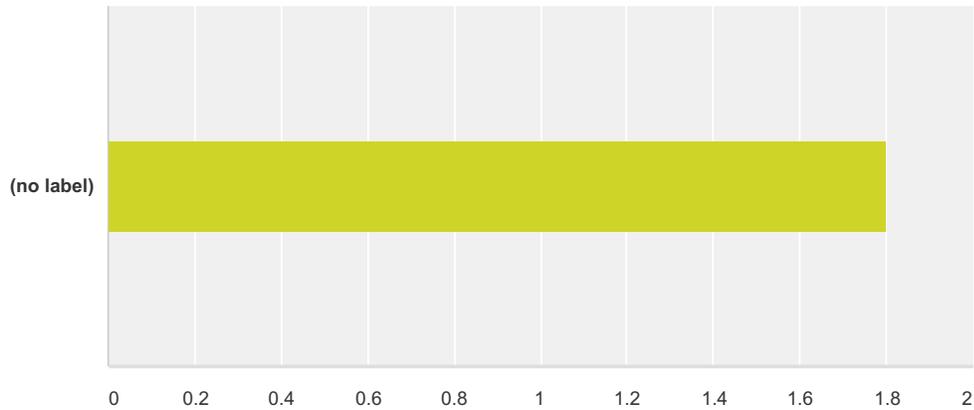
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9	Modify to say: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	11/11/2015 5:05 PM
10	This standard appears in NGSS as: MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. [Clarification Statement: Emphasis is on the processes of melting, crystallization, weathering, deformation, and sedimentation, which act together to form minerals and rocks through the cycling of Earth's materials.] [Assessment Boundary: Assessment does not include the identification and naming of minerals.] It is written better in the NGSS document. The detail information is better in the clarifying statement and not in the standard.	11/11/2015 5:04 PM
11	Leave as is in NGSS, this written clearer.	11/11/2015 5:03 PM
12	This reads like a GLE. Leave it as the NGSS wrote it.	11/11/2015 5:02 PM
13	Leave the clarifying information from the description on NGSS document	11/11/2015 5:02 PM
14	It is well written and easy to understand. Need more clarification on assessing understanding.	11/4/2015 1:13 PM
15	Keep as proposed. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	11/1/2015 9:34 AM

MS-ESS3 Earth and Human Activity (6-8)

Q86 The standards in this strand are developmentally appropriate.

Answered: 10 Skipped: 209



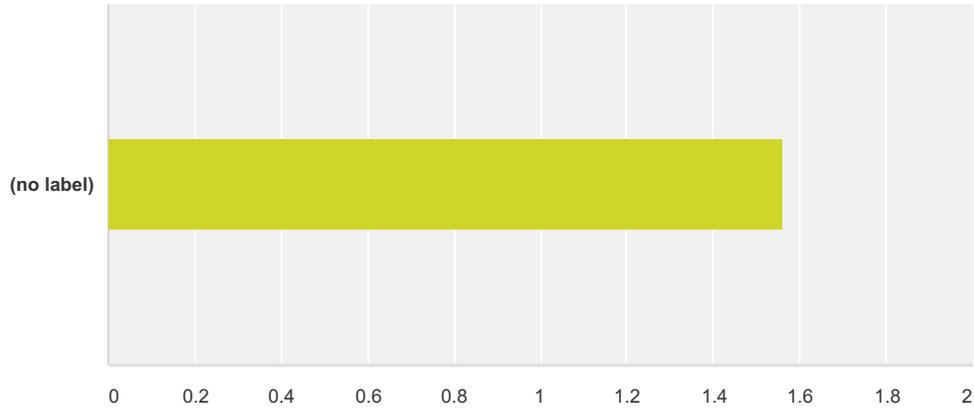
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	60.00% 6	10.00% 1	20.00% 2	10.00% 1	10	1.80

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:20 AM
2	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:56 AM
3	The proposed standards are research-based and are developmentally appropriate.	11/1/2015 9:59 AM

MS-ESS3 Earth and Human Activity (6-8)

Q87 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 9 Skipped: 210



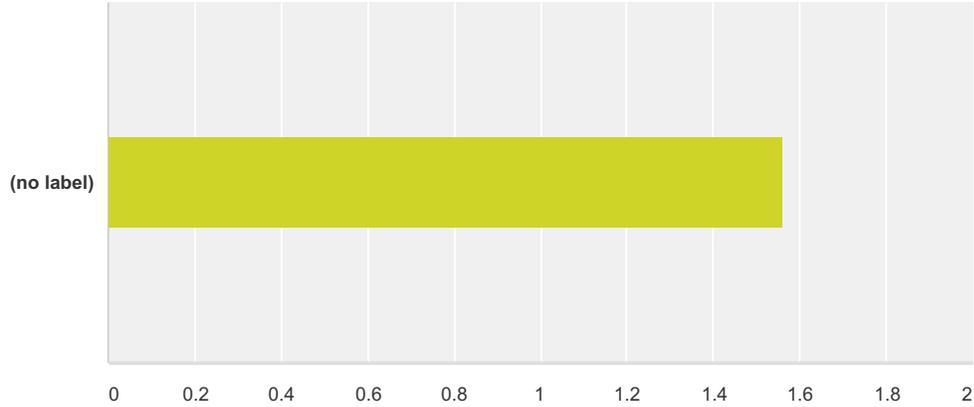
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	66.67% 6	11.11% 1	22.22% 2	0.00% 0	9	1.56

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:20 AM
2	Keep proposed standards as is for this strand. They are based upon years of research and learning progressions for how students best learn and understand science.	11/1/2015 9:59 AM

MS-ESS3 Earth and Human Activity (6-8)

Q88 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 9 Skipped: 210



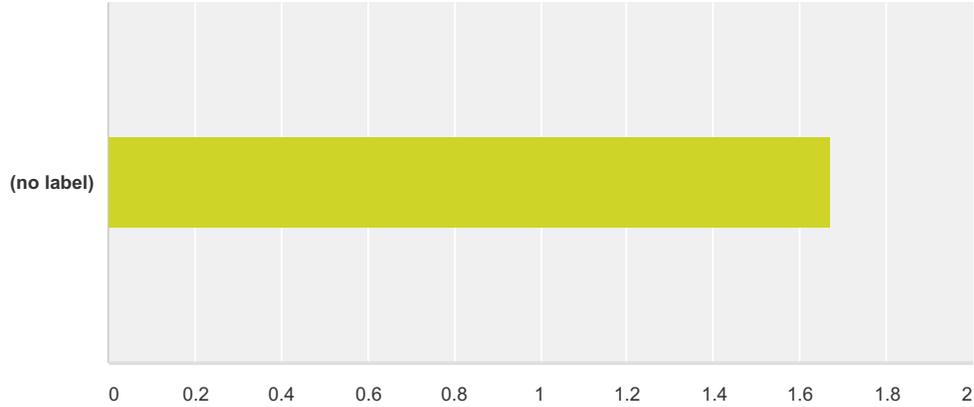
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	66.67% 6	11.11% 1	22.22% 2	0.00% 0	9	1.56

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:20 AM
2	Keep proposed standards as is for this strand. By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	11/1/2015 9:59 AM

MS-ESS3 Earth and Human Activity (6-8)

Q89 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 9 Skipped: 210



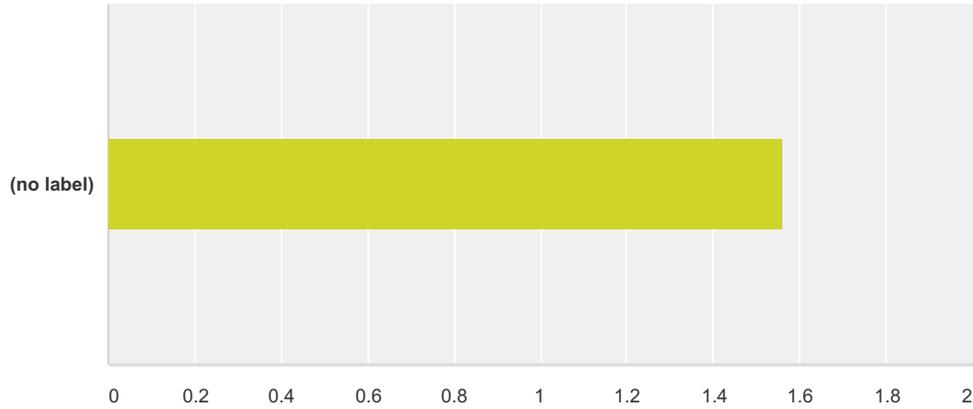
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	55.56% 5	22.22% 2	22.22% 2	0.00% 0	9	1.67

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:20 AM
2	The choice of practice is limiting for MS-ESS3-3. If students were able to construct an argument supported by evidence as the end result here, then they would have the opportunity to engage in the collection of multiple and varied types of evidence. To state "analyze data" as the end goal is restrictive in terms of the types of research, investigations and learning students can perform on this important and relevant topic. The three-dimensional format is still conducive to developing science literacy but to develop deeper understanding, the practice of argumentation is a better choice here with student engaging in multiple practices to collect evidence for the argument. That flexibility also aids in assessment options.	11/1/2015 9:59 AM

MS-ESS3 Earth and Human Activity (6-8)

Q90 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 9 Skipped: 210



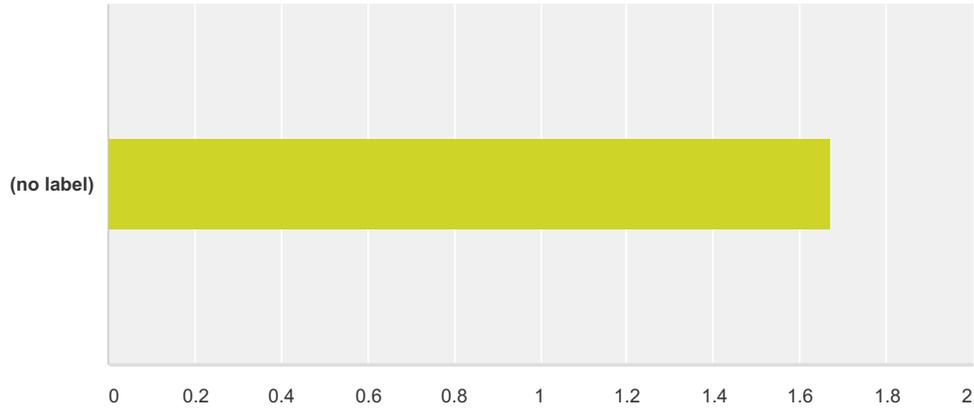
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	66.67% 6	11.11% 1	22.22% 2	0.00% 0	9	1.56

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:20 AM
2	Keep proposed standards as is for this strand. These standards show key connections and make the practice of science evidence to all stakeholders. The crosscutting concepts also make the standards understandable to all. By making connections through crosscutting concepts, everyone can see the links between what students are learning and how they can transfer that knowledge to other courses and experiences.	11/1/2015 9:59 AM

MS-ESS3 Earth and Human Activity (6-8)

Q91 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 9 Skipped: 210



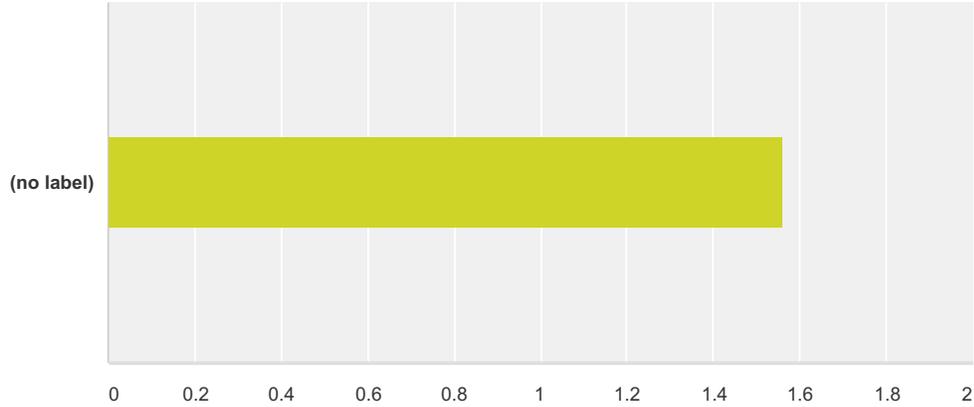
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	55.56% 5	22.22% 2	22.22% 2	0.00% 0	9	1.67

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:20 AM
2	The choice of practice is limiting for MS-ESS3-3. If students were able to construct an argument supported by evidence as the end result here, then they would have the opportunity to engage in the collection of multiple and varied types of evidence. To state "analyze data" as the end goal is restrictive in terms of the types of research, investigations and learning students can perform on this important and relevant topic. The three-dimensional format is still conducive to developing science literacy but to develop deeper understanding, the practice of argumentation is a better choice here with student engaging in multiple practices to collect evidence for the argument. That flexibility also aids in assessment options.	11/1/2015 9:59 AM

MS-ESS3 Earth and Human Activity (6-8)

Q92 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 9 Skipped: 210



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	66.67% 6	11.11% 1	22.22% 2	0.00% 0	9	1.56

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:20 AM
2	Keep proposed standards as is for this strand. Our knowledge of science is constantly improving. These proposed standards contain the content necessary for students to be scientifically literate but also provided the needed upgrade based upon advancements that have occurred in science since the last standards were adopted. They also include the format that research shows is best in terms of helping students to learn and understand science.	11/1/2015 9:59 AM

MS-ESS3 Earth and Human Activity (6-8)

Q93 Overall comments regarding the proposed standards for Earth and Human Activity (MS-ESS3):

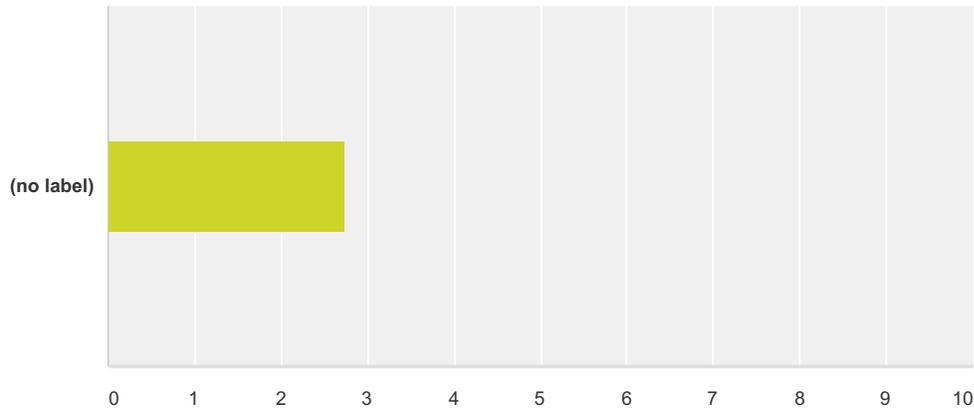
Answered: 4 Skipped: 215

#	Responses	Date
1	ESS3.C, bullet 2 - ambiguous wording "unless... engineered otherwise" divide into 6,7,8 grade standards so I know what you really expect me to teach	12/2/2015 10:59 PM
2	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 2:15 PM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:20 AM
4	Keep as proposed with possible slight adjustments. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	11/1/2015 9:59 AM

HS-PS1 Matter and its Interactions (9-12)

Q95 The standards in this strand are developmentally appropriate.

Answered: 23 Skipped: 196



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	17.39% 4	17.39% 4	39.13% 9	26.09% 6	23	2.74

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:21 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:06 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:06 AM
4	The standard is vague leaving educators guessing on the specific information needing to be taught.	11/29/2015 9:09 PM
5	Theses standards seem appropriate for most of our college bound students. Our general population may struggle with the specificity.	11/16/2015 2:31 PM
6	New standards are vague and confusing.	11/13/2015 1:22 PM

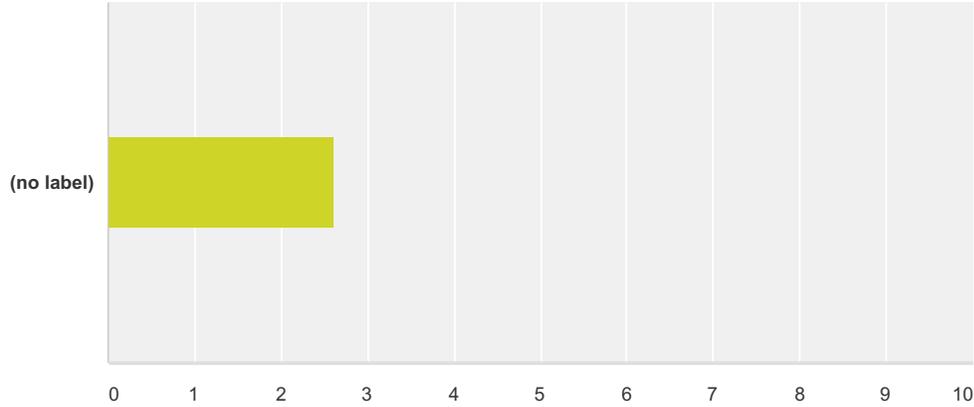
HB1490 Work Group - Science 6-12

7	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 12:50 PM
8	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course.	11/13/2015 10:57 AM
9	HS-PS1-5, HS-PS1-6, HS-PS1-7 : these standards are not appropriate for a freshman level physical science course. The concepts of bond energy, reaction rates, and equilibrium are appropriate for a junior or senior level chemistry course. We are recommending the creation of standards designed specifically for chemistry and physics courses.	11/9/2015 4:49 PM
10	HS-PS-1-4 and HS-PS-1-7 are not appropriate for introductory classes (physical science and chemistry I).	11/9/2015 2:01 PM
11	These standards, except for the first 3, seem to be what is currently being taught in a chemistry class, not the physical science class. Due to a lack of timing/ course breakdown, one cannot say that these standards are appropriate for every level in high school. A divide of when these should be taught would help.	11/4/2015 2:09 PM
12	There is no specific class listed for each standard. For a new teacher to teach the material, what class includes which standard? They are inappropriate because of their vague generalities, considering the standards lack progression and are non-developmental, but just simply listed. For a student, parent, or teacher look for one class, one year, with any of these standards, they would not be able to find anything. The parent would have no specific idea of the curriculum for the class, and the teacher doesn't know except to teach a ridiculous amount of material to a student and not have any direction. The lack of specificity is disturbing. It should be labeled according to the course taught, not the major concept.	11/4/2015 1:24 PM
13	This is written in a difficult way for grade level appropriateness. They are written very vaguely, as to in which teachers may think there is more information that they need to teach per the course.	11/4/2015 1:08 PM
14	The standards in this strand are not organized by grade levels. Multiple courses are represented within the strand with no way to discern which courses contain each standard. This makes organizing a course pacing guide very difficult and could confuse parents who attempt to read the course standards.	11/4/2015 1:08 PM
15	The proposed standards are research-based and are developmentally appropriate.	11/2/2015 10:11 AM

HS-PS1 Matter and its Interactions (9-12)

Q96 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 21 Skipped: 198



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	19.05% 4	23.81% 5	33.33% 7	23.81% 5	21	2.62

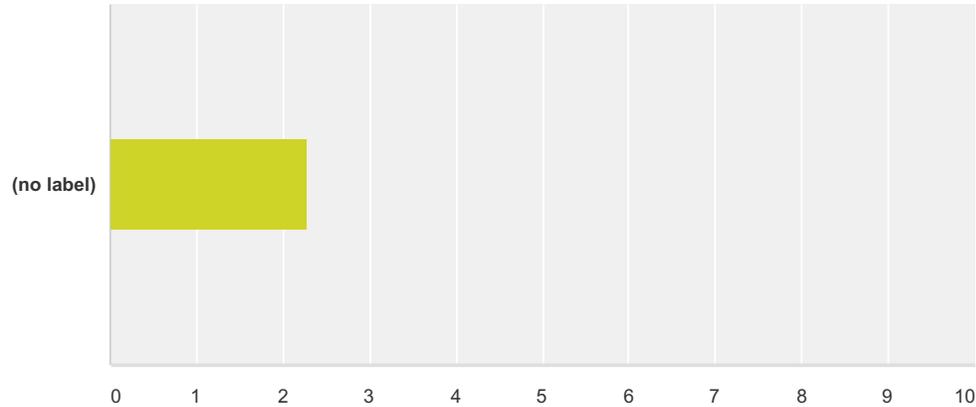
#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:21 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:06 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:06 AM
4	Again, the standards are vague and need to include specific information.	11/29/2015 9:09 PM
5	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 12:50 PM

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6	HS-PS1-5, HS-PS1-6, HS-PS1-7 standards are not part of a coherent path for a freshman level physical science class. We are recommending the creation of standards designed specifically for chemistry and physics courses.	11/9/2015 4:49 PM
7	Standards are pretty vague in most instances. It is difficult to tell what students might be expected to do with a particular standard. For example, HS-PS-1-2: How would students revise an explanation of chemical properties or valence electrons?	11/9/2015 2:01 PM
8	They do represent a coherent pathway. We need to build on the first matter standard to move onto the second standard. But, again, because of the lack of course specification, I do not believe these standards follow a coherent path across ALL grade levels.	11/4/2015 2:09 PM
9	What coherency? What path? It's just vague generalities, thrown against a wall, hoping they'll stick. They are all just major concepts in science, not what will reasonably be taught, or should be taught within a year. To what degree do we assess these standards? If my child doesn't understand every one of the science standards upon graduation, are they a failure? What is considered mastery of these concepts? Or is the state just saying, "Here's our curriculum, interpret it how you want, parents and teachers."?	11/4/2015 1:24 PM
10	There is no path. It is a list of standards that then must be left up to the district to determine what should be in each class. It was much easier to follow in the previous way, as to see what should be taught at certain grades, then moved on for upper grades.	11/4/2015 1:08 PM
11	The standards do not follow a path through each successive course level. Teachers would have difficulty determining which standards to follow.	11/4/2015 1:08 PM
12	The standards are based upon years of research and learning progressions for how students best learn and understand science. For HS-PS1-4: This standard (HS-PS1-4) actually clusters more appropriately with Motion and Stability: Forces and Interactions in terms of the attractive and repulsive forces. A topical cluster for structure and properties of matter would clarify the connections. This is certainly a standard that overlaps both Matter and Its Interactions and Forces and Interactions but since the focus is on bonding then it seems to fit more appropriately with Forces and Interactions.	11/2/2015 10:11 AM

Q97 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	22.73% 5	31.82% 7	40.91% 9	4.55% 1	22	2.27

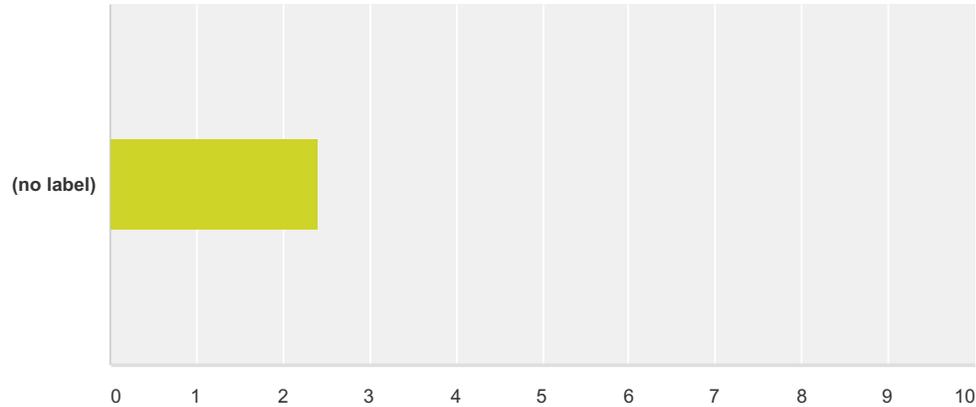
#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:21 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:06 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:06 AM
4	If revised, standards need rubrics to define the rigor for each grade level.	11/13/2015 1:22 PM
5	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 12:50 PM

HB1490 Work Group - Science 6-12

6	HS-PS1-5, HS-PS1-6, HS-PS1-7 standards are too rigorous for a freshman level physical science course. We are recommending the creation of standards designed specifically for chemistry and physics courses.	11/9/2015 4:49 PM
7	The standards need to be rewritten in a manner that is less broad in terms of content (per standard).	11/9/2015 2:01 PM
8	Very rigorous. However, for 1 class, the expectations are too high. Across the entirety of a high school experience, these standards meet expectations of high rigor.	11/4/2015 2:09 PM
9	Yes, they set a RIGOROUS path, but at which grade level? 9-12 is so vague, again, just so vague. The colored boxes help tremendously for teachers, but much of these concepts go from really basic knowledge to extremely advanced concepts. So... what do we teach again? All of it and my freshmen fail? All of it and pray for some really advanced seniors? Or teach what we know we need to teach for the individual courses we have?	11/4/2015 1:24 PM
10	By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content. For HS-PS1-1: The periodic table serves as a model since its organization allows for predictions in trends. The practice of modeling should somehow be noted to maintain the three-dimensional structure of the performance expectation. For HS-PS1-9: Since the clarification statement specifically includes examples of types of models, the practice of modeling should be explicit in the standard. It could simply state, "Use and/or develop models . . ." rather than "Use symbolic representations." We must be explicit with the practices to convey some of the new understandings for these practices and for inquiry in general.	11/2/2015 10:11 AM

Q98 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	27.27% 6	13.64% 3	50.00% 11	9.09% 2	22	2.41

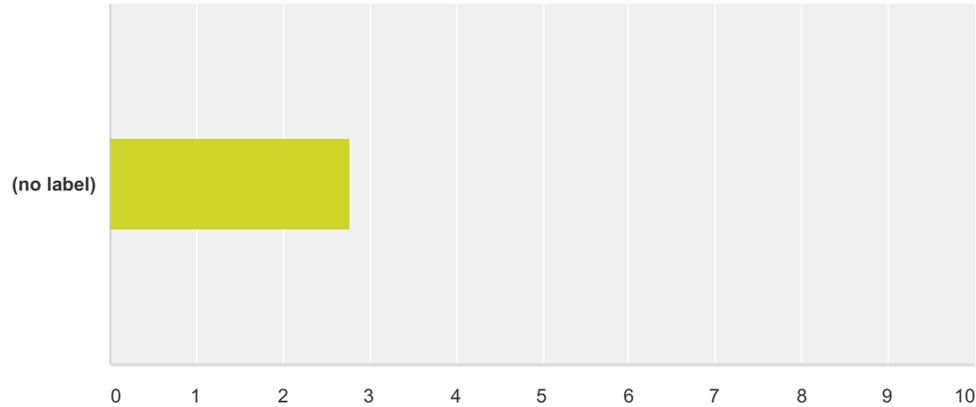
#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:21 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:06 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:06 AM
4	The standard does not include specific information for assessment and needs to include specific information for clarification.	11/29/2015 9:09 PM
5	Several of these are performance based and will be difficult to efficiently assess at the state level.	11/16/2015 2:31 PM
6	standards are so vague and mixed that any assessment must be either too specific to be able to match the broad range of possible teaching tracks or too broad to have any rigor	11/13/2015 1:22 PM

HB1490 Work Group - Science 6-12

7	<p>Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide</p>	11/13/2015 12:50 PM
8	<p>The majority of standards can be assessed, but strands HS-PS1-5, HS-PS1-6, HS-PS1-7 should not be assessed at the freshman level. We are recommending the creation of standards designed specifically for chemistry and physics courses.</p>	11/9/2015 4:49 PM
9	<p>I believe that the engineering and modeling can be assessed within the classroom. However, I think many of the standards would be difficult to assess accurately on a state assessment.</p>	11/9/2015 2:01 PM
10	<p>The standards are too vague to be assessed across a state. There is not enough structure as to how the standard should be taught. Therefore it is left to teacher interpretation. This can cause large differences in instruction throughout the school districts therefore making a standardized state test a bad form of assessment.</p>	11/4/2015 2:09 PM
11	<p>Yes, if only a few points from each standard from each major concept are taught for individual classes. But again, just from reading these, I wouldn't know what we are supposed to be reasonably teaching.</p>	11/4/2015 1:24 PM
12	<p>HS-PS1.4 I don't believe this standard is doable for any school, as written. It's not the content, specifically, but a lack of training for teachers in this strand. HS-PS1.7 The phrase "Refine the design of a chemical system" is clear for a chemist, but not many others.</p>	11/2/2015 10:22 AM
13	<p>All the standards can be assessed and science should be assessed in this way.</p>	11/2/2015 10:11 AM

Q99 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	18.18% 4	9.09% 2	50.00% 11	22.73% 5	22	2.77

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:21 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:06 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:06 AM
4	Educators will have difficulty explaining the specific information related to the standards due to the vague nature of the standard.	11/29/2015 9:09 PM
5	Many of the standards are so inclusive that while educated teachers may understand, explaining to most parents would require them to take the class as well.	11/13/2015 1:22 PM

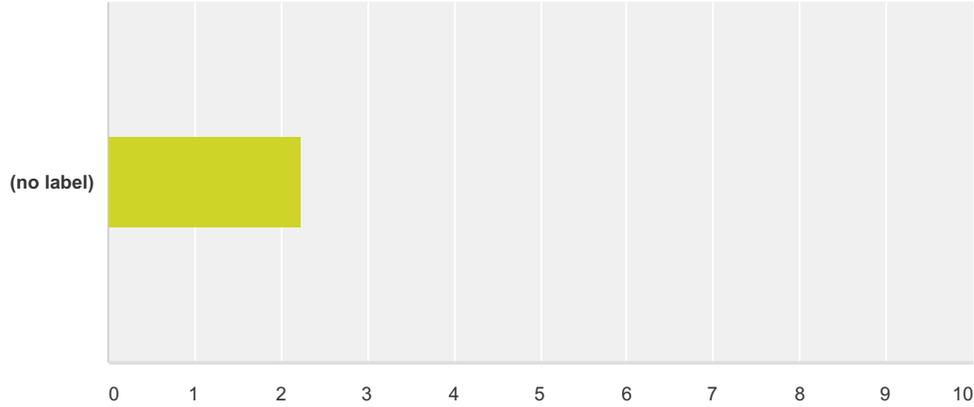
HB1490 Work Group - Science 6-12

6	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 12:50 PM
7	The strands are acceptable except the following: HS-PS1-5, HS-PS1-6, HS-PS1-7.	11/9/2015 4:49 PM
8	Standards are much too vague to be understandable to everyone.	11/9/2015 2:01 PM
9	If a teacher must interpret what the standard is, how will a parent know??	11/4/2015 2:09 PM
10	Good thing no parent emails me about the state standards and how to explain why or why we are not teaching certain things in the state curriculum.	11/4/2015 1:24 PM
11	Parents would have no idea what standards are being taught in specific classes at any given time. It is written, that even teachers who have taught the material prior, would have a struggle in knowing exactly what should be taught per class. I am not sure why it was necessary to completely unload the previous way in which they were written, for this new way.	11/4/2015 1:08 PM
12	The standards are vaguely written and cause confusion when trying to determine where a course begins and ends.	11/4/2015 1:08 PM
13	HS-PS1.4 I don't believe this standard is doable for any school, as written. It's not the content, specifically, but a lack of training for teachers in this strand. HS-PS1.7 This very important concept is not easy to grasp in the details and complexity of the standard. I think teachers will need more training on this standard. The phrase "Refine the design of a chemical system" is clear for a chemist, but not many others.	11/2/2015 10:22 AM
14	For HS-PS1-3: This standard (HS-PS1-3) is verbose. The purpose of the clarification statement is to include the details and examples of what is meant by the standard. By putting some of those components in the standard, the flexibility for assessment is also affected. Perhaps simplify the standard and place the standard components in the clarification statement. "Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. [Clarification Statement: Emphasis is on understanding the strengths of forces between particles, not on naming specific intermolecular forces (such as dipole-dipole). Examples of particles could include ions, atoms, molecules, and networked materials (such as graphite). Examples of bulk properties of substances could include the melting point and boiling point, vapor pressure, and surface tension.] [Assessment Boundary: Assessment does not include Raoult's law calculations of vapor pressure.] For HS-PS1-8: A simplification of this standard would just state "Use mathematical representations to support . . ." A chemical reaction is a mathematical representation of proportions so it is simpler just to state the standard in that way. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (cross-cutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. The content was addressed in the previous GLEs but the standard has been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all.	11/2/2015 10:11 AM

HS-PS1 Matter and its Interactions (9-12)

Q100 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	31.82% 7	22.73% 5	36.36% 8	9.09% 2	22	2.23

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:21 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:06 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:06 AM
4	Many concepts that are needed are omitted, others are included that most students will not use.	11/13/2015 1:22 PM
5	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 12:50 PM

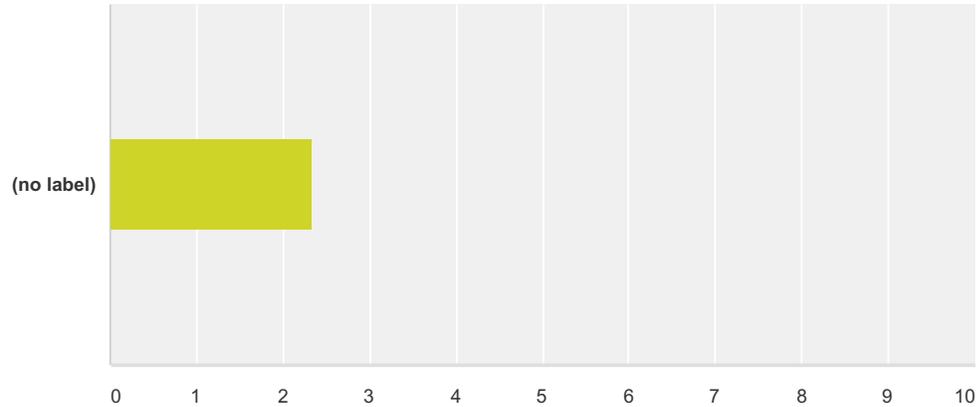
HB1490 Work Group - Science 6-12

6	The strands are appropriate however the strands HS-PS1-5, HS-PS1-6, HS-PS1-7 should be addressed in a junior or senior level chemistry course. We are recommending the creation of standards designed specifically for chemistry and physics courses.	11/9/2015 4:49 PM
7	There seems to be quite a bit of missing content if students want to continue at the college level.	11/9/2015 2:01 PM
8	These are all ideas that are needed in order to be successful in higher education.	11/4/2015 2:09 PM
9	All of them? Some of them? What is readiness? If they don't understand every strand from this standard, from this concept, are they ready? I get a lot of positive feedback from former students after they take college chemistry, saying that I prepared them well, and all the while I couldn't understand what the state wanted me to teach in any singular course, so... yes?	11/4/2015 1:24 PM
10	Keep proposed standards as is for this strand with noted recommendations. This new format for the standards mirrors the college and career readiness benchmarks for ACT and for advanced placement sciences, all of which are a way we measure college and career readiness.	11/2/2015 10:11 AM

HS-PS1 Matter
and its
Interactions
(9-12)

Q101 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 21 Skipped: 198



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	28.57% 6	19.05% 4	42.86% 9	9.52% 2	21	2.33

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:21 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:06 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:06 AM
4	The Standards are so specific and performance based. There will need to be a huge amount of foundation, background, and scaffolding.	11/16/2015 2:31 PM
5	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 12:50 PM

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6	Again, these standards are vague and inaccurate. They do not give specific enough concepts to teach.	11/4/2015 2:09 PM
7	There's a lot of breadth, alright. Accurate for what? Encompass content for which class? It's like they're listed as "If your kid takes 13 science classes in high school, they will know all of this about waves, matter, biological processes, etc. Every single thing." But if they take physical science, biology, and chemistry, are these standards appropriate? And again, the concepts need to fall in a legible, ordered, and reasonable curriculum if we are to be held accountable for teaching these concepts.	11/4/2015 1:24 PM
8	Over four years, yes this content is met, but not for each grade level. It is accurate on the information taught.	11/4/2015 1:08 PM
9	Keep proposed standards as is for this strand with recommendations. Our knowledge and understanding of science is constantly advancing. These proposed standards contain the content necessary for students to be scientifically literate but also provided the needed upgrade based upon advancements that have occurred in science since the last standards were adopted. They also include the format that research shows is best in terms of helping students to learn and understand science.	11/2/2015 10:11 AM

Q102 Overall comments regarding the proposed standards for Matter and Its Interactions (MS-PS1):

Answered: 14 Skipped: 205

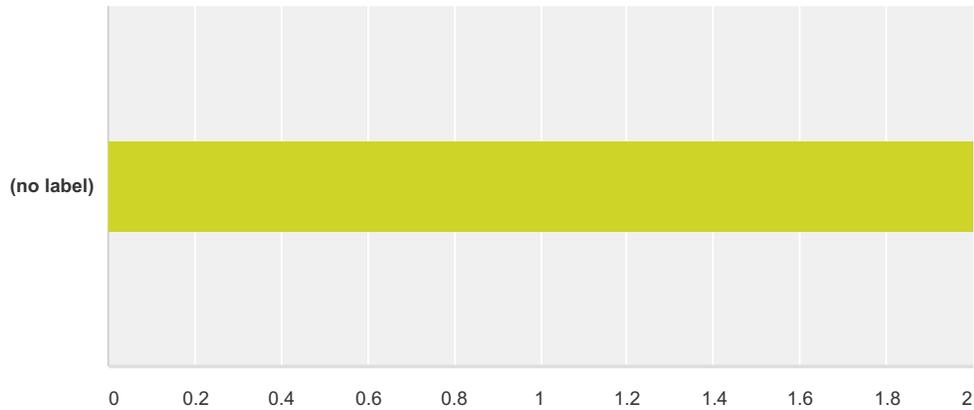
#	Responses	Date
1	Scientific Inquiry should be included in Science standards	12/3/2015 8:33 AM
2	The number 1 growing field in Missouri is healthcare yet you have many more Earth Science Standards then Chemistry standards. Are we truly preparing our students for healthcare related vocations? Will you explain?	12/1/2015 6:49 AM
3	I am currently a 7th and 8th grade Science teacher. I have been teaching for ten years now. I feel as if the new proposed Middle School Science Standards are very general in nature and are not as detailed as to what the previous GLE's were. A new teacher coming in would have a difficult time knowing what they are expected to teach without more detailed information. One of my biggest worries is I do not see anything in regards to the Scientific Method, variables, etc. So does that mean we still teach as usual, or not? Also, I do not see where the new standards cover technological advances and how it has influence today's science and the future. I do not understand the format of the standards, along the lines where I see the new standard on the left and the old standard on the right. Then, there are the old sub strands below, but nothing on the new standard. Are these just lumped all together with the new standard or have they been forgotten? I feel as if the wording of the new suggested standards are a bit overwhelming and would be more difficult for the students on their daily objectives. At my district, we are required to post the daily objectives, I feel as if we were to put the phrase, "construct an argument supported by empirical evidence" would cause them to shut down and not to be successful.	11/30/2015 2:16 PM
4	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:21 AM
5	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:06 AM
6	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:06 AM
7	These standards should be adopted as they are written.	11/27/2015 9:07 PM
8	Conservation of energy is omitted from both physical science and earth science.	11/13/2015 1:22 PM
9	Step One: "addressed elsewhere"- (proposed standard is addressed somewhere below or above in the same document.) Where? Why can't you not put reference(pg #, section) to tell where? Step Two: IF you intend to put together, ALL life science taught in ONE grade level, that is an excellent idea! ALL P.S. taught in ONE grade level, applause, applause! :) Step Three: The proposed standard wording is better than existing strand. (understand meaning of wording better, simpler to understand), but overall proposed standard is TOO VAGUE! Step Four: Each proposed standard needs a checklist, or bullets, listed underneath the new standard that explains all components so student/teacher can achieve the standard to 100%. Need rubric/scoring guide	11/13/2015 12:50 PM
10	We are recommending the creation of standards designed specifically for chemistry and physics courses. Certain standards, specifically HS-PS1-5, HS-PS1-6, HS-PS1-7 and not appropriate for a freshman level physical science course. This survey was created in collaboration with physical science and chemistry teachers at Ozark High School.	11/9/2015 4:49 PM
11	Please try to add more detail to the path, timing, and concept that is needing to be taught.	11/4/2015 2:09 PM

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12	These are pretty terrible, but this unit is not unique in the awful structure of the standards. The colored boxes are fine for teachers, but way too vague, grouped too largely, etc. It needs to be outlined so that parents can see what their kids are supposed to be learning in that actual course, and the teachers know what to teach in that actual course.	11/4/2015 1:24 PM
13	Except HS-PS 1.4 and HS-PS 1.7, I like the standards as written.	11/2/2015 10:22 AM
14	<p>Keep as proposed with suggestions. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.</p>	11/2/2015 10:11 AM

Q104 The standards in this strand are developmentally appropriate.

Answered: 7 Skipped: 212



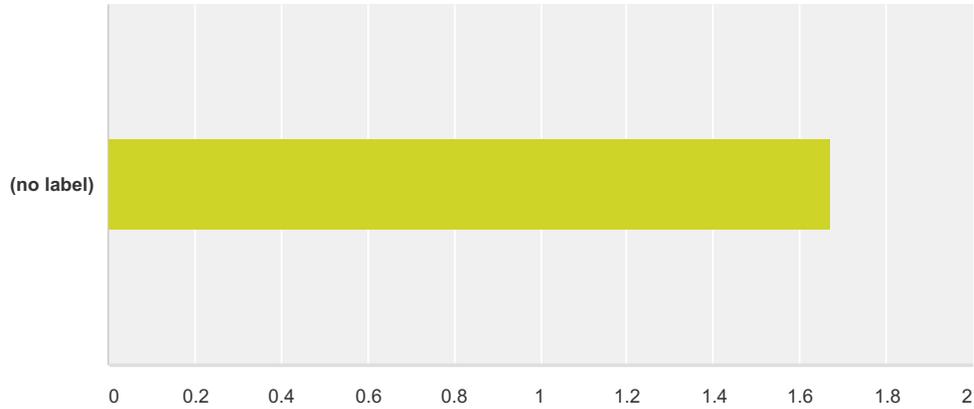
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	57.14% 4	0.00% 0	28.57% 2	14.29% 1	7	2.00

#	Suggested revisions for standards:	Date
1	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
2	It is not specific where each standard is addressed and at what level. Each grade should teach ONE specific content ONLY. 6th grade should be - only Physical Science. 7th grade should be - only Life Science material. 8th Grade - only Earth Science material. Each grade should be ONLY ONE specific course. The standards are way too vague and need more details also.	11/13/2015 11:16 AM
3	The proposed standards are research-based and are developmentally appropriate.	11/2/2015 10:18 AM

HS-PS2 Motion and Stability: Forces and Interactions (9-12)

Q105 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 6 Skipped: 213



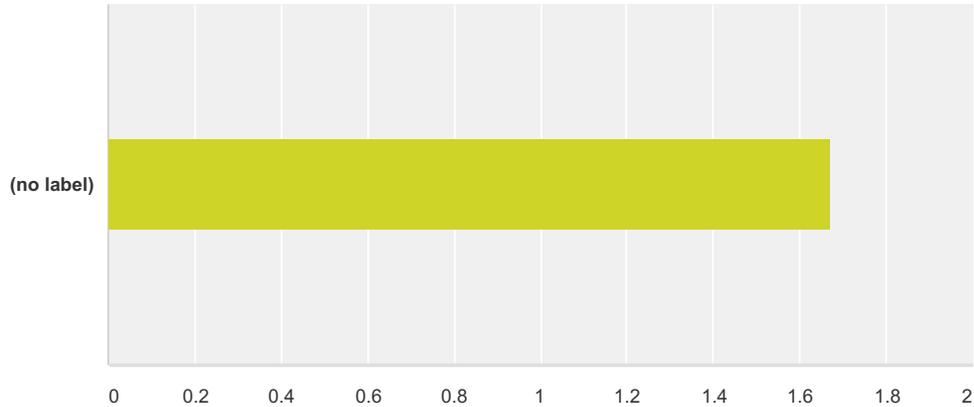
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	66.67% 4	0.00% 0	33.33% 2	0.00% 0	6	1.67

#	Suggested revisions for standards:	Date
1	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
2	The proposed standards demonstrate coherence and are based upon learning progressions.	11/2/2015 10:18 AM

HS-PS2 Motion and Stability: Forces and Interactions (9-12)

Q106 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 6 Skipped: 213



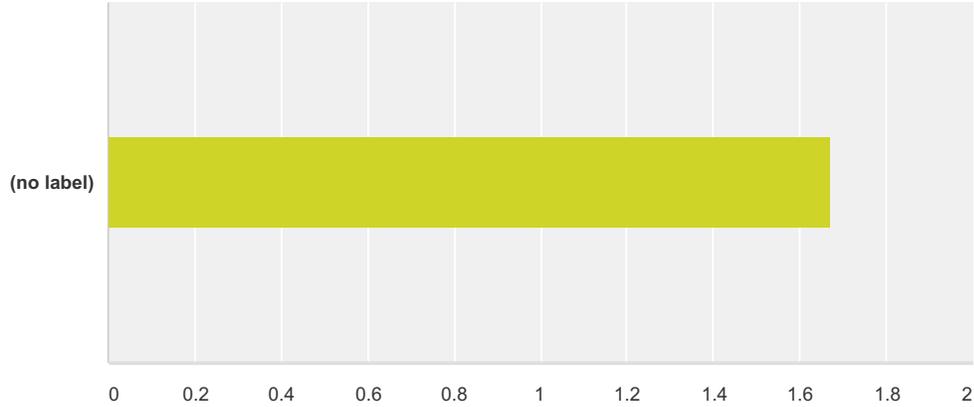
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	66.67% 4	0.00% 0	33.33% 2	0.00% 0	6	1.67

#	Suggested revisions for standards:	Date
1	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
2	The depth of knowledge these standards promote will provide rigor based upon complexity driven by the much needed incorporation of the practices of science with the content.	11/2/2015 10:18 AM

HS-PS2 Motion and Stability: Forces and Interactions (9-12)

Q107 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 6 Skipped: 213

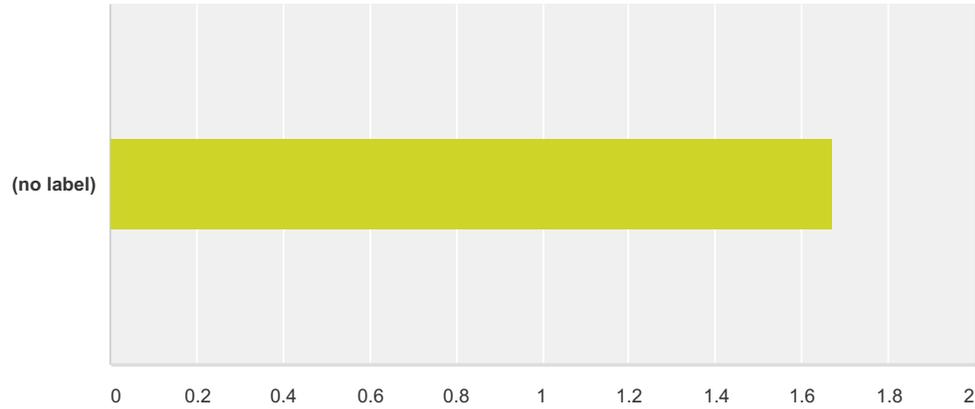


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	66.67% 4	0.00% 0	33.33% 2	0.00% 0	6	1.67

#	Suggested revisions for standards:	Date
1	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
2	Checked Keep Proposed As Is All the standards can be assessed and science should be assessed in this way.	11/2/2015 10:18 AM

Q108 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 6 Skipped: 213



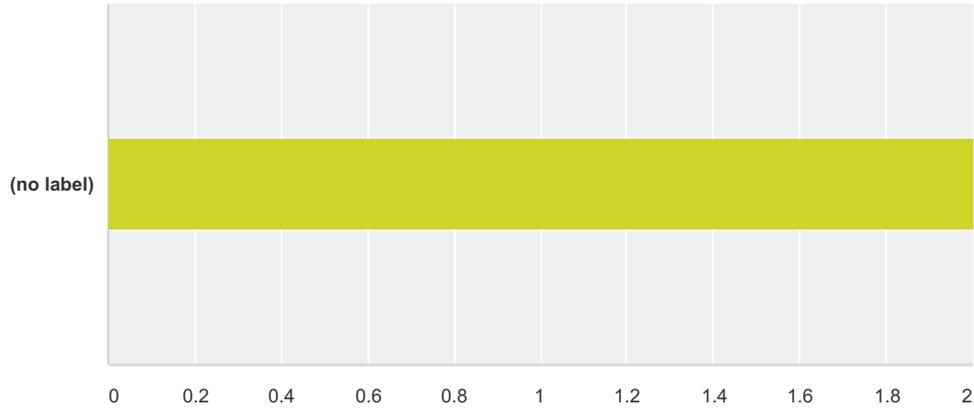
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	66.67% 4	0.00% 0	33.33% 2	0.00% 0	6	1.67

#	Suggested revisions for standards:	Date
1	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
2	This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (cross-cutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education.	11/2/2015 10:18 AM

HS-PS2 Motion and Stability: Forces and Interactions (9-12)

Q109 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 6 Skipped: 213



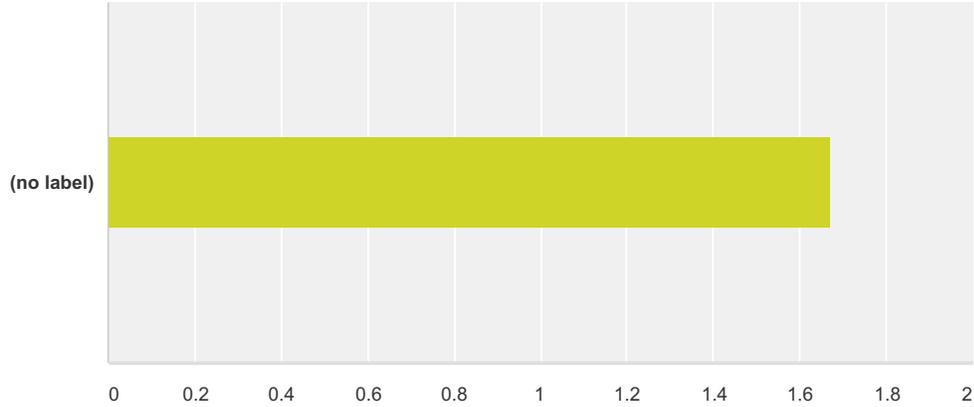
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	33.33% 2	33.33% 2	33.33% 2	0.00% 0	6	2.00

#	Suggested revisions for standards:	Date
1	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
2	Why not include Coulombic forces?	11/20/2015 1:17 PM
3	The incorporation of the science and engineering practices certainly promote college and career readiness by encouraging problem solving and the development of critical thinking skills. For HS-PS2-2: To emphasize the practice of argumentation at the high school level and continue the learning progression for that practice as well as the content, it would be better to have students support "the claim" rather than "the concepts." The practices are college and career ready skills students need to learn and develop in addition to the content for the science discipline.	11/2/2015 10:18 AM

HS-PS2 Motion and Stability: Forces and Interactions (9-12)

Q110 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 6 Skipped: 213



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	66.67% 4	0.00% 0	33.33% 2	0.00% 0	6	1.67

#	Suggested revisions for standards:	Date
1	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
2	The amount of content is appropriate to allow for deeper understanding.	11/2/2015 10:18 AM

HS-PS2 Motion
and Stability:
Forces and
Interactions (9-12)

**Q111 Overall comments regarding the
proposed standards for Motion and
Stability; Forces and Interactions (HS-PS2):**

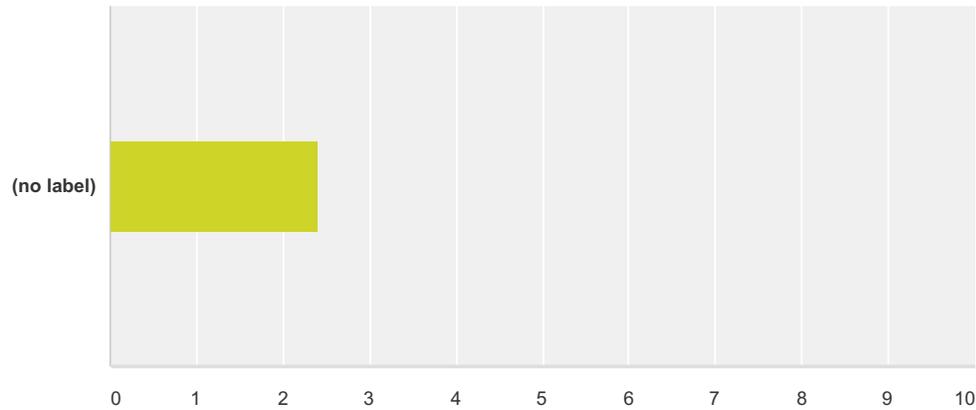
Answered: 5 Skipped: 214

#	Responses	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:21 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	These standards should be adopted as they are written.	11/27/2015 9:08 PM
4	Keep as proposed. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	11/2/2015 10:18 AM
5	Are the standards the bare minimum or can physics teach more than the basics.	10/28/2015 9:27 AM

Q113 The standards in this strand are developmentally appropriate.

HS-PS3 Energy
(9-12)

Answered: 10 Skipped: 209



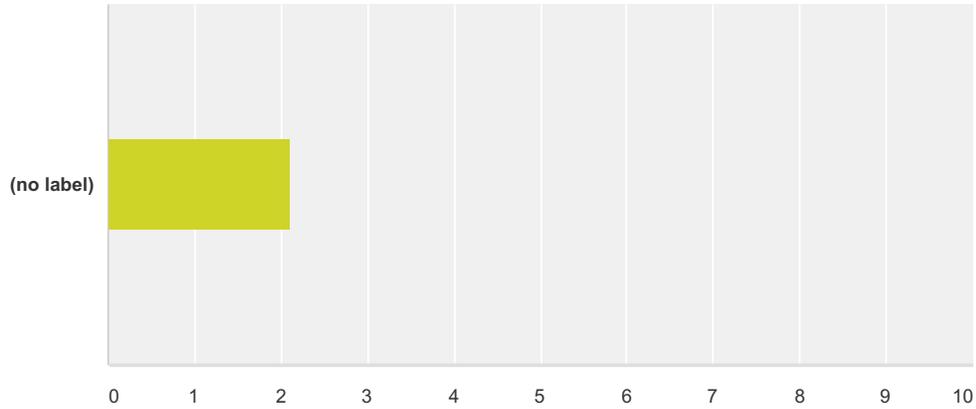
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	40.00% 4	0.00% 0	40.00% 4	20.00% 2	10	2.40

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:07 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	All physical science classes seem to be represented here. This leads to confusion over which standards apply to which course.	11/4/2015 1:59 PM
4	These standards could be considered acceptable as standards for the entirety of a high school career. However, listing these standards as "Physical Science" standards make teaching nearly impossible. If a new teacher came into a school and was told to teach the physical science standards, he/she would try to cram every standard into one year of physical science. This would cause a definite misunderstand for the teacher and students as their success at every standard would be low in one year of a "basic" physical science class. The standards need to be further guided as to what course/year they should be taught. Also, as a teacher, it would be hard to keep consistency of what is being taught per class across districts.	11/4/2015 1:21 PM
5	The proposed standards are research-based and are developmentally appropriate.	11/2/2015 10:22 AM

HS-PS3 Energy (9-12)

Q114 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 9 Skipped: 210



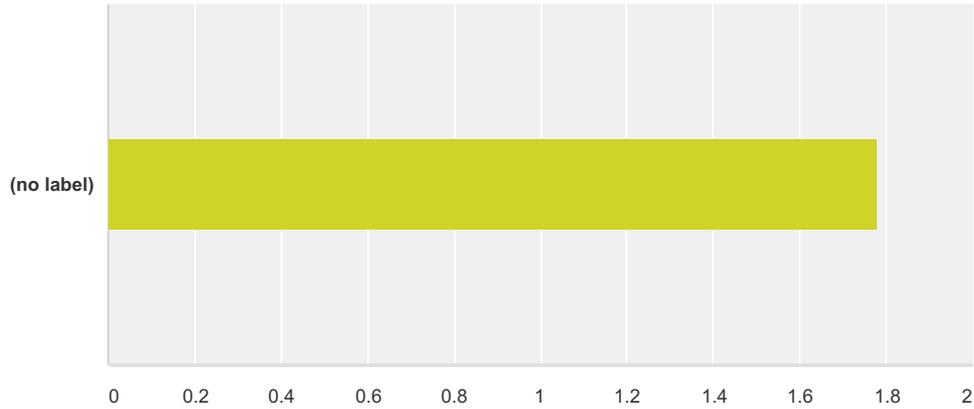
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	44.44% 4	11.11% 1	33.33% 3	11.11% 1	9	2.11

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:07 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	New teachers will have trouble finding out which standards will work for the courses they teach. There should be a rewrite of the strand that separates each standard by course.	11/4/2015 1:59 PM
4	The coherent path is there. If I begin teaching with PS-1, I would then teach PS-2, then PS-3, and so on. However, the argument still stands: What course is responsible for which standards? Where does physical science end and chemistry start? These are the adjustments that need to happen as far as the path is concerned.	11/4/2015 1:21 PM
5	The proposed standards demonstrate coherence and are based upon learning progressions.	11/2/2015 10:22 AM

HS-PS3 Energy (9-12)

Q115 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 9 Skipped: 210



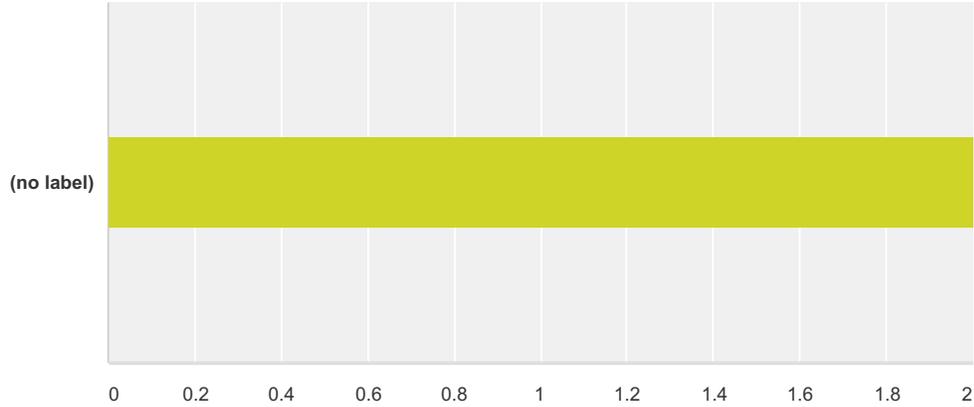
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	55.56% 5	11.11% 1	33.33% 3	0.00% 0	9	1.78

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:07 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	Yes. However, these standards are too high for a single course. Further breakdown of the standards would make the level of rigor appropriate.	11/4/2015 1:21 PM
4	The depth of knowledge these standards promote will provide rigor based upon complexity driven by the much needed incorporation of the practices of science with the content.	11/2/2015 10:22 AM

HS-PS3 Energy (9-12)

Q116 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 10 Skipped: 209



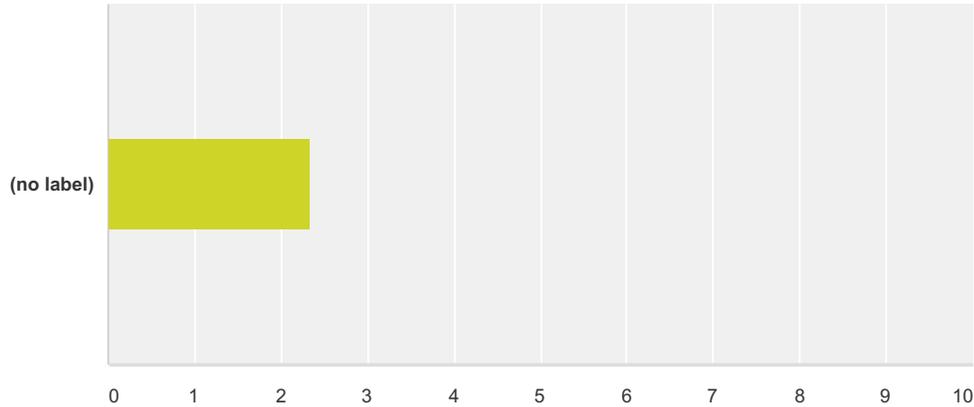
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 5	0.00% 0	50.00% 5	0.00% 0	10	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:07 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	HS PS 3-1. It is unclear what they are computing. Are these the Laws of Thermodynamics? Momentum? I am not sure what you are assessing/ HS PS 3-2. Is this referring to elastic and inelastic collisions? It is unclear what models are being referred to.	11/9/2015 2:15 PM
4	Due to the vagueness of these standards, I do not feel that they can be assessed on a state level. Because these standards are so vague in what the teacher needs to cover, each school/class/teacher could teach the idea of the standard in such a way that it does not correlate with any other teacher or class. For instance: when discussing HS PS3-4, one could teach the basic closed system using equilibrium or one could teach the same concept using calorimetry. There is not true way to teach this idea. Because of this, if a state test mentioned equilibrium, one student would succeed while the other has never even heard of questioned concept being asked.	11/4/2015 1:21 PM
5	All the standards can be assessed and science should be assessed in this way.	11/2/2015 10:22 AM

HS-PS3 Energy (9-12)

Q117 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 9 Skipped: 210



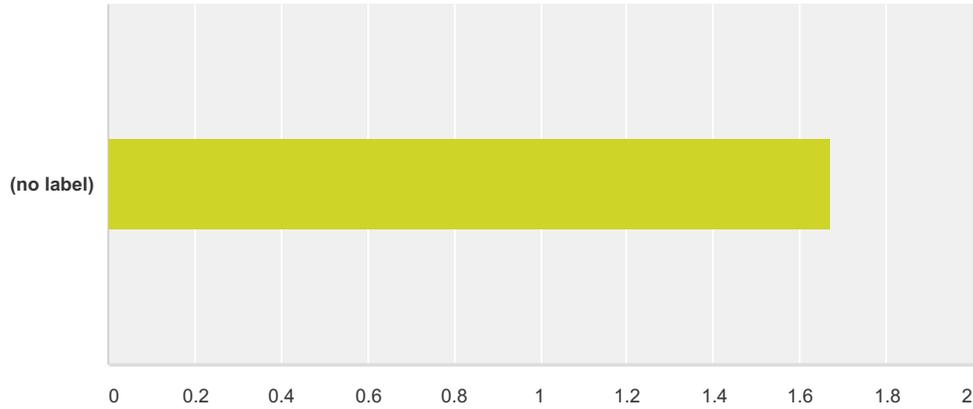
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	44.44% 4	0.00% 0	33.33% 3	22.22% 2	9	2.33

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:07 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	While educators may understand the strand, the order in which the standards are presented makes no sense. Any parent that reads these standards will most likely be confused.	11/4/2015 1:59 PM
4	If I, as a teacher, have a hard time understanding what exactly to teach, imagine being a parent and trying to decide what your student should be learning. Also, Depending on the grade/education level of a student. How will a parent be able to distinguish at which point in high school a student learns these ideas. There is no timing guideline. If a parent is to understand, a teacher needs to be able to understand.	11/4/2015 1:21 PM
5	This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (cross-cutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education.	11/2/2015 10:22 AM

HS-PS3 Energy (9-12)

Q118 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 9 Skipped: 210



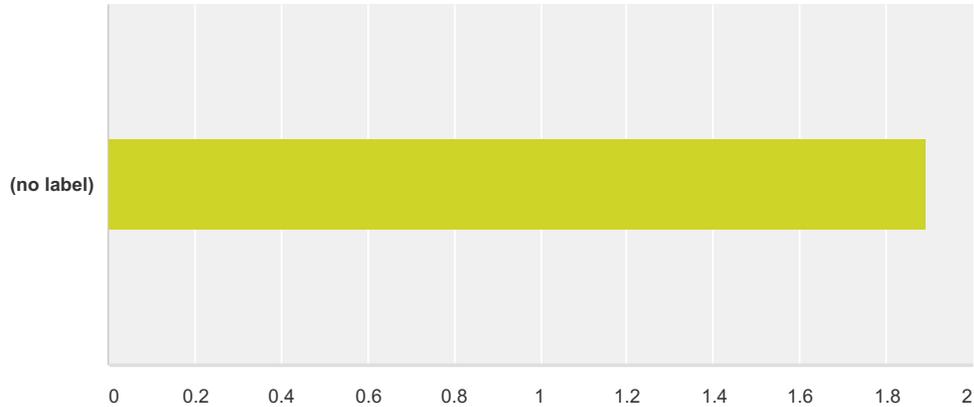
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	66.67% 6	0.00% 0	33.33% 3	0.00% 0	9	1.67

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:07 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	All of this needs to be known before a student enters higher education.	11/4/2015 1:21 PM
4	The incorporation of the science and engineering practices certainly promote college and career readiness by encouraging problem solving and the development of critical thinking skills.	11/2/2015 10:22 AM

HS-PS3 Energy (9-12)

Q119 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 9 Skipped: 210



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	55.56% 5	0.00% 0	44.44% 4	0.00% 0	9	1.89

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:07 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	These do not accurately explain what about energy should be taught. (The law of conservation of energy is not explicitly mentioned.) Plus, do to the vast examples of energy transfer, molecular level to large scale transfer, there is no one way to teach the concept. If we are trying to go to a universal education system, why is there not universal ideas being proposed?	11/4/2015 1:21 PM
4	The amount of content is appropriate to allow for deeper understanding.	11/2/2015 10:22 AM

HS-PS3 Energy
(9-12)**Q120 Overall comments regarding the
proposed standards for Energy (HS-PS3):**

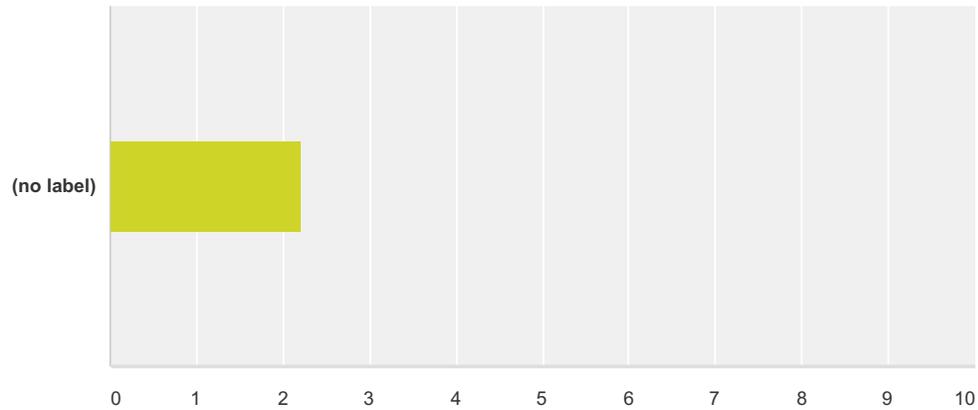
Answered: 7 Skipped: 212

#	Responses	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:22 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:07 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
4	These standards should be adopted as they are written.	11/27/2015 9:08 PM
5	The structure of the strand does not make sense in terms of courses covered. It takes a lot of effort to pick apart each standard to determine which classes are covered. Revising the strand to include which courses are covered by each standard would be more helpful to new teachers and teachers taking on a new course preparation.	11/4/2015 1:59 PM
6	I would like to see less vague, better broken down physical science high school standards.	11/4/2015 1:21 PM
7	Keep as proposed. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	11/2/2015 10:22 AM

HS-PS4 Waves and their Applications in Technologies for Information Transfer (9-12)

Q122 The standards in this strand are developmentally appropriate.

Answered: 14 Skipped: 205



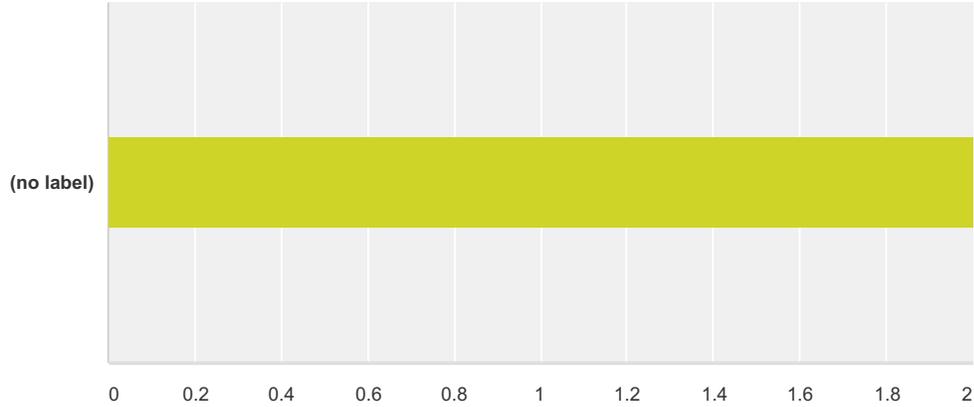
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	42.86% 6	7.14% 1	35.71% 5	14.29% 2	14	2.21

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	This standard is far beyond the ability level of the typical 14 year old learner. The mathematical computations and reasoning is beyond what this level learner can take to the next step. **perhaps all standards need to be broke down further describing what will be required to be covered at a freshmen physical science level versus an honors senior college prep chemistry class.	11/16/2015 2:35 PM
4	In an ideal world, students would be able to do scientific notation at the freshman level. When we cannot properly round, deal with decimals, looking at the measurements of electromagnetic energy and calculating, makes it difficult for this learner. So I would reevaluate here.	11/16/2015 2:30 PM
5	Seems to be concept heavy in Middle School - need to incorporate more content at high School level.	11/4/2015 1:30 PM
6	The proposed standards are research-based and are developmentally appropriate.	11/2/2015 10:32 AM
7	The standards are written for students beyond grade 9. The abstract concept electromagnetic radiation is better grasped by students after 3-4 years of high school science.	10/27/2015 8:58 AM

HS-PS4 Waves and their Applications in Technologies for Information Transfer (9-12)

Q123 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 12 Skipped: 207



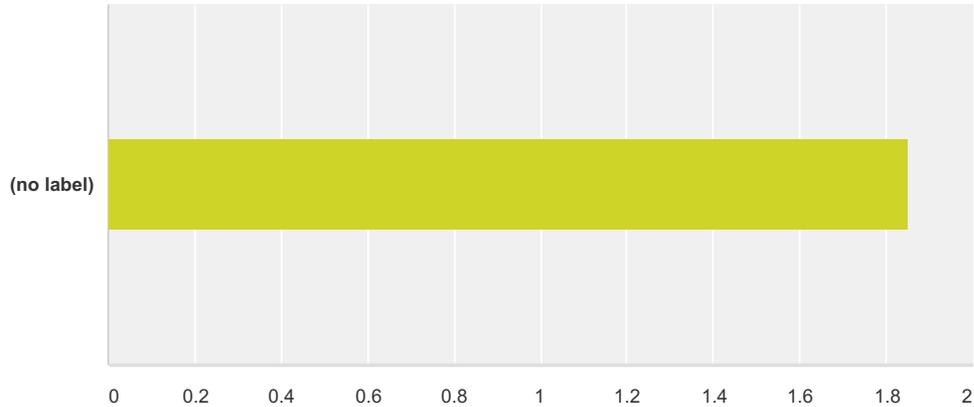
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	41.67% 5	25.00% 3	25.00% 3	8.33% 1	12	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	Follows a coherent development. Although depends heavily on Middle School development of basic concepts.	11/4/2015 1:30 PM
4	The proposed standards demonstrate coherence and are based upon learning progressions.	11/2/2015 10:32 AM
5	There is a significant emphasis on the current issues related to electromagnetic radiation. This emphasis is not seen in other physical science standards.	10/27/2015 8:58 AM

HS-PS4 Waves and their Applications in Technologies for Information Transfer (9-12)

Q124 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 13 Skipped: 206



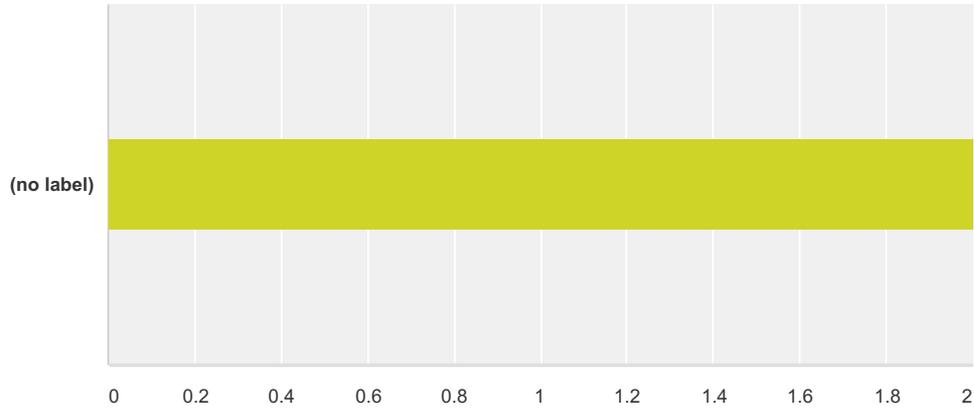
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	23.08% 3	30.77% 4	0.00% 0	13	1.85

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	Maybe a list of additional terms to help explain or simplify things to help further understanding for younger students would help.	11/16/2015 2:30 PM
4	The depth of knowledge these standards promote will provide rigor based upon complexity driven by the much needed incorporation of the practices of science with the content.	11/2/2015 10:32 AM
5	The standards are too rigorous for regular 9th grade curriculum. The developmental age is not appropriate for such complexity.	10/27/2015 8:58 AM

HS-PS4 Waves and their Applications in Technologies for Information Transfer (9-12)

Q125 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 13 Skipped: 206



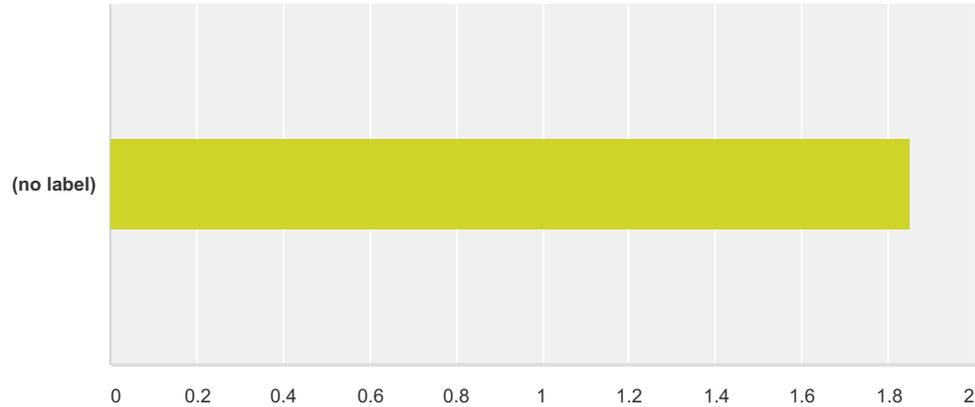
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	7.69% 1	46.15% 6	0.00% 0	13	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	I think it would be easier to see things in the classroom but being cautious that if experiments were not able to be performed in the classroom, the students might not be able to have full knowledge to perform well on a standardized test.	11/16/2015 2:30 PM
4	High School standards would not be easily tested on State level.	11/4/2015 1:30 PM
5	All the standards can be assessed and science should be assessed in this way.	11/2/2015 10:32 AM
6	They can be assessed in the classroom but would be difficult for a state level assessment.	10/27/2015 8:58 AM

HS-PS4 Waves and their Applications in Technologies for Information Transfer (9-12)

Q126 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 13 Skipped: 206



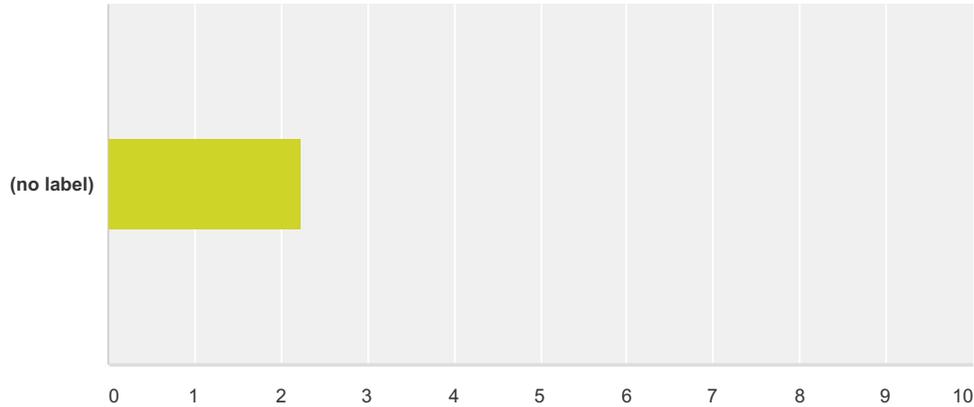
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	53.85% 7	15.38% 2	23.08% 3	7.69% 1	13	1.85

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	A change in verbiage might help with understanding for educators. After looking for some additional knowledge through colleagues and other tools, I had a better understanding. Maybe a slight change in language would make it easier for an educator to teach the material.	11/16/2015 2:30 PM
4	I can't see parents understanding these at all. Most teachers would need to update their training as well.	11/4/2015 1:30 PM
5	This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (cross-cutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education.	11/2/2015 10:32 AM

HS-PS4 Waves and their Applications in Technologies for Information Transfer (9-12)

Q127 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 13 Skipped: 206



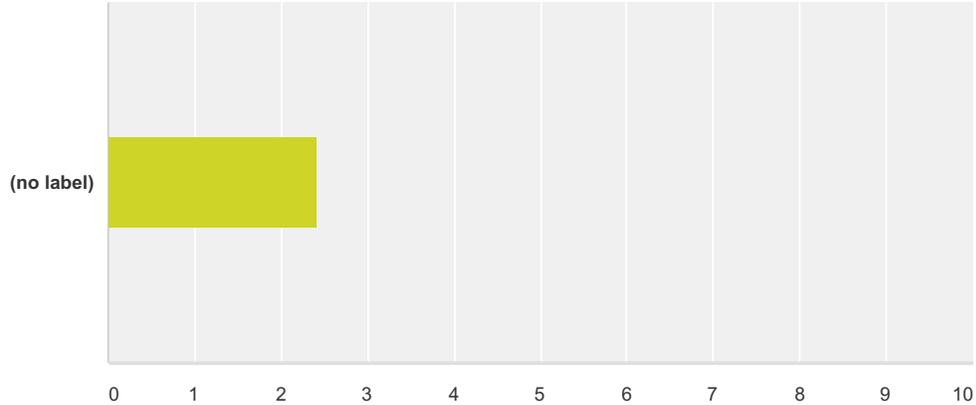
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	30.77% 4	15.38% 2	53.85% 7	0.00% 0	13	2.23

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	In today's world students should understand the digital world. Technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.	11/20/2015 1:38 PM
4	I believe the information required here is definitely for a college bound student. I just have concern that some of the requirements are leaps and bounds higher than should be set for a freshman student.	11/16/2015 2:30 PM
5	There is a need for a standard that will allow students to learn about digital versus analog methods of transmission and storage of information. Advancements in technology necessitate the addition of a standard so students actually explore and evaluate the benefits of the technologies we use each and every day. Although this is not a concept that has been taught in the past, our knowledge has advanced and students should evaluate and investigate "Evaluate questions about the advantages of using a digital transmission and storage of information"	11/2/2015 10:32 AM
6	They are targeted for college readiness. HS-PS4 4 is appropriate for career readiness.	10/27/2015 8:58 AM

HS-PS4 Waves and their Applications in Technologies for Information Transfer (9-12)

Q128 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 12 Skipped: 207



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	25.00% 3	16.67% 2	50.00% 6	8.33% 1	12	2.42

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
3	principles involved in digital technology should be incorporated	11/20/2015 1:38 PM
4	This strand seems to lack concepts at high school level. It is too limited to a few electromagnetic wave concepts.	11/4/2015 1:30 PM
5	For HS-PS4-3: HS-PS4-3 is oversimplified and could even lead to a misconception. The wording listed below represents what students should know, understand and do much better in the three-dimensional format. Communicate technical information about about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy. [Clarification Statement: Examples could include solar cells capturing light and converting it to electricity; medical imaging; and communications technology.] [Assessment Boundary: Assessments are limited to qualitative information. Assessments do not include band theory.] There is a need for a standard that will allow students to learn about digital versus analog methods of transmission and storage of information. Advancements in technology necessitate the addition of a standard so students actually explore and evaluate the benefits of the technologies we use each and every day. Although this is not a concept that has been taught in the past, our knowledge has advanced and students should evaluate and investigate "Evaluate questions about the advantages of using a digital transmission and storage of information"	11/2/2015 10:32 AM
6	Too narrow to one specific topic in physical science.	10/27/2015 8:58 AM

HS-PS4 Waves and their Applications in Technologies for Information Transfer (9-12)

Q129 Overall comments regarding the proposed standards for Waves and Applications in Technology for Information Transfers (HS-PS4):

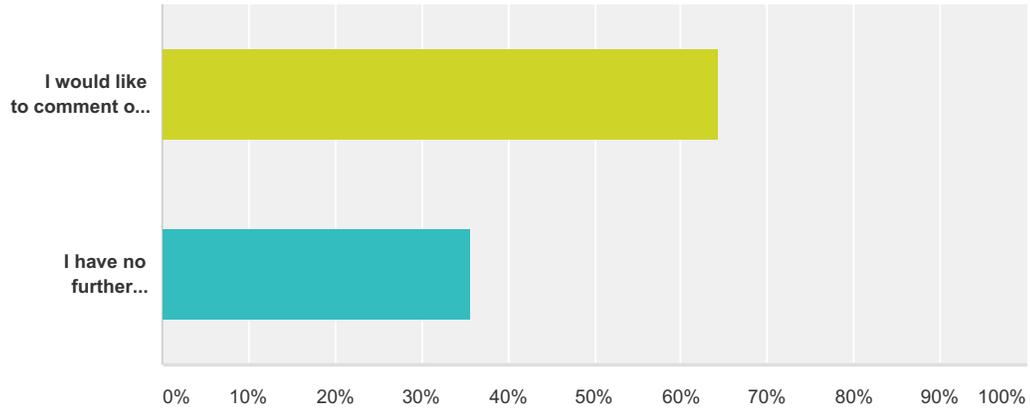
Answered: 7 Skipped: 212

#	Responses	Date
1	No changes are necessary at this time.	11/30/2015 1:23 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:22 AM
3	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
4	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:07 AM
5	These standards should be adopted as they are written.	11/27/2015 9:09 PM
6	They seem very limited and sketchy at high school level. Educators would need to use vertical teaming to make sure curriculum is covered comprehensively.	11/4/2015 1:30 PM
7	The overall format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	11/2/2015 10:32 AM

HS-LS1 From Molecules to Organisms: Structures and Processes (9-12)

Q130 Choose an option:

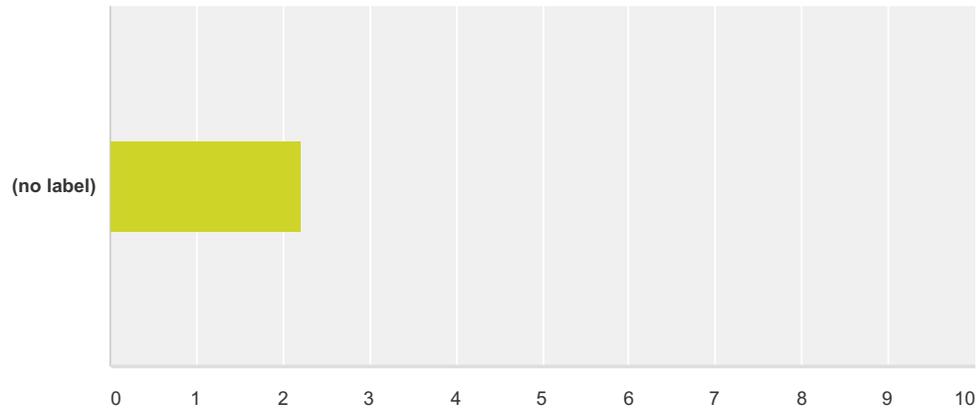
Answered: 14 Skipped: 205



Answer Choices	Responses
I would like to comment on another strand.	64.29% 9
I have no further comments on the Science 6-12 proposed standards.	35.71% 5
Total	14

Q131 The standards in this strand are developmentally appropriate.

Answered: 24 Skipped: 195



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	37.50% 9	12.50% 3	41.67% 10	8.33% 2	24	2.21

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	The new standards are excessively vague and non-specific to the topic areas. A new teacher would have no idea what to teach and which topics hold more importance.	11/20/2015 9:52 AM
4	This standard is not developmentally appropriate because it is not specific enough. There needs to be a better job of organization of this and I think that the committee needs to first focus on what BIG topics they want to address and then add in the specifics into their "clarification." The main issue I see with these proposed standards is that there needs to be specific standards for all of the high school science areas. It is confusing and frustrating to try to find the standards that are specific to your subject. I hate the idea that there are only 3 high school subjects: life sciences, earth sciences, and physical sciences. Then, you have to search all 3 to find what you think should be the biology standards. Again, this is poorly organized and this process needs to be reevaluated. I do not know how first year or even little experience would know what to do with these standards. I suggest that this standard be broken down into 4 main categories: Homeostasis, Photosynthesis & Cellular respiration, Biomolecules (proteins, carbohydrates, lipids, and nucleic acids), and CELLS. It is a horrible idea that cells are not addressed at all in general biology. I think that this is huge for the students at this age level because they are able to achieve these standards but through a higher DOK level. With these proposed standards, there is not enough information for the students or teachers to know what needs to be addressed and how.	11/13/2015 1:22 PM
5	I do not see any stands that relate directly to scientific Method, or Cell and Cell parts?	11/11/2015 4:06 PM

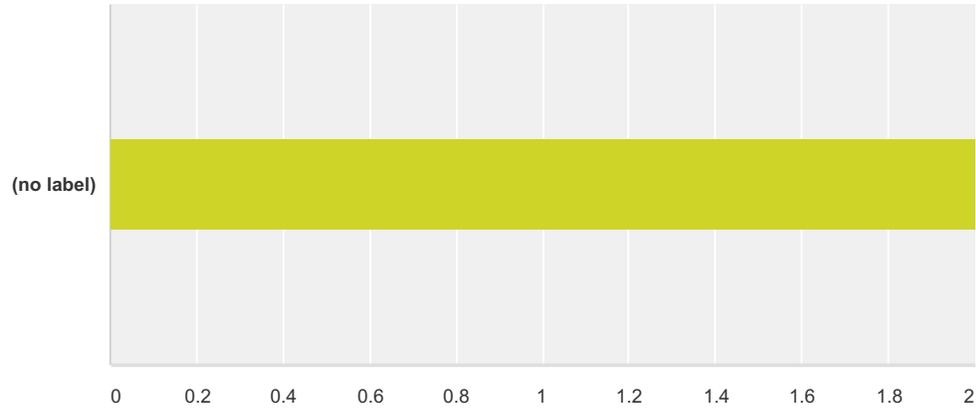
HB1490 Work Group - Science 6-12

6	Functions of the macromolecules should be known by the students and being able to identify them is key in using a model of the cell to understand how the cell works....lipid membrane, transport proteins....those are just two of the macromolecules that would be used in understanding HS-LS1.2 with water and nutrient intake.	11/10/2015 12:59 PM
7	HS-LS1-2 and HS-LS1-3 are stated too vaguely. It would help to incorporate more information from the red clarifying statement when constructing these strands.	11/4/2015 1:58 PM
8	Like the introduction of homeostasis with feedback mechanisms. This allows for an opportunity to talk about organism bodies. On the other hand, this set of standards lacks a direct connection of hierarchical organization from cells to tissues to organs to organ systems to organism which is the ULTIMATE example of "Molecules to organisms." This section of standards also lack the cooperation of various body systems working together to allow an organism to function (connections of the digestive and lymphatic systems, skeletal and muscle systems, nervous and digestive systems).	11/4/2015 1:18 PM
9	Removing cell structure and function material and only discussing it during MS seems troublesome. If there is not a mandate on when in HS (and possibly MS) that students learn the cell structure/function standards, then it increases the likelihood of students losing this material (which is necessary for understanding protein synthesis, metabolism, cell reproduction, etc.). I think that standards related to cell structure and function should be retained.	11/4/2015 1:12 PM
10	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM
11	The expectation for student performance needs to be more clearly described. All of the standards are too vague and are open to multiple interpretations.	11/4/2015 1:09 PM
12	HLS1-5 requires clarification statement and assessment boundary. Without this information the standard is too vague. HLS1-2 seems quite broad. "Emphasis is on functions at the organism system level such as nutrient uptake, water delivery, and organism movement in response to stimuli." This encompasses a LOT and really does not fit in with cells, heredity, ecosystems or evolution.	11/2/2015 10:51 AM
13	The proposed standards are research-based and are developmentally appropriate.	11/2/2015 10:45 AM

HS-LS1 From
Molecules to
Organisms: Structures
and Processes (9-12)

Q132 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 20 Skipped: 199



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	45.00% 9	15.00% 3	35.00% 7	5.00% 1	20	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM

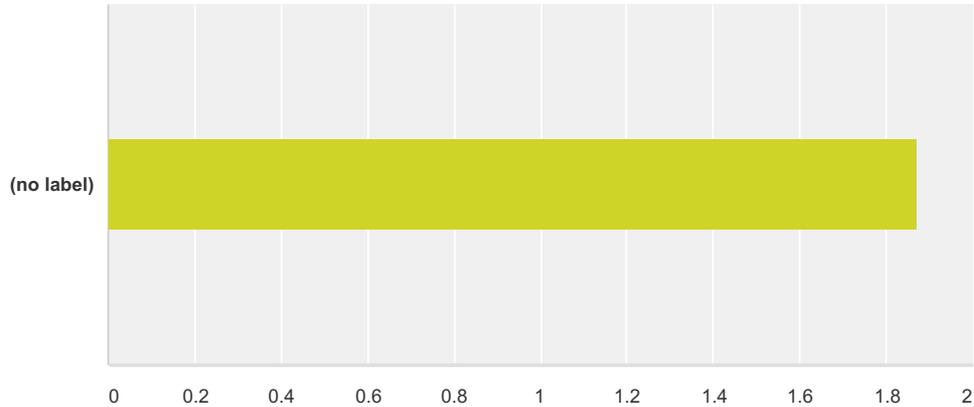
HB1490 Work Group - Science 6-12

3	<p>These proposed standards do not show a coherent path through and across all grade levels. How are teachers and students supposed to emphasize a topic (cells) and NEVER come back to it again? Without addressing cells in this learning standard, there is no way that students are going to understand the idea behind where photosynthesis and cellular respiration occurs. Hence, students will not be able to relate the idea behind these processes and why it is important for homeostasis. If students do not understand the idea behind cells, how are they going to relate this to this proposed standard? There is no way a student will get the ideas behind mitosis, meiosis, or protein synthesis. Again, I think that there needs to be specific standards for ALL high school science subjects. These standards are trying to take the "easy" way out and lump standards together. This is not realistic because with standards like these proposed ones, students will struggle when they transfer from one course to another, from one school to another, and/or teacher to teacher. Biology needs to have their own standards and specific standards = topics that need to be covered. I do not think that there is a worry that there is an overlap of what is taught in biology to chemistry, but if they are not given their own specific standards, then students have no way of being coherent across all grade levels because these standards are open to how each teacher in each school would like to interpret and carry out these standards. I HATE the idea that there are these 3 general standards for earth, life, and physical sciences, when we ONLY have a BIOLOGY EOC. How is this supposed to be coherent across all grade levels when there are not specific standards for each science class? If the idea main purpose behind these proposed standards were to condense and give obscure "standards" then I feel that this was done perfectly. If the idea behind this was to "simplify" the current standards, then this was not achieved and instead, too much content was cut out of these new, proposed standards. Please rewrite these standards for: 1. Each subject and 2. Figure out what BIG topics you want us to teach within that subject.</p>	11/13/2015 1:22 PM
4	<p>I believe these standards are suitable for MS, not HS level.</p>	11/10/2015 12:59 PM
5	<p>Although this standard follows a coherent path across grade levels, research demonstrates that repeating, practicing and learning a topic deeper encourages greater retention of that knowledge. It is concerning that students will learn about cellular structure & function (organelles and their function) at the middle school level, but this is NOT repeated at the high school level. Student may have 1-3 year gap between "learning" organelles at the MS level and when they are enrolled in HS Biology, creating a gap of their knowledge and little room for review of this topic.</p>	11/4/2015 1:18 PM
6	<p>Removing cell structure and function material and only discussing it during MS seems troublesome. If there is not a mandate on when in HS (and possibly MS) that students learn the cell structure/function standards, then it increases the likelihood of students losing this material (which is necessary for understanding protein synthesis, metabolism, cell reproduction, etc.). I think that standards related to cell structure and function should be retained.</p>	11/4/2015 1:12 PM
7	<p>Needs statement of limitations as seen in NGSS</p>	11/4/2015 1:11 PM
8	<p>HLS1-2 seems quite broad. "Emphasis is on functions at the organism system level such as nutrient uptake, water delivery, and organism movement in response to stimuli." This encompasses a LOT and really does not fit in with cells, heredity, ecosystems or evolution. I do not find this standard to be necessary at this level.</p>	11/2/2015 10:51 AM
9	<p>For HS-LS1-5: This standard actually combines the middle school performance expectations for photosynthesis and cellular respiration. This standard can remain but it should still be introduced in middle school first and be a supporting standard here. Students should not see it for the first time in high school. A clarification statement would be helpful.</p>	11/2/2015 10:45 AM

HS-LS1 From
Molecules to
Organisms: Structures
and Processes (9-12)

Q133 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 23 Skipped: 196



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	47.83% 11	26.09% 6	17.39% 4	8.70% 2	23	1.87

#	Suggested revisions for standards:	Date
1	Curious as to why the following has been omitted- (Strand 3) 2.D.e. * Interpret a data table showing the effects of an enzyme on a biochemical reaction This is a concept that is very important in AP Biology and has been beneficial to students that were introduced to the concept in Bio I.	12/3/2015 8:56 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
4	They are too broad to be able to expect rigorous and high expectations.	11/20/2015 9:52 AM
5	The question that I keep asking myself is how is this at the same level or more rigorous than the standards that we are currently using. From looking at the clarification section underneath the standard and looking at the Crosswalk, I do not see any transfer of equal or more rigor. This is very disappointing as an educator, and i feel that we are stealing education from these students. How should students successfully construct a scientific explanation based on evidence for the role of photosynthesis and cellular respiration (HS-LS1-5) when they cannot understand the idea behind homeostasis in standards 1-2 and 1-3? Throughout the process of simplifying the old standards, there was too much material that is vital to the success of understanding biology and its processes that were taken out. Students need to understand the idea of homeostasis, protein synthesis, what a selectively permeable membrane is and why it's important for cells, the law of conservation of mass, and biomolecules. Without addressing these topics, we are taking away the rigor of this subject and missing all of the important ideas that build the foundation for biology.	11/13/2015 1:22 PM

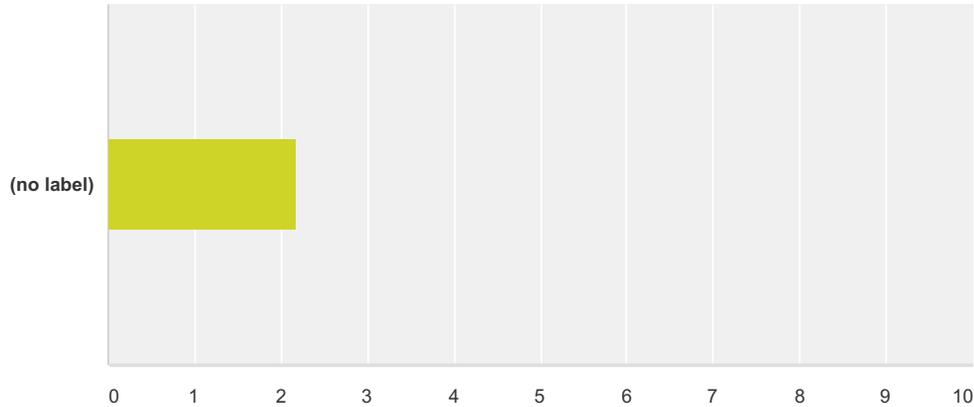
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6	I believe these standards for high school are to weak. More detail should be required in the assessments to prepare the students for AP classes and the college level.	11/10/2015 12:59 PM
7	Removing cell structure and function material and only discussing it during MS seems troublesome. If there is not a mandate on when in HS (and possibly MS) that students learn the cell structure/function standards, then it increases the likelihood of students losing this material (which is necessary for understanding protein synthesis, metabolism, cell reproduction, etc.). I think that standards related to cell structure and function should be retained.	11/4/2015 1:12 PM
8	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM
9	Oh they are rigorous all right.	11/2/2015 10:51 AM
10	The depth of knowledge these standards promote will provide rigor based upon complexity driven by the much needed incorporation of the practices of science with the content.	11/2/2015 10:45 AM

HS-LS1 From Molecules to Organisms: Structures and Processes (9-12)

Q134 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 23 Skipped: 196



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	34.78% 8	21.74% 5	34.78% 8	8.70% 2	23	2.17

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	construct a model would be hard to assess at teh state level HS LS1 - 1	11/20/2015 1:49 PM
4	To assess classroom content you need to know the specific topics and areas. Without knowing what should be taught how can you expect decent test scores?	11/20/2015 9:52 AM
5	There will need to be a lot of support with lab/model building documents and possibly software for teachers to use.	11/16/2015 2:23 PM
6	NO! There are many more things (law of conservation of mass, protein synthesis, translation, transcription, photosynthesis processes, and cellular respiration processes) that are included on the EOC and are not addressed well in the proposed standards. I think that these standards need to be reorganized and put into specific categories that will be more user friendly towards students and teachers. I think that the committee needs to take a look at the current science standards and the national science standards and make a list of what is the most important concepts to learn. From here, then subcategories can be made and include the specifics. So, I feel like this committee tried to oversimplify and failed. These proposed standards are not realistic and not appropriate for the state assessments because this is too vague.	11/13/2015 1:22 PM

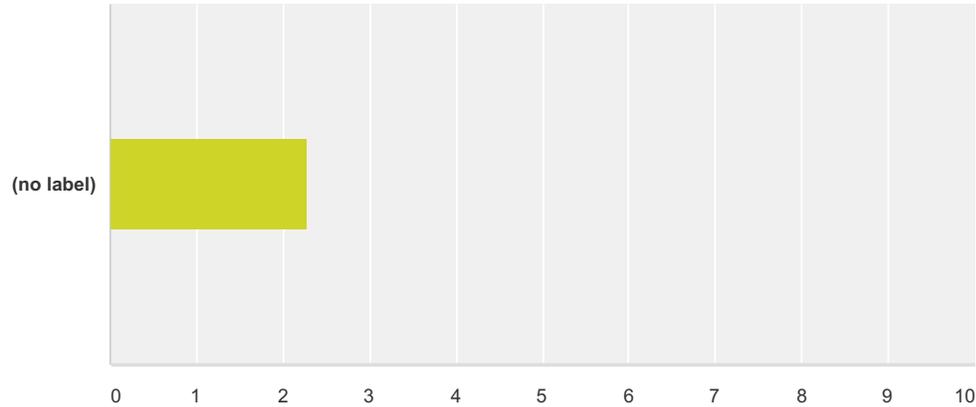
HB1490 Work Group - Science 6-12

7	Several of the standards use "develop," "create," "construct" and/or "use" model, but students will continued to be tested in a Multiple Choice format. Although these can easily be assessed in the classroom, I have a deep concern of how they will be assessed at the State level using a 50 question Multiple Choice assessment.	11/4/2015 1:18 PM
8	There is a heavy focus on "modeling" as a means of demonstrating knowledge/understanding. In some cases, modeling is explained with examples - ex. HS1-LS1-6. Other times, examples or explanations of model include vague terms like "conceptual models".	11/4/2015 1:12 PM
9	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM
10	I disagree. We need more information on precisely what is expected. Each standard is open to some degree of interpretation. We will be guessing and hoping that classroom assessments match state level expectations.	11/4/2015 1:09 PM
11	I am unsure of how designing a model will be assessed at the state level. I can assess that in my classroom but when 5 out of 8 standards in this section include designing a model, maybe examples of models should be listed, similar to HSL1-6."Examples of models could include diagrams, chemical equations, and conceptual models"	11/2/2015 10:51 AM
12	For HS-LS1-1: The practice of constructing a model would be difficult to assess at the state level; however, the practice of constructing an explanation would be plausible. Students could still utilize modeling to reach the end goal of constructing an explanation.	11/2/2015 10:45 AM

HS-LS1 From
Molecules to
Organisms: Structures
and Processes (9-12)

Q135 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 22 Skipped: 197



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	22.73% 5	36.36% 8	31.82% 7	9.09% 2	22	2.27

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	some rewording and come have too many concepts incorporated into one standard see comments in comment section below	11/20/2015 1:49 PM
4	Extreme lack of information	11/20/2015 9:52 AM
5	There will possibly need to be training for teachers on how to teach the science and engineering practices.	11/16/2015 2:23 PM
6	Wording needs to be more specific. I think that there was too much "openness" with these proposed standards. There is no way that students or parents will understand what this standard is trying to get at. This standard needs to focus on either the topic of protein synthesis OR protein functions (which are discussed later on in biomolecules - HS - LS1-8). Again, the committee over simplified and we are left with theses standards that are lacking too much material and emphasis on important key points. I think that there needs to be a standard for biomolecules (proteins, nucleic acids, carbohydrates, and lipids). There needs to be a standard on photosynthesis and one on cellular respiration. Then under these standards there can be subcategories that includes more specifics like the cellular transport, energy formation, energy transfer, law of conservation of mass, etc.	11/13/2015 1:22 PM

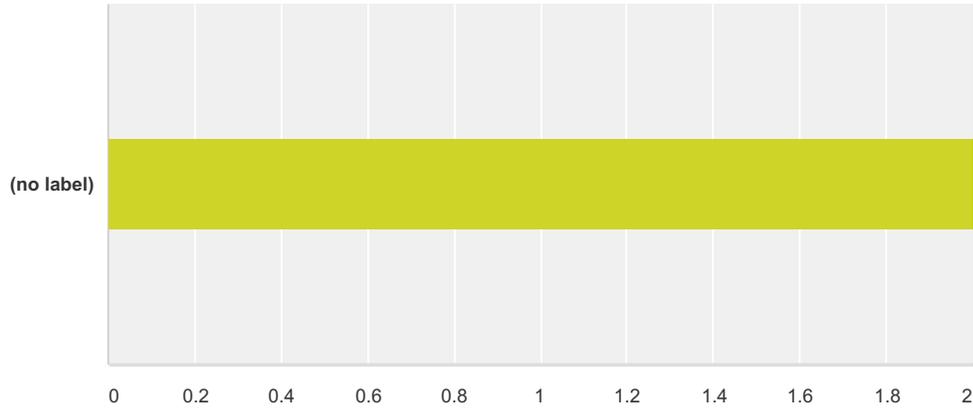
HB1490 Work Group - Science 6-12

7	Many schools have a honors or weighted course. Perhaps providing a suggested assessment boundary for those courses in the various standards would be good.	11/10/2015 12:59 PM
8	Some standards are a little vague such as "Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms."	11/4/2015 1:18 PM
9	There is a heavy focus on "modeling" as a means of demonstrating knowledge/understanding. In some cases, modeling is explained with examples - ex. HS1-LS1-6. Other times, examples or explanations of model include vague terms like "conceptual models".	11/4/2015 1:12 PM
10	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM
11	They are too vague.	11/4/2015 1:09 PM
12	For HS-LS1-3: Keep as proposed (except "stomata" should be changed to "stomate." This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (cross-cutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. The content was addressed in the previous GLEs but the standard has been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all.	11/2/2015 10:45 AM

HS-LS1 From
Molecules to
Organisms: Structures
and Processes (9-12)

Q136 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 23 Skipped: 196



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	39.13% 9	26.09% 6	30.43% 7	4.35% 1	23	2.00

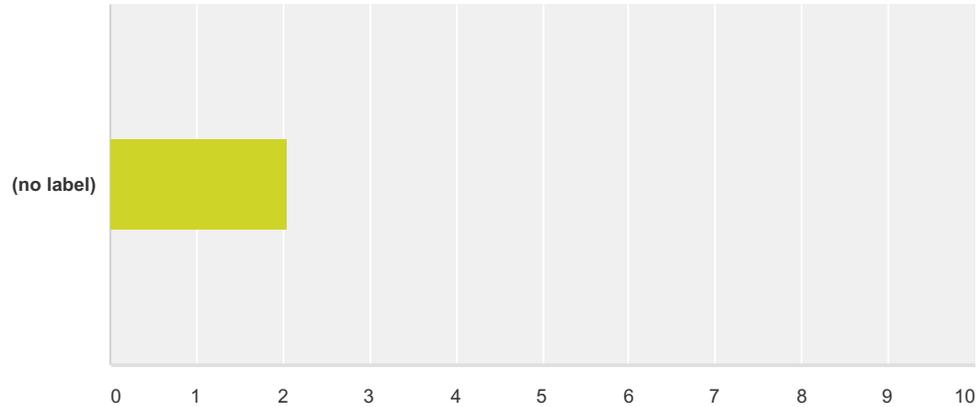
#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	The units need to be narrowed and have the specific area of content.	11/20/2015 9:52 AM
4	Looking at the proposed standards, it is very difficult to understand what ideas are trying to be addressed within this standard. How can we get tot he idea of DNA determining the structure of proteins within focusing on transcription and translation? If this proposed standard is addressing them, then they need to be included within the standard. The idea of translating DNA into RNA and then from RNA to codons, is not addressed in this standard. So, is this important? In order to make the students more prepared for college, this topic needs to be addressed. I think that there needs to be more rigor and emphasis on the specific biological topics throughout these standards. For these standards to be more productive with college and career readiness, the standards must be more rigorous and specific.	11/13/2015 1:22 PM
5	For the most part...yes. But skipping out on the details of macromolecules and organelles is not getting them ready for college biology.	11/10/2015 12:59 PM
6	Life science standards should include greater emphasis on biodiversity and the structure and function of the human body.	11/4/2015 1:09 PM

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7	The incorporation of the science and engineering practices certainly promote college and career readiness by encouraging problem solving and the development of critical thinking skills.	11/2/2015 10:45 AM
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Q137 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 23 Skipped: 196



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	43.48% 10	13.04% 3	39.13% 9	4.35% 1	23	2.04

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	rewording needed "Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. Clarification Statement: Emphasis is on using evidence from models and simulations to support explanations. Assessment Boundary: Assessment does not include the details of the specific chemical reactions or identification of macromolecules."	11/20/2015 1:49 PM
4	The are accurate but lack major guidance	11/20/2015 9:52 AM
5	How can these standards be accurate and encompass the content when there are not specific content standards? I do not know how to address this comment area because it does not apply to these standards since these proposed standards are not appropriate.	11/13/2015 1:22 PM
6	Where is human anatomy - ex. body systems? Connections to larger ideas such as homeostasis?	11/4/2015 1:12 PM
7	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM
8	Life science standards should include greater emphasis on biodiversity and the structure and function of the human body.	11/4/2015 1:09 PM

HB1490 Work Group - Science 6-12

9	<p>For HS-LS1-8: This standard as written would promote a misconception. Not all organic compounds contain nitrogen, sulfur and phosphorus. A better way to word this particular performance expectation would be: "Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. Clarification Statement: Emphasis is on using evidence from models and simulations to support explanations. Assessment Boundary: Assessment does not include the details of the specific chemical reactions or identification of macromolecules."</p>	11/2/2015 10:45 AM
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HS-LS1 From Molecules to Organisms: Structures and Processes (9-12)

Q138 Overall comments regarding the proposed standards for From Molecules to Organisms: Structures and Process (MS-LS1):

Answered: 15 Skipped: 204

#	Responses	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:22 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:08 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
4	These standards should be adopted as they are written.	11/27/2015 9:09 PM
5	LS2 - 1 - separate into two like suggested below Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. Clarification Statement: Emphasis is on quantitative analysis and comparison of the relationships among interdependent factors including boundaries, resources, climate, and competition. Examples of mathematical comparisons could include graphs, charts, histograms, and population changes gathered from simulations or historical data sets. Assessment Boundary: Assessment does not include deriving mathematical equations to make comparisons." and "Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. Clarification Statement: Examples of mathematical representations include finding the average, determining trends, and using graphical comparisons of multiple sets of data. Assessment Boundary: Assessment is limited to provided data." LS2 - 2 and LS2 - 4 are very overwhelming with a lot incorporated	11/20/2015 1:49 PM
6	The gaps that are being created between middle school and high school are very large. Most topics need to be re-assessed once the students reach high school level.	11/20/2015 9:52 AM
7	I chose this standard to comment on because it contains traditionally challenging concepts. The standard is rigorous and will be difficult for lower achieving students. It is appropriate for college bound students.	11/17/2015 10:02 AM
8	Like the transition from explain and recall to model and explain with evidence.	11/16/2015 2:15 PM
9	I unfortunately have nothing positive to say about these suggested learning standards. These standards are not relevant and you are asking teachers to look into these three sciences and to pick and choose what they want to classify as being biology, chemistry, A&P, ecology, etc. standards. This needs to be completely reorganized and the committee needs to look at 3 things when making these "new" proposed standards: 1. National Science Standards - Next Gen. 2. Old Missouri learning standards 3. EOC tests and what's covered on the tests.	11/13/2015 1:22 PM
10	This is for HS not MS...	11/10/2015 12:59 PM
11	Thank you for your hard work. Please continue to improve MO's standards.	11/4/2015 1:12 PM
12	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM
13	Please clarify the standards. I want to know exactly what my students will be expected to know and be able to do on the state assessment.	11/4/2015 1:09 PM

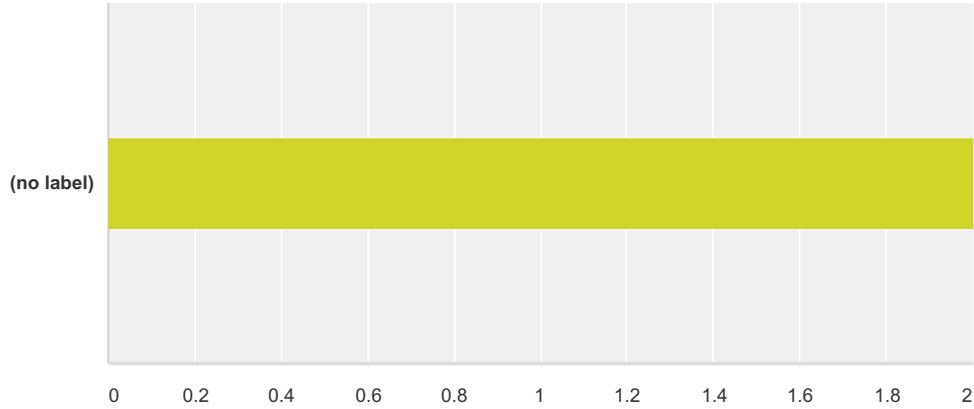
HB1490 Work Group - Science 6-12

14	<p>This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.</p>	11/2/2015 10:45 AM
15	<p>I believe that HS-LS1 is ready to be used. It is very understandable and I think the way Scientific Inquiry is implemented into the sections or strand is great.</p>	10/30/2015 2:48 PM

HS-LS2 Ecosystems:
Interactions, Energy, and
Dynamics (9-12)

Q140 The standards in this strand are developmentally appropriate.

Answered: 14 Skipped: 205



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	42.86% 6	21.43% 3	28.57% 4	7.14% 1	14	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:09 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	A rubric needs to be devised that might develop appropriate	11/13/2015 1:42 PM
4	This standard is not developmentally appropriate because it is not specific enough. There needs to be a better job of organization of this and I think that the committee needs to first focus on what BIG topics they want to address and then add in the specifics into their "clarification." The main issue I see with these proposed standards is that there needs to be specific standards for all of the high school science areas. It is confusing and frustrating to try to find the standards that are specific to your subject. I hate the idea that there are only 3 high school subjects: life sciences, earth sciences, and physical sciences. Then, you have to search all 3 to find what you think should be the biology standards. Again, this is poorly organized and this process needs to be reevaluated. I do not know how first year or even little experience would know what to do with these standards. I suggest that this standard be broken down into 4 main categories: Homeostasis, Photosynthesis & Cellular respiration, Biomolecules (proteins, carbohydrates, lipids, and nucleic acids), and CELLS. It is a horrible idea that cells are not addressed at all in general biology. I think that this is huge for the students at this age level because they are able to achieve these standards but through a higher DOK level. With these proposed standards, there is not enough information for the students or teachers to know what needs to be addressed and how.	11/13/2015 1:30 PM
5	Standards would be more developmentally appropriate if more clear on differences within each grade level. Standards should build on each other as grade level increases.	11/4/2015 1:11 PM

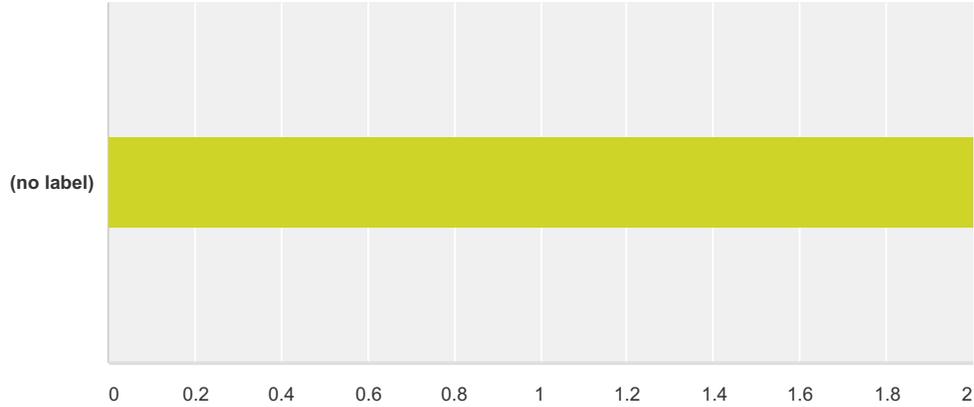
HB1490 Work Group - Science 6-12

6	Not every student will respond well and perform well with these very narrow standards. There is no room for expression of other methods of understanding	11/3/2015 4:48 PM
7	The proposed standards are research-based and are developmentally appropriate.	11/2/2015 11:00 AM

HS-LS2 Ecosystems:
Interactions, Energy, and
Dynamics (9-12)

Q141 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 14 Skipped: 205



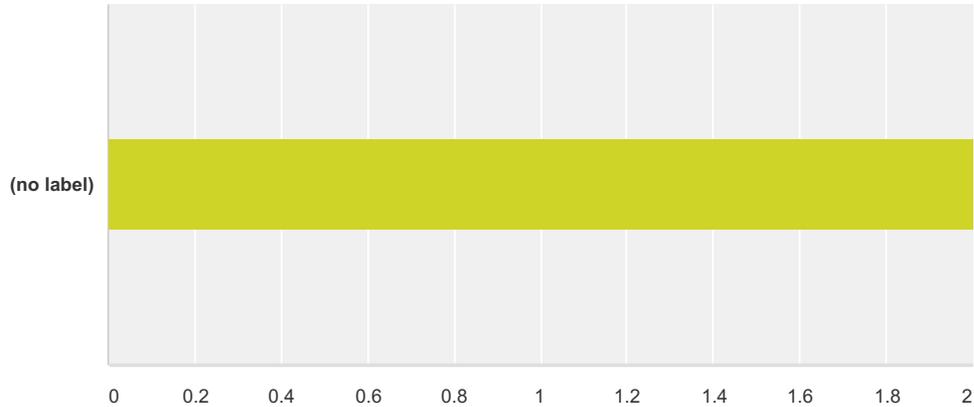
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 7	7.14% 1	35.71% 5	7.14% 1	14	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:09 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	some standards need to be addressed at more than one level to allow for the growth of the student's learning	11/13/2015 1:42 PM
4	I appreciate the idea of incorporating and focusing upon large concepts - but teachers are going to need guidance about what actually needs to be taught, covered, discussed, investigated, etc. in order for students to master these concepts. I think that details of the standard should be readily available to teachers, etc. within the actual standards.	11/4/2015 2:03 PM
5	The path followed needs to be expanded to include more background review.	11/3/2015 4:48 PM
6	The standards are based upon years of research and learning progressions for how students best learn and understand science.	11/2/2015 11:00 AM

HS-LS2 Ecosystems:
Interactions, Energy, and
Dynamics (9-12)

Q142 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 14 Skipped: 205



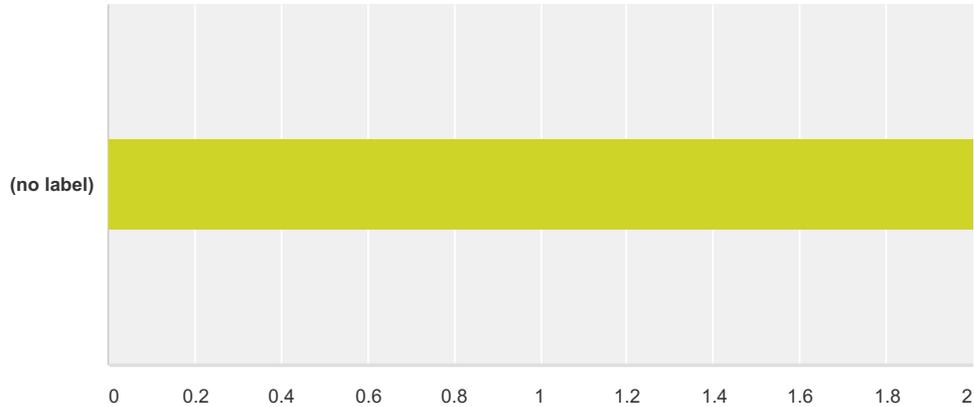
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	42.86% 6	21.43% 3	28.57% 4	7.14% 1	14	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:09 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	Explain what modeling and communicating are more clearly.	11/4/2015 2:03 PM
4	Standards set an unclear path for students at the different grade levels. Standards should be more specific to each grade level, easily seeing how they build on one another.	11/4/2015 1:11 PM
5	Although science does incorporate and uses math, there are many other means of expressing understanding science that do not include using mathematical processes so extensively. The standards need to be broadened so that the entire basis of understanding is not completely based in math.	11/3/2015 4:48 PM
6	By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	11/2/2015 11:00 AM

HS-LS2 Ecosystems:
Interactions, Energy, and
Dynamics (9-12)

Q143 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 14 Skipped: 205



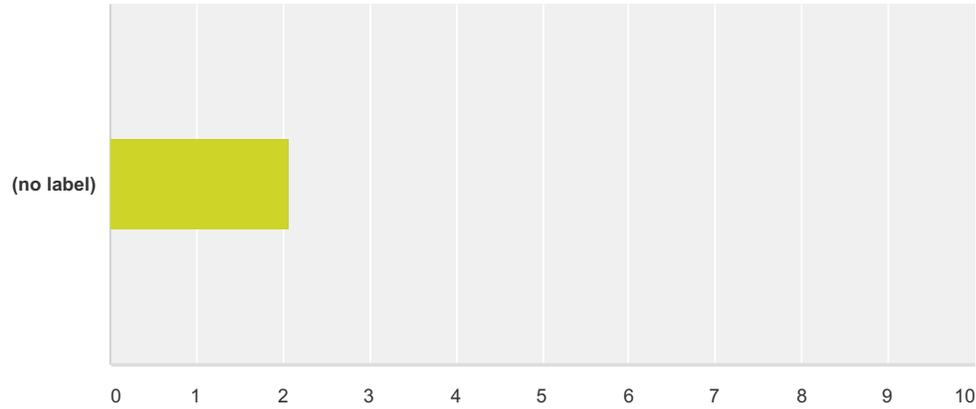
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 7	7.14% 1	35.71% 5	7.14% 1	14	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:09 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	I appreciate the idea of incorporating and focusing upon large concepts - but teachers are going to need guidance about what actually needs to be taught, covered, discussed, investigated, etc. in order for students to master these concepts. I think that details of the standard should be readily available to teachers, etc. within the actual standards.	11/4/2015 2:03 PM
4	In some cases, the means by which the standards would be expressed may not be accessible to all schools across the state and may not be available to the students even within the community.	11/3/2015 4:48 PM
5	All the standards can be assessed and science should be assessed in this way.	11/2/2015 11:00 AM

HS-LS2 Ecosystems:
Interactions, Energy, and
Dynamics (9-12)

Q144 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 14 Skipped: 205



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	42.86% 6	14.29% 2	35.71% 5	7.14% 1	14	2.07

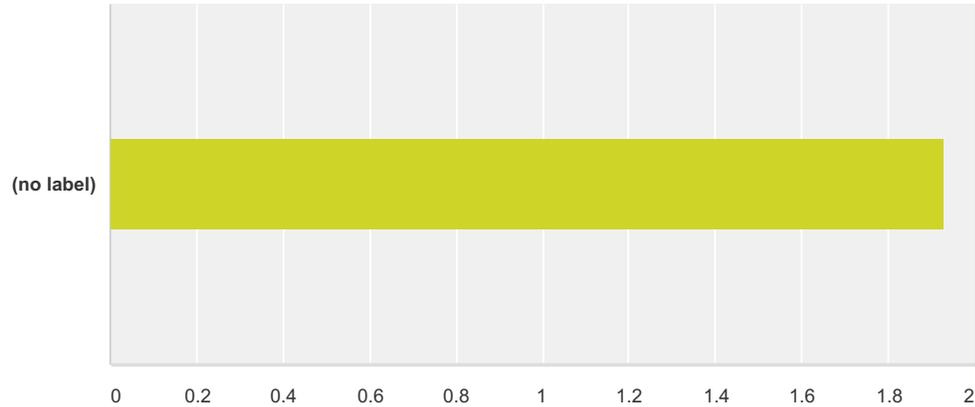
#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:09 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	I appreciate the idea of incorporating and focusing upon large concepts - but teachers are going to need guidance about what actually needs to be taught, covered, discussed, investigated, etc. in order for students to master these concepts. I think that details of the standard should be readily available to teachers, etc. within the actual standards.	11/4/2015 2:03 PM

HB1490 Work Group - Science 6-12

4	<p>HS-LS2-1 is too broad and oversimplifies two ideas that would be better represented as two separate standards. Please see the suggestion below: "Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. Clarification Statement: Emphasis is on quantitative analysis and comparison of the relationships among interdependent factors including boundaries, resources, climate, and competition. Examples of mathematical comparisons could include graphs, charts, histograms, and population changes gathered from simulations or historical data sets. Assessment Boundary: Assessment does not include deriving mathematical equations to make comparisons." and "Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. Clarification Statement: Examples of mathematical representations include finding the average, determining trends, and using graphical comparisons of multiple sets of data. Assessment Boundary: Assessment is limited to provided data." HS-LS2-2: A lot of processes were incorporated into this standard when the intent was to truly focus on aerobic and anaerobic conditions. As is, the standard is too overwhelming. HS-LS2-4: A lot of processes were incorporated into this standard when the intent should be to truly focus on photosynthesis and cellular respiration.</p>	11/2/2015 11:00 AM
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Q145 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 14 Skipped: 205



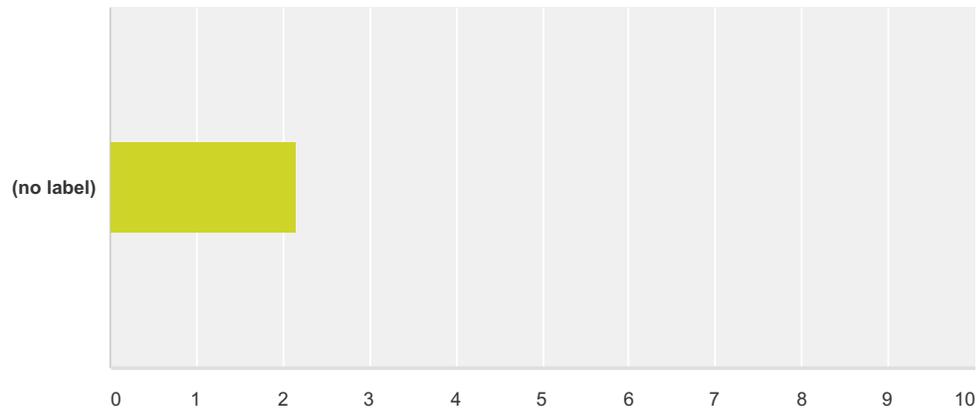
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 7	14.29% 2	28.57% 4	7.14% 1	14	1.93

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:09 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	These standards do not necessarily meet college or career readiness simply because they do not encompass the focus of science and do not make simpler connections to the student's life.	11/3/2015 4:48 PM
4	This new format for the standards mirrors the college and career readiness benchmarks for ACT and for advanced placement sciences, all of which are a way we measure college and career readiness.	11/2/2015 11:00 AM

HS-LS2 Ecosystems:
Interactions, Energy,
and Dynamics (9-12)

Q146 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 14 Skipped: 205



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	35.71% 5	21.43% 3	35.71% 5	7.14% 1	14	2.14

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:09 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	I would like to see the nitrogen cycle taught along with the carbon cycle.	11/16/2015 2:29 PM
4	I appreciate the idea of incorporating and focusing upon large concepts - but teachers are going to need guidance about what actually needs to be taught, covered, discussed, investigated, etc. in order for students to master these concepts. I think that details of the standard should be readily available to teachers, etc. within the actual standards.	11/4/2015 2:03 PM
5	They need to be broadened for student interest, region, and location.	11/3/2015 4:48 PM
6	A standard/performance expectation is needed to address the role of group behavior such as: "Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce. [Clarification Statement: Emphasis is on (1) distinguishing between group and individual behavior, (2) identifying evidence supporting the outcomes of group behavior, and (3) developing logical and reasonable arguments based on evidence. Examples of group behaviors could include flocking, schooling, herding, and cooperative behaviors such as hunting, migrating, and swarming.]	11/2/2015 11:00 AM

HS-LS2 Ecosystems:
Interactions, Energy,
and Dynamics (9-12)

**Q147 Overall comments regarding the
proposed standards for Ecosystems:
Interactions, Energy, and Dynamics (HS-
LS2):**

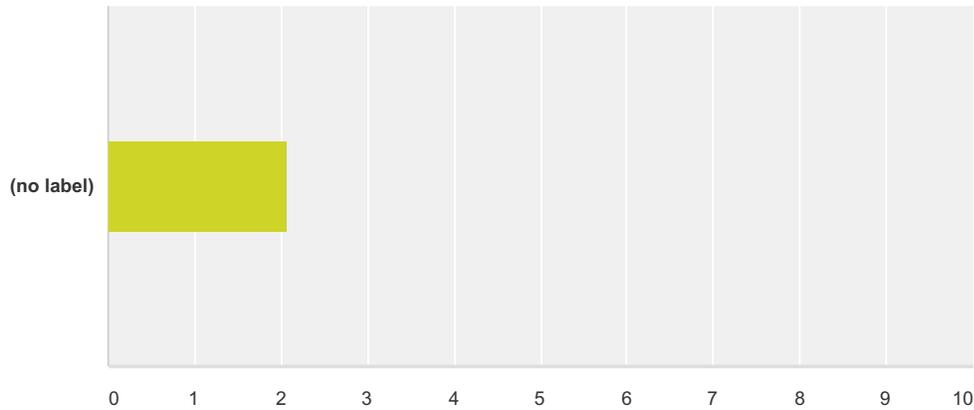
Answered: 7 Skipped: 212

#	Responses	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:23 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:08 AM
3	These standards should be adopted as they are written.	11/27/2015 9:09 PM
4	I like the complexity of the carbon cycle standard (HS-LS2-4).	11/16/2015 2:29 PM
5	I think these might reach more students (modeling vs just recalling)	11/16/2015 2:16 PM
6	This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	11/2/2015 11:00 AM
7	Excellent!	10/30/2015 2:50 PM

Q149 The standards in this strand are developmentally appropriate.

Answered: 17 Skipped: 202

HS-LS3 Heredity:
Inheritance and
Variation of Traits
(9-12)



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	41.18% 7	17.65% 3	35.29% 6	5.88% 1	17	2.06

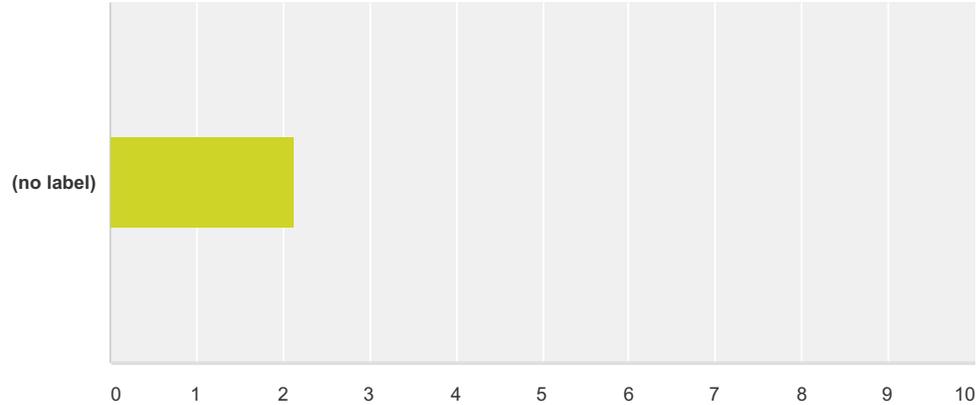
#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:23 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:10 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	The standards in this strand are very vague. These new standards will make it very difficult for teachers to know what needs to be taught.	11/20/2015 10:26 AM
5	MS-LS4-3 should not be covered in MS. This is a difficult concept for sophomores to grasp.	11/4/2015 1:13 PM
6	What is meant by "develop and use models"? It is impossible to ascertain whether or not these standards are developmentally appropriate without a clear understanding of what is expected.	11/4/2015 1:12 PM
7	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM
8	I am skeptical that mutations and genetic recombination can be covered appropriately at the middle school level. These concepts are important for both heredity and evolution. Assuming students can comprehend the complexities of those concepts at the middle school level, will they remember that concept by 10th grade Biology? Doubtful.	11/4/2015 1:07 PM

9	The proposed standards are research-based and are developmentally appropriate.	11/2/2015 11:24 AM
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HS-LS3 Heredity:
Inheritance and
Variation of Traits (9-12)

Q150 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 17 Skipped: 202



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	35.29% 6	23.53% 4	35.29% 6	5.88% 1	17	2.12

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:23 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:10 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	asexual and sexual reproduction with regard to genetic information and variation in offspring should be a middle school concept to allow for scaffolding at the high school level	11/20/2015 2:00 PM
5	These standards will make it very hard to follow a coherent path because teachers will interpret these standards differently. They are not in depth enough to know where to end and where to begin.	11/20/2015 10:26 AM
6	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM
7	I'm not sure it makes sense to only cover at middle school level. Seems like a dead end path.	11/4/2015 1:07 PM

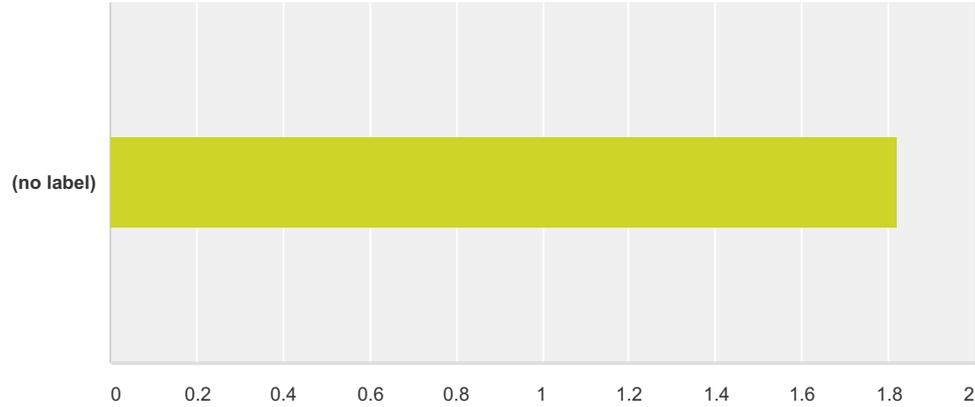
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8	<p>HS-LS3-2: This standard was moved from the learning progressions of middle school. The practice of developing and using models was removed such that the three-dimensional structure is not followed as in the other standards. Since research shows that the three-dimensional framework is how students learn and develop understanding of science, this standard should be written to reflect the content, practice and crosscutting concept. HS-LS3-3: This standard was moved from the learning progressions of middle school. The point of learning progressions is to build understanding. Not establishing any basis for heredity and inheritance in middle school would not allow for developing deeper understanding. The field of genetics is too important to ignore in our standards. This standard should be returned (MS-LS3-1) to middle school and built upon in high school.</p>	11/2/2015 11:24 AM
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HS-LS3 Heredity:
Inheritance and
Variation of Traits
(9-12)

Q151 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 17 Skipped: 202



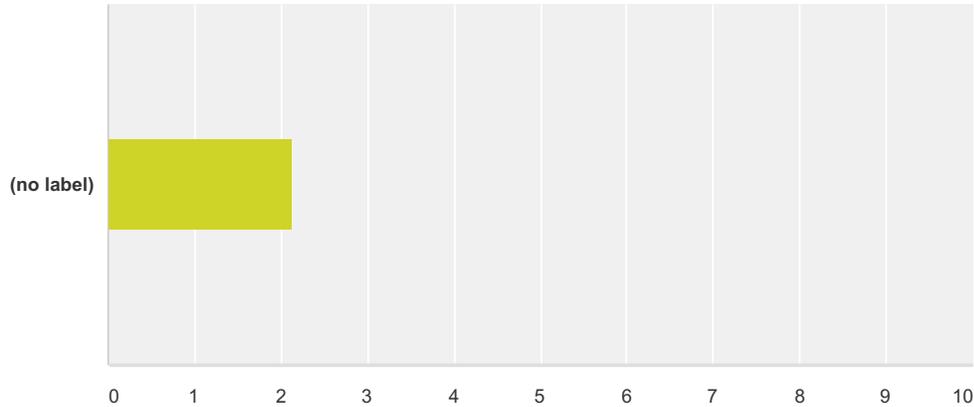
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	52.94% 9	17.65% 3	23.53% 4	5.88% 1	17	1.82

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:23 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:10 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	A rigorous path with high expectations will be hard to achieve due to the lack specificity.	11/20/2015 10:26 AM
5	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM
6	Keep proposed standards as is for this strand. By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	11/2/2015 11:24 AM

HS-LS3 Heredity:
Inheritance and
Variation of Traits
(9-12)

Q152 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 17 Skipped: 202



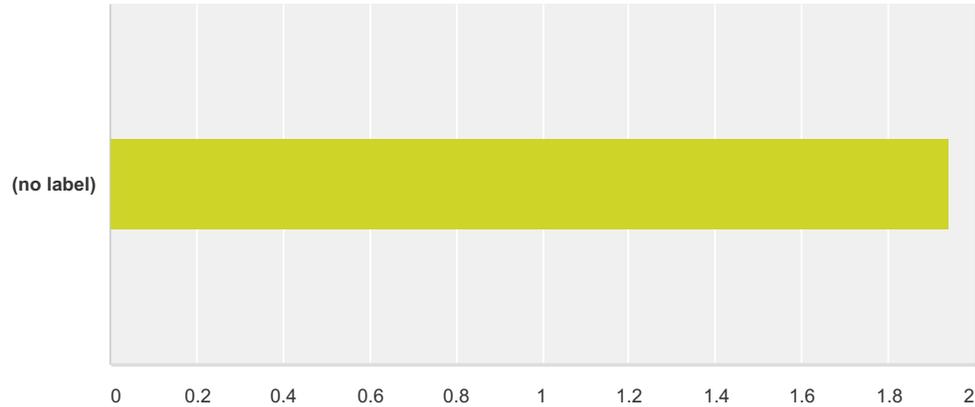
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	41.18% 7	17.65% 3	29.41% 5	11.76% 2	17	2.12

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:23 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:10 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	These standards will be very hard to assess because teachers will go into each strand with a different perspective of how in depth they should teach.	11/20/2015 10:26 AM
5	Teachers will need support to "develop and use" quality models.	11/16/2015 2:32 PM
6	I fail to grasp how students going to demonstrate understanding using a multiple choice test when standards are so geared towards modeling.	11/4/2015 1:13 PM
7	The standards must be clarified so teachers are not forced to guess if their classroom assessments match the state level assessments.	11/4/2015 1:12 PM
8	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM

9	All the standards can be assessed and science should be assessed in this way.	11/2/2015 11:24 AM
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Q153 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 17 Skipped: 202



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	52.94% 9	5.88% 1	35.29% 6	5.88% 1	17	1.94

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:23 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:10 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	The standards are too vague for them to be understood by educators or parents.	11/20/2015 10:26 AM
5	These standards are extremely vague.	11/4/2015 1:13 PM
6	The standards are too vague to be clearly understandable.	11/4/2015 1:12 PM
7	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM

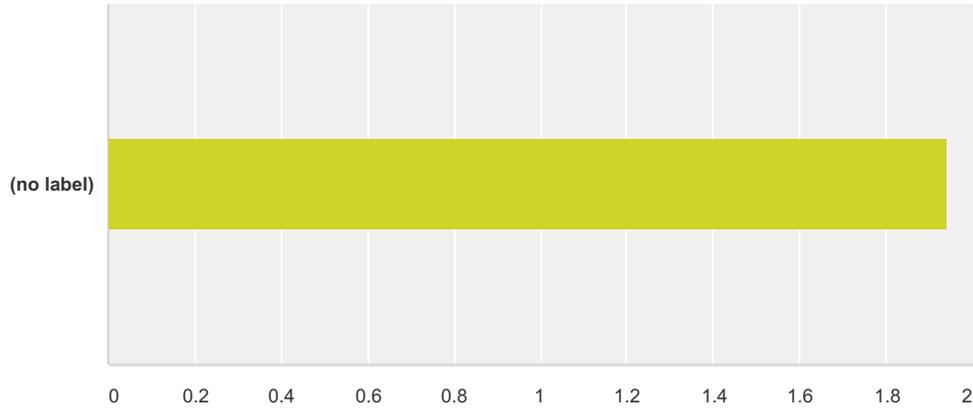
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8	This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (cross-cutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education.	11/2/2015 11:24 AM
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HS-LS3 Heredity:
Inheritance and
Variation of Traits
(9-12)

Q154 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 17 Skipped: 202



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	41.18% 7	29.41% 5	23.53% 4	5.88% 1	17	1.94

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:23 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:10 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	A standard/performance expectation is needed to address the role of group behavior such as: "Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce. [Clarification Statement: Emphasis is on (1) distinguishing between group and individual behavior, (2) identifying evidence supporting the outcomes of group behavior, and (3) developing logical and reasonable arguments based on evidence. Examples of group behaviors could include flocking, schooling, herding, and cooperative behaviors such as hunting, migrating, and swarming.]	11/20/2015 2:00 PM

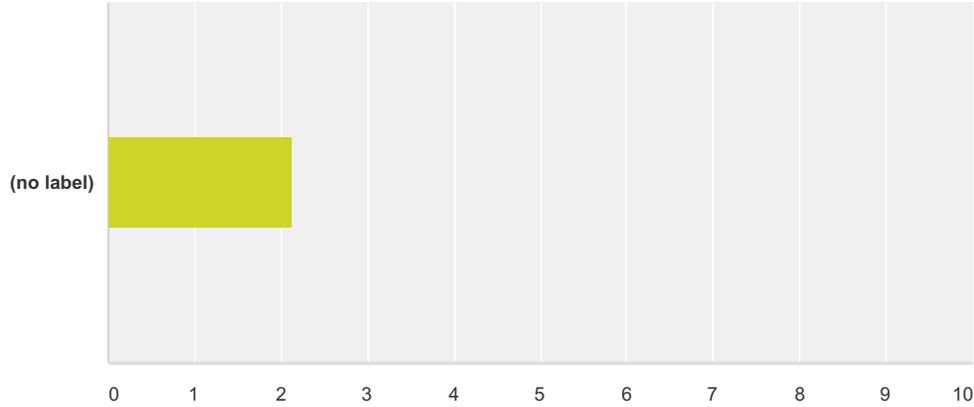
HB1490 Work Group - Science 6-12

5	These standards will only represent the necessary content for a student to reach college and/or career readiness if teachers interpret the standards at this level. The standards are vague. It would be very hard for a new teacher to know how to get to this point with these standards.	11/20/2015 10:26 AM
6	Possibly include Mendelian genetics?	11/16/2015 2:32 PM
7	This new format for the standards mirrors the college and career readiness benchmarks for ACT and for advanced placement sciences, all of which are a way we measure college and career readiness.	11/2/2015 11:24 AM

HS-LS3 Heredity:
Inheritance and Variation
of Traits (9-12)

Q155 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 17 Skipped: 202



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	35.29% 6	17.65% 3	47.06% 8	0.00% 0	17	2.12

#	Suggested revisions for standards:	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:23 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:10 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	They are accurate, however not specific.	11/20/2015 10:26 AM
5	The standards are accurate but lots of topics will still have to be retaught at the HS level that are supposed to be covered in MS.	11/4/2015 1:13 PM
6	Needs statement of limitations as seen in NGSS	11/4/2015 1:11 PM
7	Not sure the breadth would be adequate at the middle school level.	11/4/2015 1:07 PM

HB1490 Work Group - Science 6-12

8	<p>Keep proposed standards as is for this strand with possibly recommendations. Science is constantly changing. These proposed standards contain the content necessary for students to be scientifically literate but also provided the needed upgrade based upon advancements that have occurred in science since the last standards were adopted. They also include the format that research shows is best in terms of helping students to learn and understand science.</p>	11/2/2015 11:24 AM
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HS-LS3 Heredity:
Inheritance and
Variation of Traits
(9-12)

**Q156 Overall comments regarding the
proposed standards for Heredity and
Inheritance: Variation of Traits (HS-LS3):**

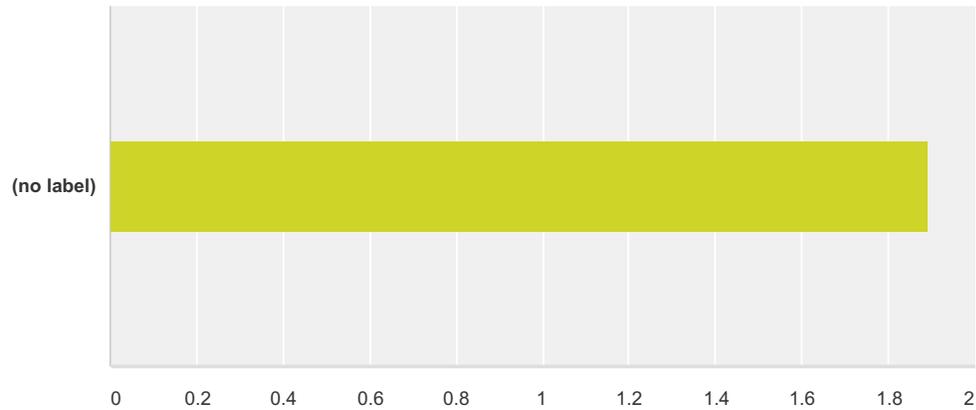
Answered: 8 Skipped: 211

#	Responses	Date
1	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:23 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:10 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	These standards should be adopted as they are written.	11/27/2015 9:10 PM
5	The standards are very vague.	11/20/2015 10:26 AM
6	The idea of mutations is not terribly time consuming - not sure what is to be gained by eliminating from the curriculum at the high school level. I feel like students would be missing out on some relevant applications at the high school level. Teaching at the middle school level - in addition - would be a better recommendation since repetition of concepts can only help.	11/4/2015 1:07 PM
7	This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	11/2/2015 11:24 AM
8	Excellent as is!	10/30/2015 2:52 PM

HS-LS4 Biological
Evolution: Unity and
Diversity (9-12)

Q158 The standards in this strand are developmentally appropriate.

Answered: 19 Skipped: 200



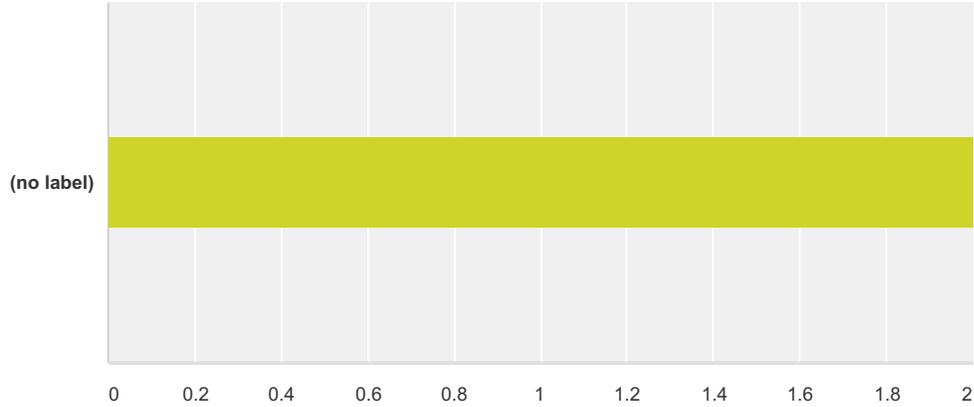
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	47.37% 9	15.79% 3	36.84% 7	0.00% 0	19	1.89

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:11 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
3	These standards are lacking specific examples and can be interpreted differently by educators.	11/20/2015 11:03 AM
4	HS-LS4.3 - Why no assessment of coevolution/resistance when that determines how viruses, bacteria, evolve resistances in medicine and agriculture? Maybe it's there and I missed it?	11/10/2015 2:02 PM
5	Needs statement of limitations as seen in NGSS	11/4/2015 1:12 PM
6	The proposed standards are research-based and are developmentally appropriate.	11/2/2015 11:35 AM

HS-LS4 Biological
Evolution: Unity and
Diversity (9-12)

Q159 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 19 Skipped: 200

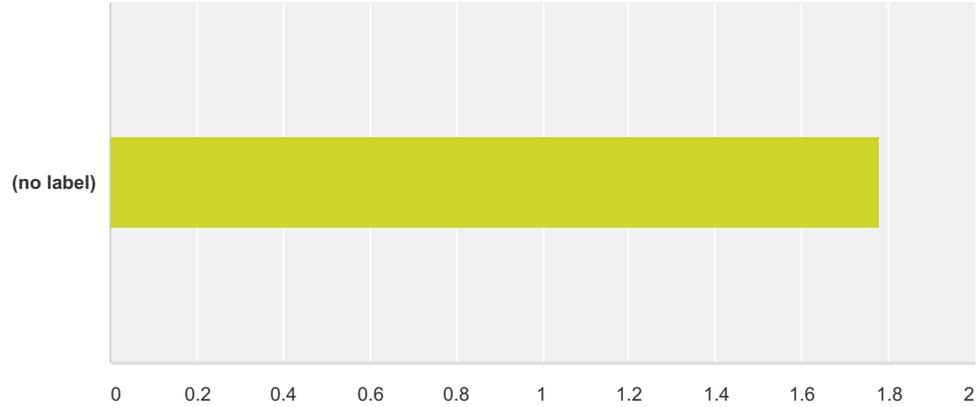


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	47.37% 9	10.53% 2	36.84% 7	5.26% 1	19	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:11 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
3	Due to the lack of specific strands it will be difficult for a coherent path to be created across all grade levels.	11/20/2015 11:03 AM
4	The middle school standards seem to have a lot of information to cover. As a high school teacher I am concerned that they learn about cells at some point in middle school and then in high school they need to learn about mitosis and there is a great amount of time to forget cell structure and function.	11/20/2015 10:14 AM
5	Needs statement of limitations as seen in NGSS	11/4/2015 1:12 PM
6	HS-LS4-2: This standard is actually from the learning progressions of middle school and has been moved to high school. The need was expressed in the middle school life science feedback for the need for additional pieces of evidence for students to investigate and build arguments. This concept was eliminated from the middle school progression.	11/2/2015 11:35 AM

Q160 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 18 Skipped: 201



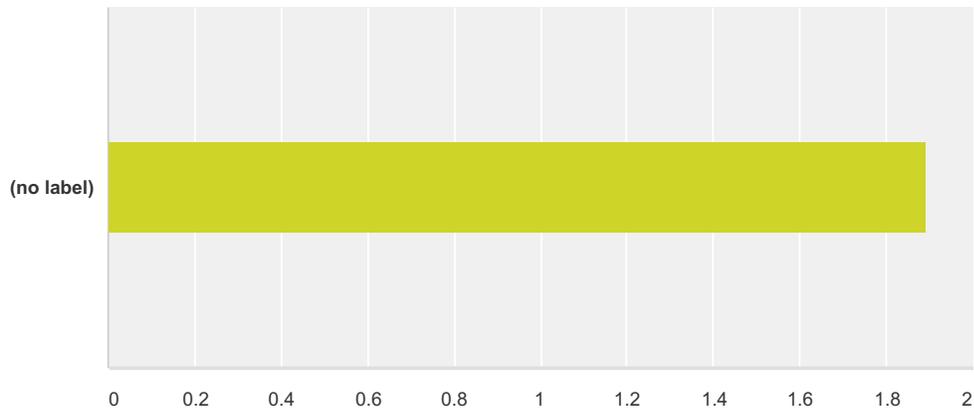
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	55.56% 10	11.11% 2	33.33% 6	0.00% 0	18	1.78

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:11 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
3	The standards will set a rigorous path of high expectations after they are revised to include more specific strands.	11/20/2015 11:03 AM
4	Needs statement of limitations as seen in NGSS	11/4/2015 1:12 PM
5	Keep proposed standards as is for this strand. By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	11/2/2015 11:35 AM

HS-LS4 Biological
Evolution: Unity and
Diversity (9-12)

Q161 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 18 Skipped: 201



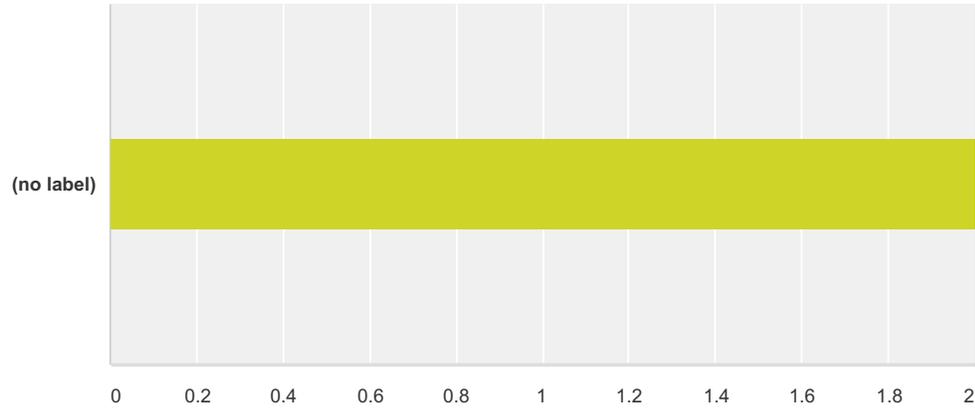
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 9	11.11% 2	38.89% 7	0.00% 0	18	1.89

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:11 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
3	The standards in this strand will be very hard to assess. The standards need to be more specific eliminating misconceptions.	11/20/2015 11:03 AM
4	The only feedback I can provide is that each standard is very broad with very few actual learning outcomes or indicators provided. I assume this will be left to individual school districts to incorporate.	11/13/2015 10:14 AM
5	Needs statement of limitations as seen in NGSS	11/4/2015 1:12 PM
6	All the standards can be assessed and science should be assessed in this way.	11/2/2015 11:35 AM

HS-LS4 Biological
Evolution: Unity and
Diversity (9-12)

Q162 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 18 Skipped: 201



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 9	11.11% 2	27.78% 5	11.11% 2	18	2.00

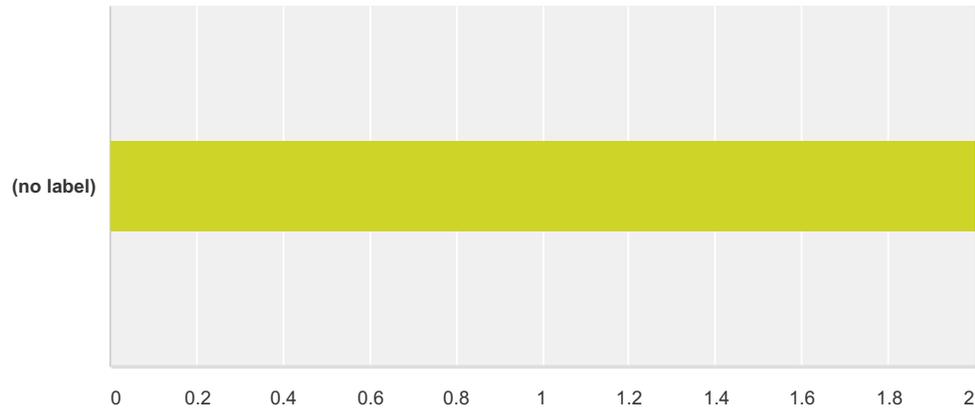
#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:11 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
3	These stands are too vague for educators and parents to fully understand.	11/20/2015 11:03 AM
4	These new standards are very vague compared to the last set of standards. The previous set is pretty clear cut on what should be discussed or covered. I am not sure what is meant by "Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms." When it is phrased: "Predict the movement of molecules across a selectively permeable membrane (i.e. diffusion, osmosis, active transport) needed for a cell to maintain homeostasis..." It is very clear cut what should be covered. I think these new standards are confusing and leave a lot of grey area.	11/20/2015 10:14 AM
5	The only feedback I can provide is that each standard is very broad with very few actual learning outcomes or indicators provided. I assume this will be left to individual school districts to incorporate.	11/13/2015 10:14 AM
6	Needs statement of limitations as seen in NGSS	11/4/2015 1:12 PM

HB1490 Work Group - Science 6-12

7	Keep proposed standards as is for this strand. These standards show key connections and make the practice of science evidence to all stakeholders. The crosscutting concepts also make the standards understandable to all. By making connections to concepts like "cause and effect," everyone can see the links between what students are learning and how they can transfer that knowledge to other courses and experiences.	11/2/2015 11:35 AM
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Q163 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 19 Skipped: 200



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	42.11% 8	21.05% 4	31.58% 6	5.26% 1	19	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:11 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
3	These strands will be able to reach college and/or career readiness as long as teachers interpret the strands at this level. Without specific standard this will be difficult to achieve.	11/20/2015 11:03 AM
4	HS-LS4-1: "Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence and not supported by other lines of empirical evidence."	11/16/2015 2:39 PM
5	I have not seen a college biology course yet that has not required students to have this sort of prior learning before entering the course. This is a necessity if we want our students to be able to compete at the higher levels of education and in the global economy.	11/13/2015 10:14 AM
6	Engineering in the area of biology seems a little weak, more like the focus is on mechanics. (genetics, biomedical, biochemical?)	11/10/2015 2:02 PM
7	I honestly cannot think of very many jobs that would require a thorough understanding of macroevolution, except for evolutionary biology teacher.	11/4/2015 1:13 PM

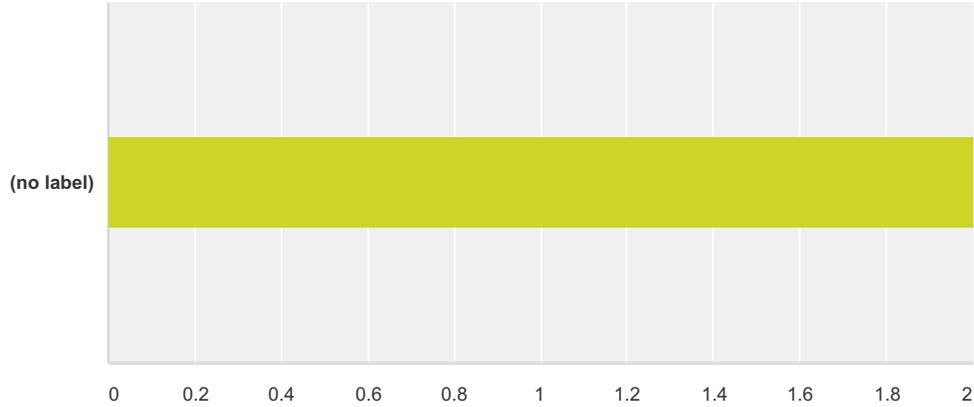
HB1490 Work Group - Science 6-12

8	This new format for the standards mirrors the college and career readiness benchmarks for ACT and for advanced placement sciences, all of which are a way we measure college and career readiness.	11/2/2015 11:35 AM
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HS-LS4 Biological
Evolution: Unity
and Diversity
(9-12)

Q164 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 20 Skipped: 199



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 10	5.00% 1	40.00% 8	5.00% 1	20	2.00

#	Suggested revisions for standards:	Date
1	This is only one side of the Options. You need to look at the (Bible Creation) side. Don't dismiss this as a Crazy Christian. How the Earth Created is not a Science question. Science is observable and repeatable. Nothing about the creation of earth was observed and none of it really can be repeated. So don't ignore the Creation side of the argument. There is as much science out there to prove the Creation theory as Evolution.	12/1/2015 2:30 PM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:11 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	The standards are accurate; however not very specific.	11/20/2015 11:03 AM
5	Please change HS-LS4-2. We have known for over 100 years that Haekel's embryo diagrams were FAKED. Embryos do not start out looking alike and then gradually differentiate during embryological development.	11/4/2015 1:13 PM
6	Needs statement of limitations as seen in NGSS	11/4/2015 1:12 PM
7	Keep proposed standards as is for this strand with possibly recommendations. Our knowledge and understanding of science is constantly advancing. These proposed standards contain the content necessary for students to be scientifically literate but also provided the needed upgrade based upon advancements that have occurred in science since the last standards were adopted. They also include the format that research shows is best in terms of helping students to learn and understand science.	11/2/2015 11:35 AM

HS-LS4 Biological
Evolution: Unity
and Diversity
(9-12)

**Q165 Overall comments regarding the
proposed standards for Biological
Evolution: Unity and Diversity (HS-LS4):**

Answered: 11 Skipped: 208

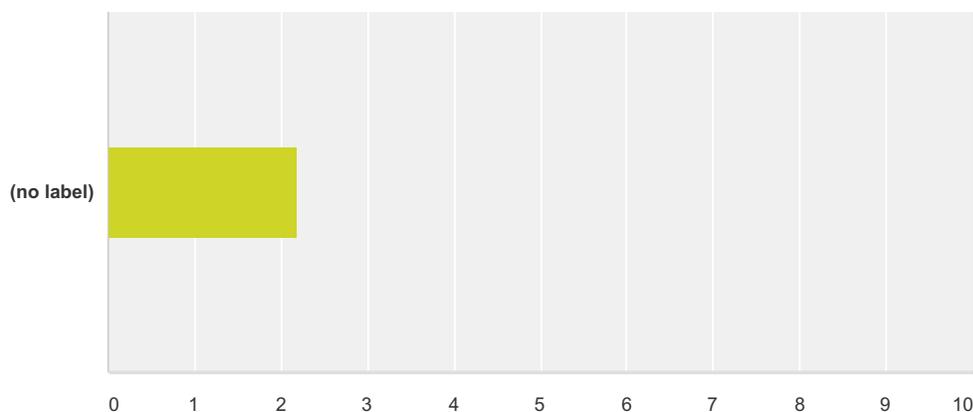
#	Responses	Date
1	Would like to see a Pro Agricultural Influence in this area with emphasis on responsible use of environmental resources but not from the view point of humans as a hazard to the environment.	12/2/2015 5:41 PM
2	Spontaneous Generation has been dis proven, so how do you say evolution has began? This is Missouri, we should not have one of the most liberal set of standards in the United States, we should be a state that presents all of the data, that is what real Science would do.	12/1/2015 2:30 PM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:23 AM
4	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:11 AM
5	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
6	These standards should be adopted as they are written.	11/27/2015 9:10 PM
7	I would really like to see these looked at in more detail and for this not to be a rushed process. Teachers spend a lot of time making sure their curriculum is aligned to the standards and repetitive changing of the standards does not make me a better teacher and it does not make learning conducive for the students. If we are all about the students, which we should be, we need to pick a standards style and go with it. I do not see much wrong with the former standards. Could they be modified some? Yes. I do not feel a total rewrite is the necessary process.	11/20/2015 10:14 AM
8	In order for students to fully understand evolution, they need to be presented with all the evidence for evolution. Students need to be presented with information about homologous structures and similarities in embryological development, not just the fossil record. Students need a bigger picture of all of the data that supports this theory. Limiting the information to just the fossil record creates a narrow scope of understanding. Please write the following NGSS standards back into the Missouri Standards: MS-LS4-2. Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. MS-LS4-3. Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.	11/11/2015 4:58 PM
9	Macroevolution should always be taught as one explanation for the current diversity of life on earth. It should never be taught as fact. Vast majority of the focus should be on OBSERVABLE, MEASURABLE theory of microevolution.	11/4/2015 1:13 PM

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10	<p>This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards along with the suggested modifications reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.</p>	11/2/2015 11:35 AM
11	Excellent!	10/30/2015 2:53 PM

Q167 The standards in this strand are developmentally appropriate.

Answered: 10 Skipped: 209

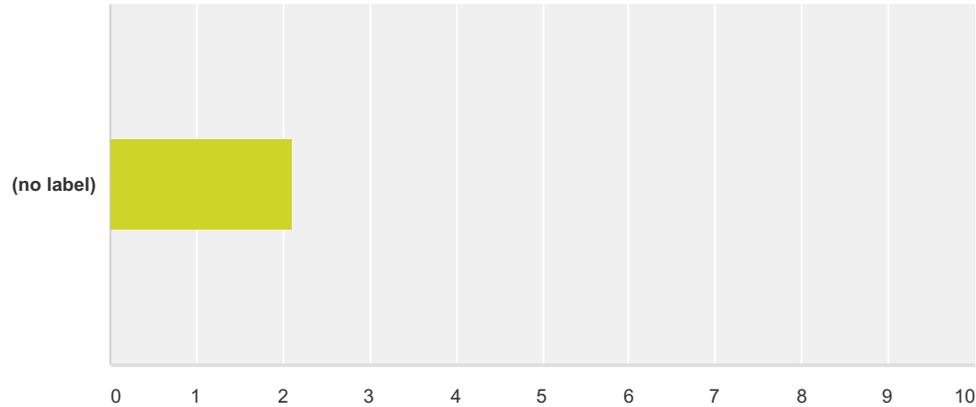


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	40.00% 4	10.00% 1	40.00% 4	10.00% 1	10	2.20

#	Suggested revisions for standards:	Date
1	HS-ESS1-2 is inappropriate at the high school level and will be rejected by most smaller communities and reflects an influence of large populations morals/standards.	12/1/2015 11:12 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	Use the next generations Standards please.	11/13/2015 11:23 AM
5	The proposed standards are research-based and are developmentally appropriate.	11/2/2015 11:46 AM

Q168 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 10 Skipped: 209

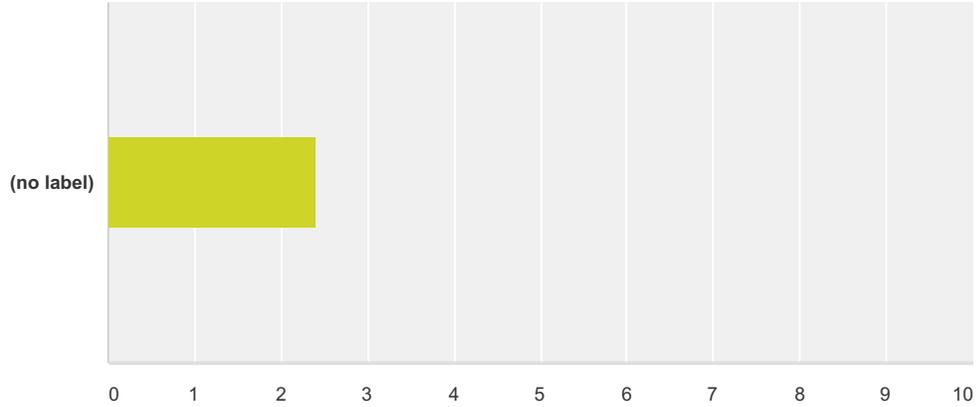


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	40.00% 4	20.00% 2	30.00% 3	10.00% 1	10	2.10

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
3	So does the next generation National Standards!	11/13/2015 11:23 AM
4	Keep proposed standards as is for this strand. They are based upon years of research and learning progressions for how students best learn and understand science.	11/2/2015 11:46 AM

Q169 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 10 Skipped: 209

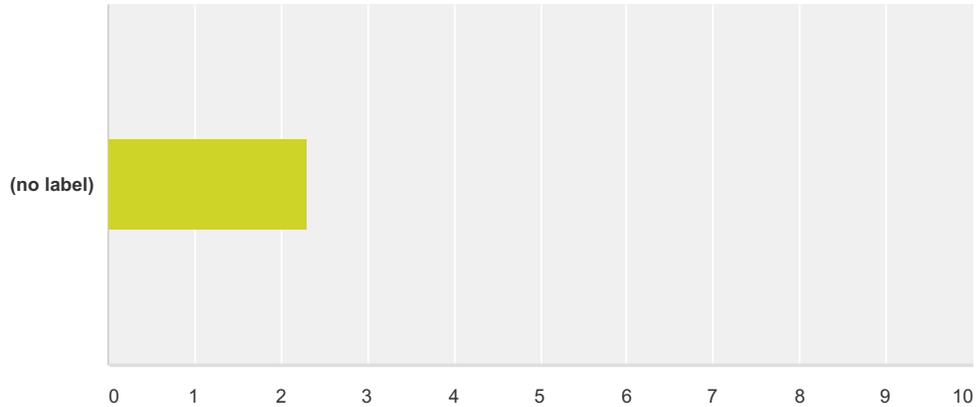


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	30.00% 3	20.00% 2	30.00% 3	20.00% 2	10	2.40

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
3	The rigorous path exists in the next generation National Standards.	11/13/2015 11:23 AM
4	Keep proposed standards as is for this strand. By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	11/2/2015 11:46 AM

Q170 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 10 Skipped: 209



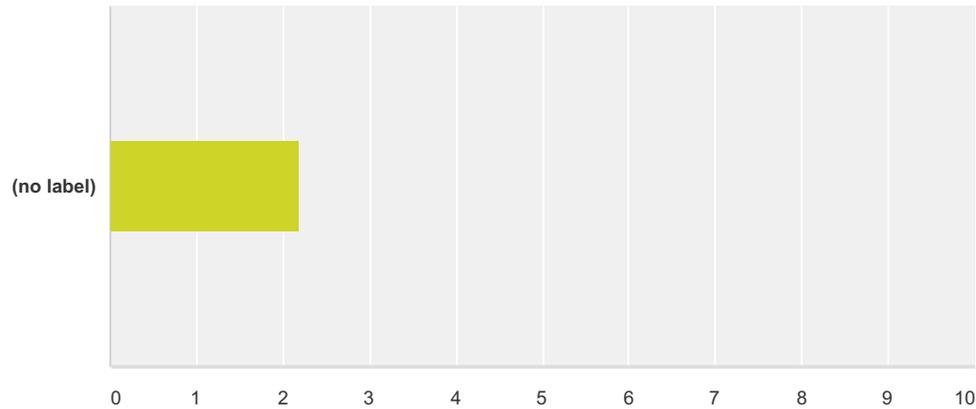
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	40.00% 4	0.00% 0	50.00% 5	10.00% 1	10	2.30

#	Suggested revisions for standards:	Date
1	x	12/1/2015 11:12 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	Yes, they can but so can the next generation National Standard	11/13/2015 11:23 AM
5	Assessment of these topics will be easy to do in a classroom setting. Standards would need to be more specific to assess on a state level. This is a broad set of topics that could be taught to different levels. Without specificity this would be hard to assess on a state level	11/4/2015 1:10 PM
6	Keep proposed standards as is for this strand. All the standards can be assessed and science should be assessed in this way.	11/2/2015 11:46 AM

HS-ESS1 Earth's Place in the Universe (9-12)

Q171 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 10 Skipped: 209



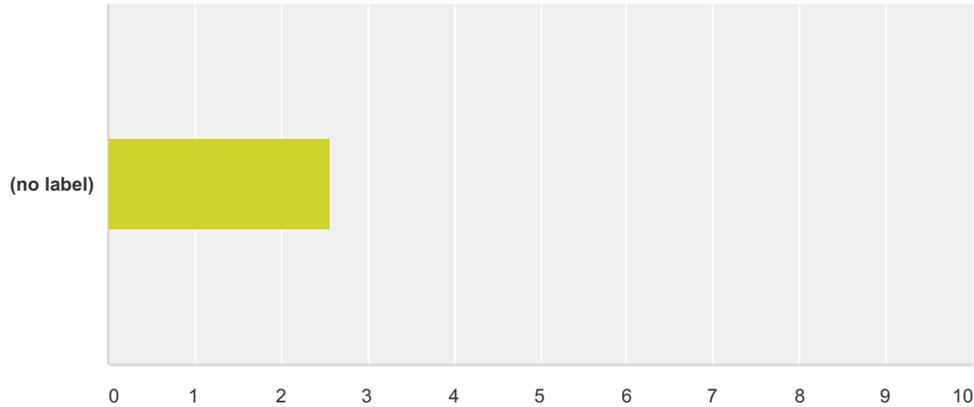
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	40.00% 4	10.00% 1	40.00% 4	10.00% 1	10	2.20

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
3	So, that is the hope of all teachers regarding Standards.	11/13/2015 11:23 AM
4	HS-ESS1-4: The practice of using mathematics and computational thinking is left out of the standard. To maintain the three-dimensional format, a practice should be included. HS-ESS1-5: This standard pulls some details into the actual performance expectation rather than leaving the details in the clarification statement. Simpler wording could be as follows, with the clarification statement specifying further details: "Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks. [Clarification Statement: Emphasis is on the ability of plate tectonics to explain the ages of crustal rocks. Examples include evidence of the ages of oceanic crust increasing with distance from mid-ocean ridges (a result of plate spreading) and the ages of North American continental crust increasing with distance away from a central ancient core (a result of past plate interactions).]	11/2/2015 11:46 AM

HS-ESS1 Earth's Place
in the Universe (9-12)

Q172 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 9 Skipped: 210

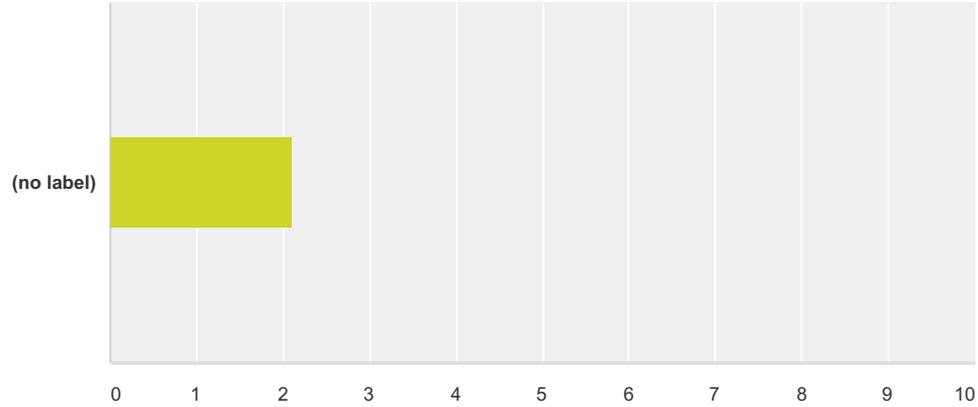


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	33.33% 3	0.00% 0	44.44% 4	22.22% 2	9	2.56

#	Suggested revisions for standards:	Date
1	Several things are not required to be understood BEFORE college... Unnecessary at HS level	12/1/2015 11:12 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
4	The next generation National Standards address this need.	11/13/2015 11:23 AM
5	Keep proposed standards as is for this strand. This new format for the standards mirrors the college and career readiness benchmarks for ACT and for advanced placement sciences, all of which are a way we measure college and career readiness.	11/2/2015 11:46 AM

Q173 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 10 Skipped: 209



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	40.00% 4	20.00% 2	30.00% 3	10.00% 1	10	2.10

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
3	So are the next generation National Standard	11/13/2015 11:23 AM
4	Keep proposed standards as is for this strand. Our knowledge of science is constantly improving. These proposed standards contain the content necessary for students to be scientifically literate but also provided the needed upgrade based upon advancements that have occurred in science since the last standards were adopted. They also include the format that research shows is best in terms of helping students to learn and understand science.	11/2/2015 11:46 AM

**Q174 Overall comments regarding the
proposed standards for Earth's Place in the
Universe (HS-ESS1):**

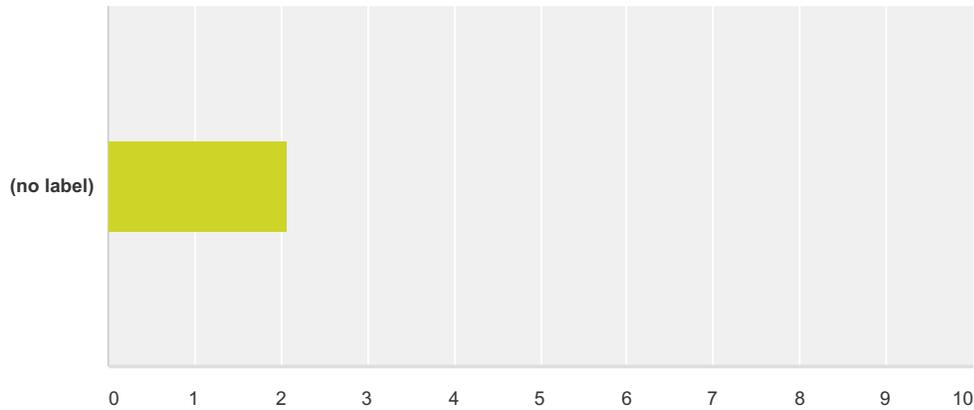
Answered: 8 Skipped: 211

#	Responses	Date
1	Remove strand 2 completely and edit several others	12/1/2015 11:12 AM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:24 AM
3	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
4	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:09 AM
5	These standards should be adopted as they are written.	11/27/2015 9:10 PM
6	Once again, please review why you needed to change the next generation National Standards.	11/13/2015 11:23 AM
7	Standard HS -ESS1-5 seems like it would fit in with ESS2 better than its current place	11/4/2015 1:10 PM
8	Keep as proposed. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	11/2/2015 11:46 AM

HS-ESS2 Earth's Systems
(9-12)

Q176 The standards in this strand are developmentally appropriate.

Answered: 14 Skipped: 205

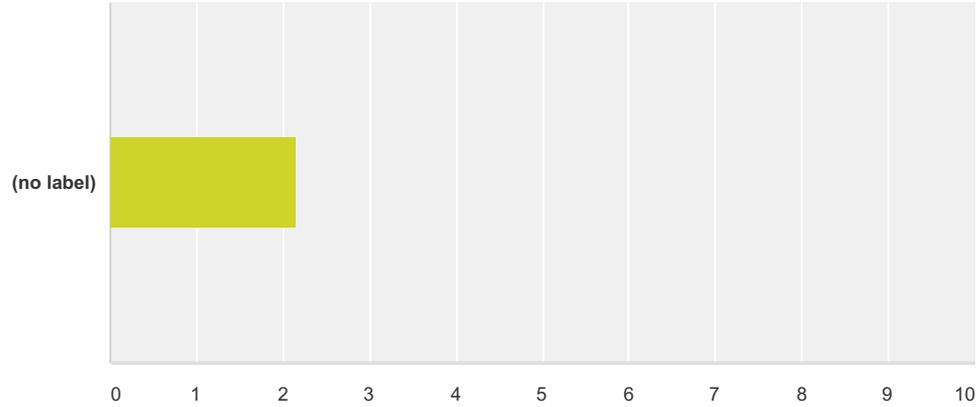


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	42.86% 6	14.29% 2	35.71% 5	7.14% 1	14	2.07

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	These standards are fine as written, but should be at the 6-8 grade level. As a small school, that would require Earth and Space Science in the high school. We do not have the teachers or the space in the schedule that could accommodate that schedule. I have 5 preps as it is already.	11/16/2015 9:08 AM
4	I am not sure why the National Standards were not adequate. I did like them.	11/13/2015 11:05 AM
5	Very broad topics to cover in this, as written it would be covered over the course of the year in different units multiple times. Some more specifics objectives in the standard would be warranted, such as connections to the hydrosphere(oceans and rivers) and connections to atmosphere(weather patterns). Very specific objectives would be helpful to help create lessons and plans to allow students to gain a very in-depth knowledge of the sections of this standard	11/4/2015 1:27 PM
6	The proposed standards are research-based and are developmentally appropriate.	11/2/2015 11:58 AM

Q177 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 13 Skipped: 206

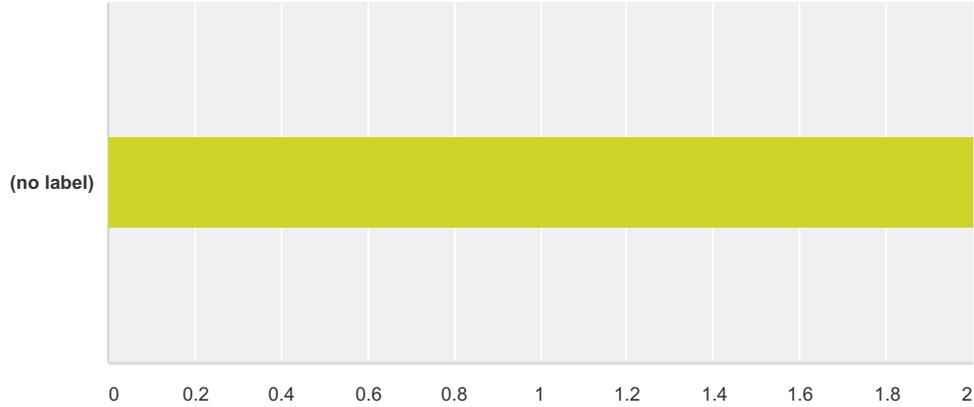


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	7.69% 1	30.77% 4	15.38% 2	13	2.15

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	I have found that the standard is too concise - I was more comfortable with the National Standard.	11/13/2015 11:05 AM
4	Keep proposed standards as is for this strand. They are based upon years of research and learning progressions for how students best learn and understand science.	11/2/2015 11:58 AM

Q178 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 13 Skipped: 206

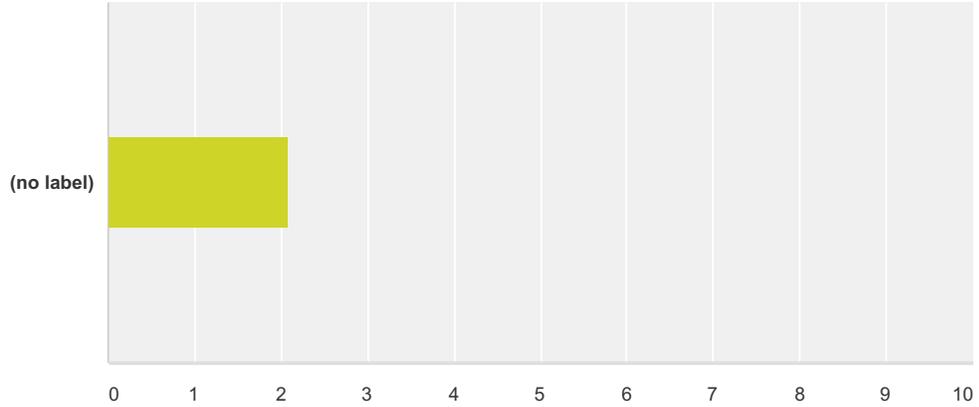


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	15.38% 2	30.77% 4	7.69% 1	13	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	This standard is not as clear as the National Standards.	11/13/2015 11:05 AM
4	The broad covering along with the higher level DOK (3 & 4) could be a struggle for our students. An understanding of what the assessment might look like or what could be assessed would be helpful in helping guide the students in their inquiry to acquire the knowledge necessary to be successful	11/4/2015 1:27 PM
5	Keep proposed standards as is for this strand. By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	11/2/2015 11:58 AM

Q179 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 13 Skipped: 206

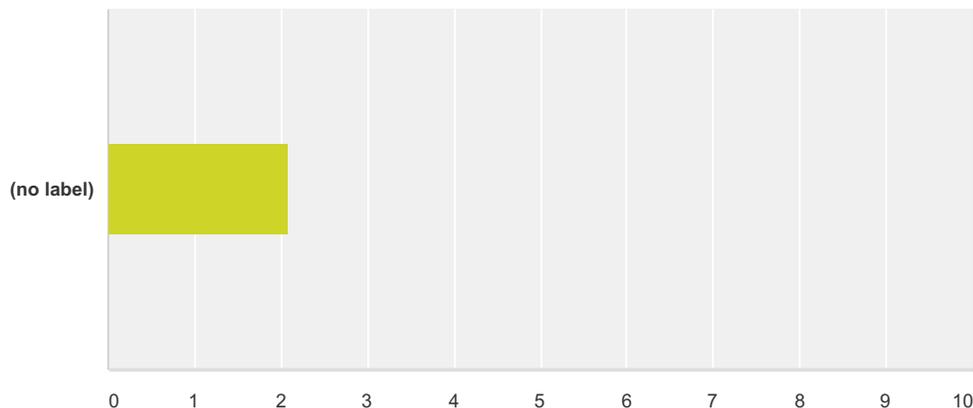


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	7.69% 1	38.46% 5	7.69% 1	13	2.08

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	Why can't the National Standards do the same?	11/13/2015 11:05 AM
4	Many of these standards are inquiry/project based and in the current state assessment format, would be very difficult to present to students. If no state assessment is created, what other options could be used to assess this material.	11/4/2015 1:27 PM
5	All the standards can be assessed and science should be assessed in this way.	11/2/2015 11:58 AM

Q180 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 13 Skipped: 206

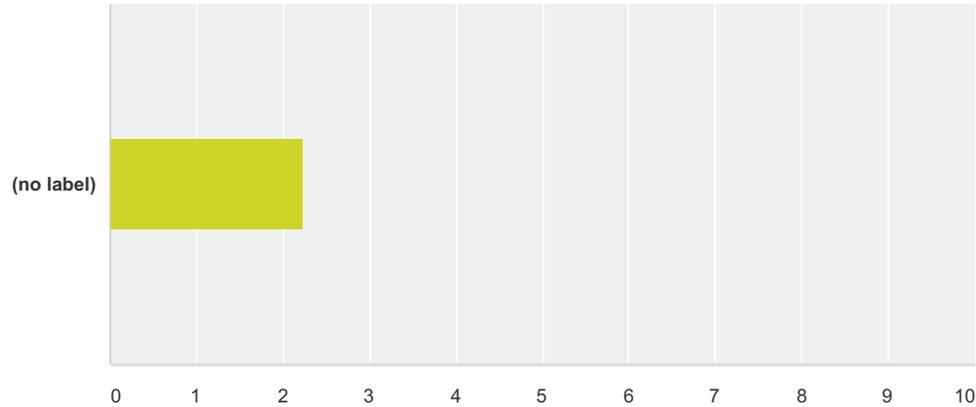


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	7.69% 1	38.46% 5	7.69% 1	13	2.08

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	Yes, I can understand this standard, but I did find it too concise.	11/13/2015 11:05 AM
4	HS-ESS2-2: Add clarification statement. [Clarification Statement: Examples should include climate feedbacks, such as how an increase in greenhouse gases causes a rise in global temperatures that melts glacial ice, which reduces the amount of sunlight reflected from Earth's surface, increasing surface temperatures and further reducing the amount of ice. Examples could also be taken from other system interactions, such as how the loss of ground vegetation causes an increase in water runoff and soil erosion; how dammed rivers increase groundwater recharge, decrease sediment transport, and increase coastal erosion; or how the loss of wetlands causes a decrease in local humidity that further reduces the wetland extent.] HS-ESS2-4: A clarification statement would be helpful. Clarification Statement: Examples of the causes of climate change differ by timescale, over 1-10 years: large volcanic eruption, ocean circulation; 10-100s of years: changes in human activity, ocean circulation, solar output; 10-100s of thousands of years: changes to Earth's orbit and the orientation of its axis; and 10-100s of millions of years: long-term changes in atmospheric composition.	11/2/2015 11:58 AM

Q181 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 13 Skipped: 206



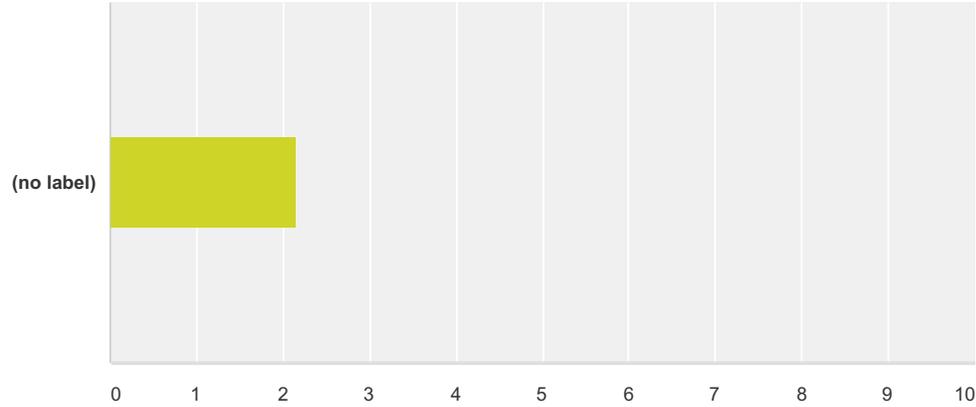
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	38.46% 5	15.38% 2	30.77% 4	15.38% 2	13	2.23

#	Suggested revisions for standards:	Date
1	Several of these issues are not necessary to be ready for college/career...they are not for the general public school student, but college prep classes.	12/1/2015 11:17 AM
2	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
3	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
4	More information would be helpful for college readiness.	11/13/2015 11:05 AM
5	Many of these standards are designed to help students increase critical thinking and inquiry-based skills. This would be a class based more towards a student looking for a major in Science in college rather than the other major contents, as most students will take a life science class.	11/4/2015 1:27 PM
6	Keep proposed standards as is for this strand. This new format for the standards mirrors the college and career readiness benchmarks for ACT and for advanced placement sciences, all of which are a way we measure college and career readiness.	11/2/2015 11:58 AM

HS-ESS2 Earth's Systems
(9-12)

Q182 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 13 Skipped: 206



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	46.15% 6	7.69% 1	30.77% 4	15.38% 2	13	2.15

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	Use the next generation National Standards, please	11/13/2015 11:05 AM
4	Keep proposed standards as is for this strand. Our knowledge of science is constantly improving. These proposed standards contain the content necessary for students to be scientifically literate but also provided the needed upgrade based upon advancements that have occurred in science since the last standards were adopted. They also include the format that research shows is best in terms of helping students to learn and understand science.	11/2/2015 11:58 AM

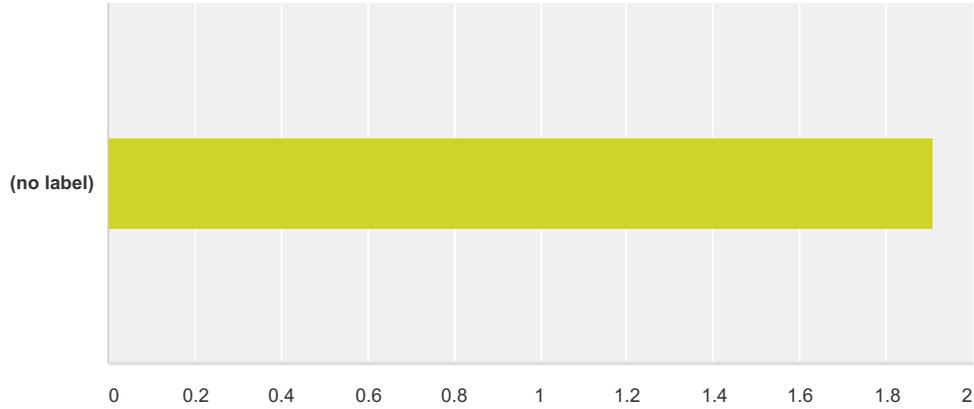
Q183 Overall comments regarding the proposed standards for Earth's Systems (HS-ESS2):

Answered: 10 Skipped: 209

#	Responses	Date
1	Would like to see a Pro Agricultural Influence in this area with emphasis on responsible use of environmental resources but not from the view point of humans as a hazard to the environment.	12/2/2015 5:41 PM
2	Remove Strand 7 completely. It seems like the standards are written with college bound kids only in mind. We are expecting HS students in public schools to excel at a level many can not attain due to previous years educational issues and huge issues outside of school. You are asking me to teach some really great idealistic things to students who come to school with pre-algebra math skills, no food at home, and constant family issues. Very nice in a perfect world- not the real world of these students.	12/1/2015 11:17 AM
3	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much to vague.	11/30/2015 10:24 AM
4	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:13 AM
5	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
6	These standards should be adopted as they are written.	11/27/2015 9:11 PM
7	I really am impressed by the next generation National Standards - please use them!	11/13/2015 11:05 AM
8	Changes made from the NGSS version have lowered the DOK and narrowed the focus too much. Please leave as written in NGSS.	11/11/2015 5:03 PM
9	This standard, while very broad in its descriptions, does a great job of covering all the material that would fall under Earth as a system. Leaves instruction open for many project/lab based lessons which help the students to learn by giving hands-on experiences. Main questions is is this class going to be assessed at the state level and will teachers/educators have input on knowing what the assessment will look like and possibly having the ability to help create the assessment.	11/4/2015 1:27 PM
10	This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	11/2/2015 11:58 AM

Q185 The standards in this strand are developmentally appropriate.

Answered: 11 Skipped: 208

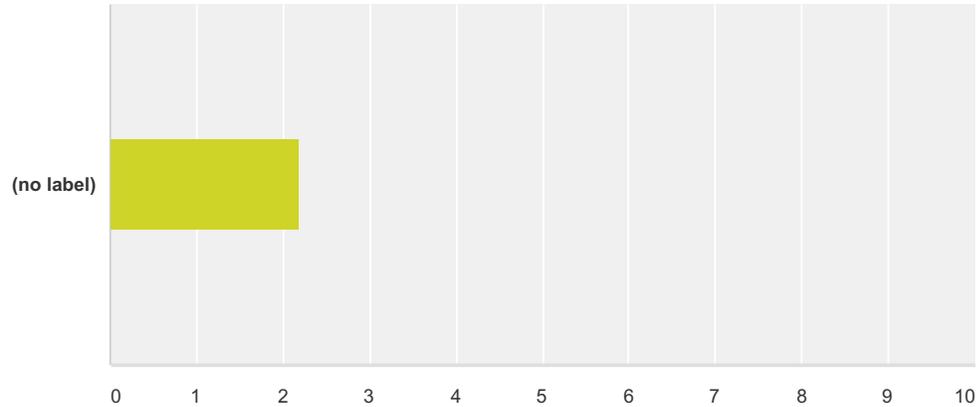


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	54.55% 6	9.09% 1	27.27% 3	9.09% 1	11	1.91

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:14 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	Why not use the National Standards?	11/13/2015 10:29 AM
4	My concern is the same for all the standards. If we do not list them for each grade level individually my fear is we will have teacher teach their favorite things and our students will have gaps of information that they are missing. We are a very rural poverty area and our students move in and out of all 5 districts a lot during the year. If we are not all on the same page those students may never be taught certain standards...	11/13/2015 6:46 AM
5	The proposed standards are research-based and are developmentally appropriate.	11/2/2015 12:05 PM

Q186 The standards in this strand follow a coherent path through and across all grade levels.

Answered: 10 Skipped: 209



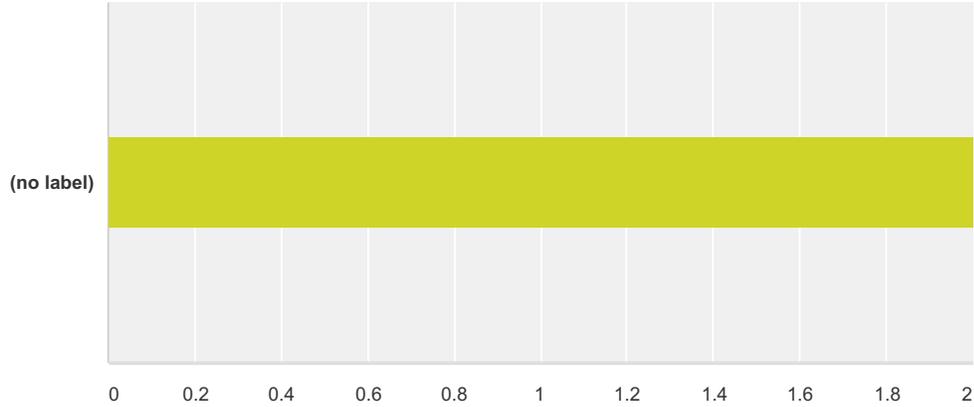
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 5	0.00% 0	30.00% 3	20.00% 2	10	2.20

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:14 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	More specific information is essential - why are you not using the National Standards.	11/13/2015 10:29 AM
4	Keep proposed standards as is for this strand. They are based upon years of research and learning progressions for how students best learn and understand science.	11/2/2015 12:05 PM

HS-ESS3 Earth and Human Activity (9-12)

Q187 The standards set a rigorous path of high expectations for students at each grade level.

Answered: 10 Skipped: 209

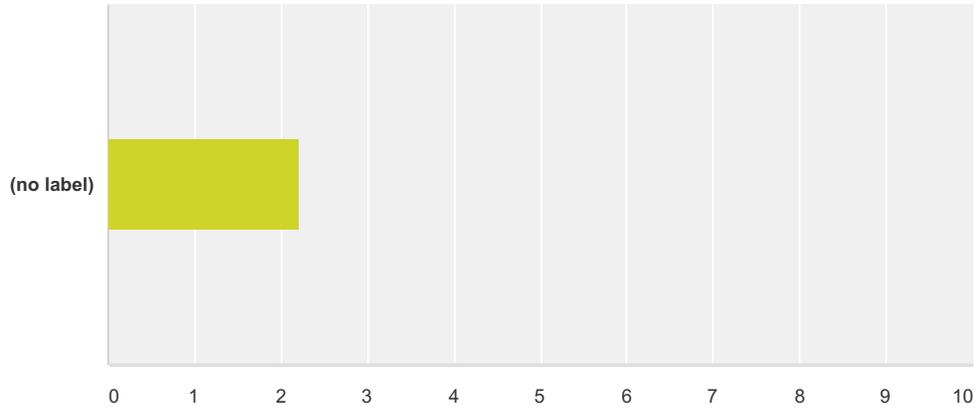


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	50.00% 5	10.00% 1	30.00% 3	10.00% 1	10	2.00

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:14 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	These do not need to "re-invent the Wheel"	11/13/2015 10:29 AM
4	Keep proposed standards as is for this strand. By embedding the practice of science with the content, the emphasis is on students doing science. Research shows that all students develop science literacy and a deeper understanding of science by engaging in the practices of science while learning the content.	11/2/2015 12:05 PM

Q188 The majority of the standards in this strand can be assessed in the classroom and/or on a state assessment.

Answered: 9 Skipped: 210

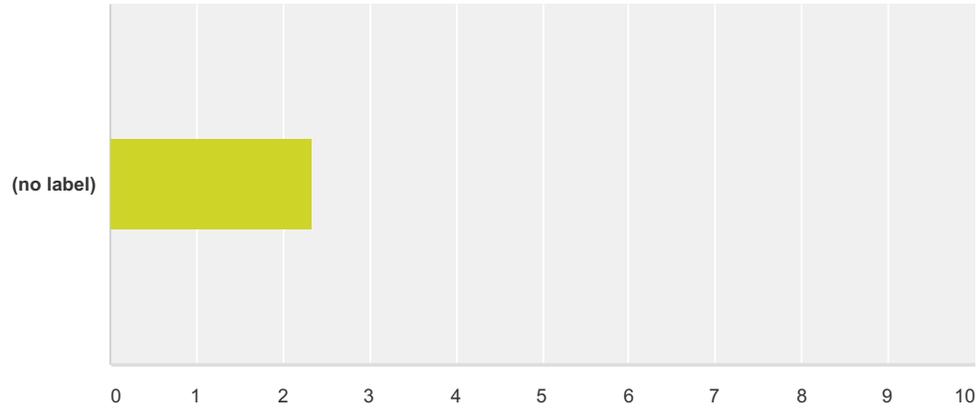


	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	44.44% 4	0.00% 0	44.44% 4	11.11% 1	9	2.22

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:14 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	This is a misuse of funds - Use the National Standards.	11/13/2015 10:29 AM
4	Without specific content standards assessing this at a state level will be difficult	11/4/2015 1:21 PM
5	All the standards can be assessed and science should be assessed in this way.	11/2/2015 12:05 PM

Q189 The standards in this strand are understandable to educators and explainable to parents and other stakeholders.

Answered: 9 Skipped: 210



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	33.33% 3	11.11% 1	44.44% 4	11.11% 1	9	2.33

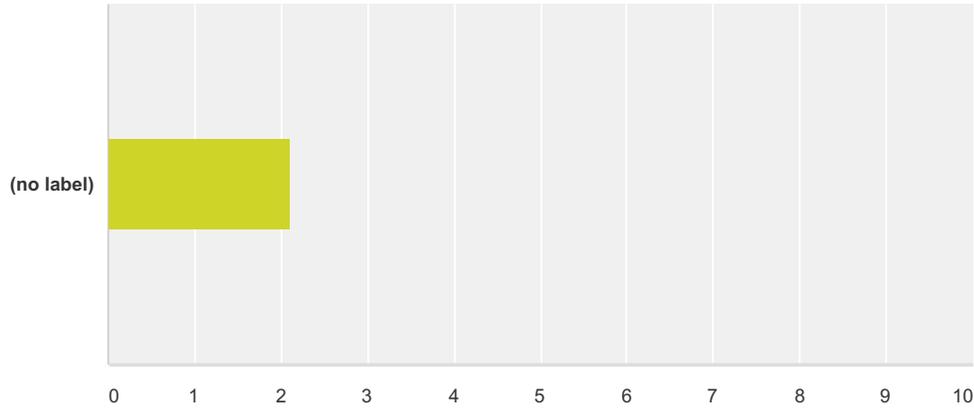
#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:14 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	They were understandable before - why are you re-writing them?	11/13/2015 10:29 AM

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4	<p>HS-ESS3-4: Spelling of "reoccurrences" This standard seems to be a combination of a life science standard and an earth science standard. For HS-ESS3-4, the following wording may be more appropriate: "Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. Clarification Statement: Examples of data on the impacts of human activities could include the quantities and types of pollutants released, changes to biomass and species diversity, or areal changes in land surface use (such as for urban development, agriculture and livestock, or surface mining). Examples for limiting future impacts could range from local efforts (such as reducing, reusing, and recycling resources) to large-scale geoengineering design solutions (such as altering global temperatures by making large changes to the atmosphere or ocean)." HS-ESS3-6: This standard does not follow the same three-dimensional format as the others and it is very broad. Perhaps another way to word it would be as follows: "Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity. Clarification Statement: Examples of Earth systems to be considered are the hydrosphere, atmosphere, cryosphere, geosphere, and/or biosphere. An example of the far-reaching impacts from a human activity is how an increase in atmospheric carbon dioxide results in an increase in photosynthetic biomass on land and an increase in ocean acidification, with resulting impacts on sea organism health and marine populations. Assessment Boundary: Assessment does not include running computational representations but is limited to using the published results of scientific computational models."</p>	11/2/2015 12:05 PM
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Q190 The standards in this strand represent the necessary content for a student to reach college and/or career readiness upon graduation.

Answered: 9 Skipped: 210



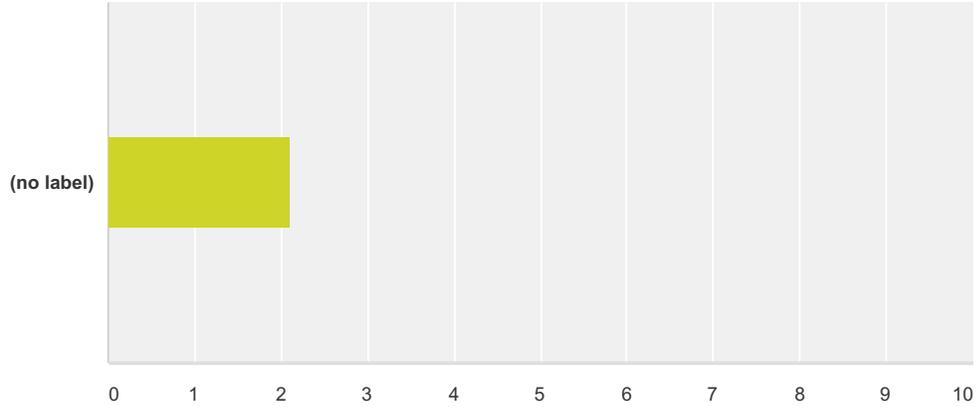
	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	44.44% 4	11.11% 1	33.33% 3	11.11% 1	9	2.11

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:14 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	So do the National Standards?	11/13/2015 10:29 AM
4	Keep proposed standards as is for this strand. This new format for the standards mirrors the college and career readiness benchmarks for ACT and for advanced placement sciences, all of which are a way we measure college and career readiness.	11/2/2015 12:05 PM

HS-ESS3 Earth and Human Activity (9-12)

Q191 The standards in this strand are accurate and encompass the breadth of the content.

Answered: 9 Skipped: 210



	1. Standards are acceptable as is. Overall the standards are listed at the appropriate grade level.	2. Standards are acceptable, edits would improve, but are not mandatory. Very few (minor) issues.	3. Standards are acceptable after they are revised as suggested immediately below.	4. Standards require complete rewrite. Majority of standards are at inappropriate grade levels.	Total	Weighted Average
(no label)	44.44% 4	11.11% 1	33.33% 3	11.11% 1	9	2.11

#	Suggested revisions for standards:	Date
1	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:14 AM
2	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
3	Right!	11/13/2015 10:29 AM
4	Keep proposed standards as is for this strand. Our knowledge of science is constantly improving. These proposed standards contain the content necessary for students to be scientifically literate but also provided the needed upgrade based upon advancements that have occurred in science since the last standards were adopted. They also include the format that research shows is best in terms of helping students to learn and understand science.	11/2/2015 12:05 PM

HS-ESS3 Earth and Human Activity (9-12)

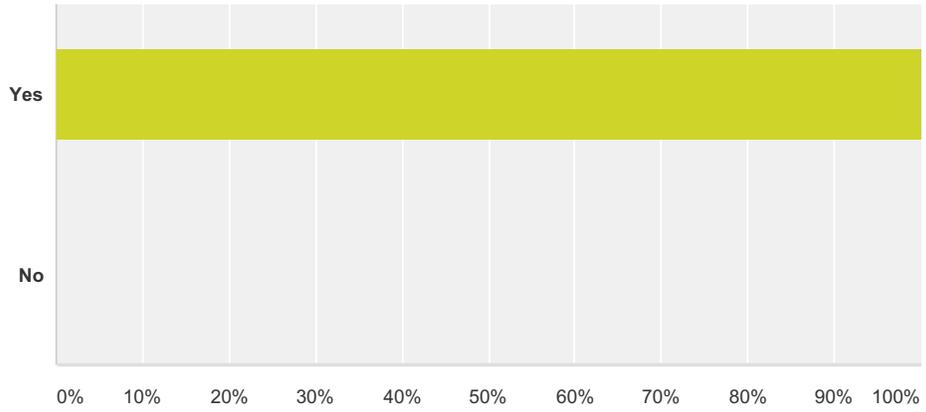
Q192 Overall comments regarding the proposed standards for Earth and Human Activity (HS-ESS3):

Answered: 7 Skipped: 212

#	Responses	Date
1	Would like to see a Pro Agricultural Influence in this area with emphasis on responsible use of environmental resources but not from the view point of humans as a hazard to the environment.	12/2/2015 5:40 PM
2	The new proposed science standards are much too vague. Are we supposed to assume that the students will know the background information in order to design, construct, and revise models of various types? A new teacher coming in to teach his/her first year there is no way they would be able to construct a game plan of how to teach the new standards or have the background to be able design a comprehensive yearlong plan. Overall, the new standards are much too vague.	11/30/2015 10:24 AM
3	I find that the proposed science standards are too general in nature. I am concerned that these standards can be interpreted in many different ways, which may result in teaching techniques that may not fully prepare the students for the future state assessments. I need to see a model curriculum that will help me understand the specific concepts that I am expected to teach.	11/30/2015 10:14 AM
4	I feel that the new proposed science standards are too general and could be interpreted several different ways. As a science teacher, I like the specific statements with the old standards. Since the proposed standards are so general, I think we need to have specific example test questions to gain a better understanding of what is being asked of us or we need more specific points to guide our teaching. The new standards also push for modeling and conducting investigations, which may result in school districts spending more money for equipment and supplies. Teachers would also need more training in order to implement the new ways of teaching involved with more modeling and allowing students to plan and conduct their own experiments. A model curriculum would be very beneficial in helping see specific examples of lessons or lab experiments that might help our students see the concepts that will be assessed.	11/30/2015 10:10 AM
5	These standards should be adopted as they are written.	11/27/2015 9:11 PM
6	Please, please re-think the need to change from the National Standards.	11/13/2015 10:29 AM
7	Keep as proposed with possible slight adjustments. This format is based upon the research-based three-dimensional structure for how students develop understanding in science. By embedding the content (disciplinary core idea) with the practices of science and overarching themes (crosscutting concepts). This format is based upon decades of research which is compiled in A Framework for K-12 Science Education. This research has been based upon the work of The National Academies (National Academy of Sciences, National Academy of Engineering, Institute of Medicine, National Research Council). Science is a performance-based discipline in need of performance-based standards. These performance expectations allow for the needed shift for both STEM (Science, Technology, Engineering, and Mathematics) integration as well as a solid foundation of science literacy for all students. The content was addressed in the previous GLEs but the standards have been updated based upon research on how students learn and understand science best. The new format also ensures the standard is not culturally biased but represents equity in science for all. Scientific advancements have occurred since the last adoption of standards for MO. It is time for this new adoption. The proposed standards reflect those needed updates as well as the needed updates in terms of how students learn and understand science best.	11/2/2015 12:05 PM

Q194 Do you work or reside in Missouri?

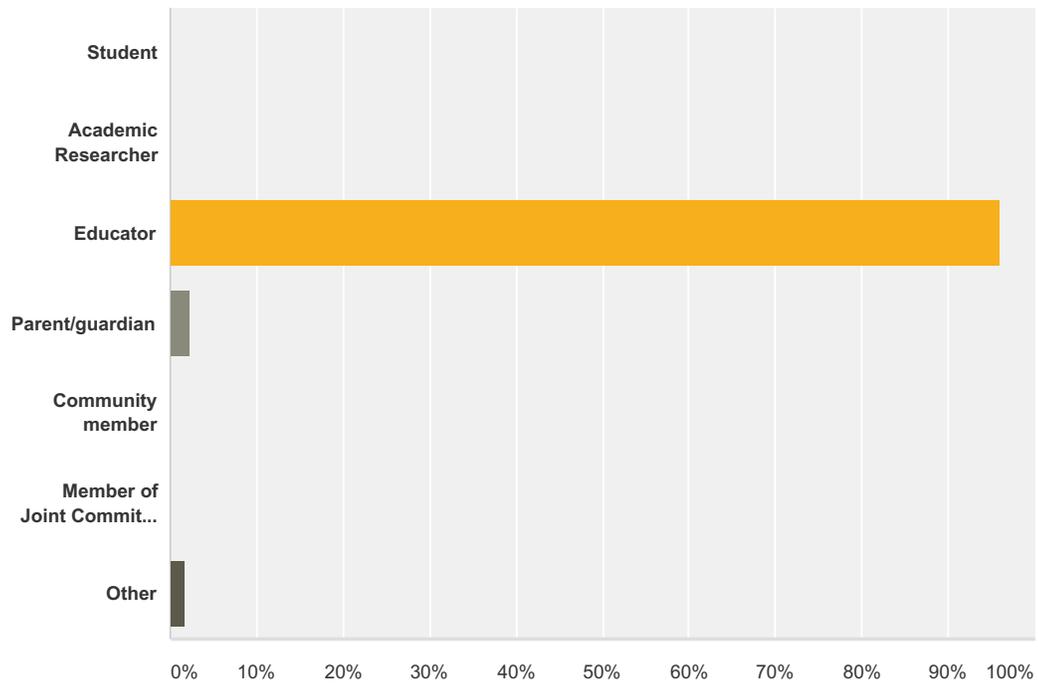
Answered: 125 Skipped: 94



Answer Choices	Responses
Yes	100.00% 125
No	0.00% 0
Total	125

Q195 How might you define your relationship to Missouri schools?

Answered: 125 Skipped: 94



Answer Choices	Responses
Student	0.00% 0
Academic Researcher	0.00% 0
Educator	96.00% 120
Parent/guardian	2.40% 3
Community member	0.00% 0
Member of Joint Committee on Education	0.00% 0
Other	1.60% 2
Total	125

Q196 What is your work or residential zip code?

Answered: 121 Skipped: 98

#	Responses	Date
1	63857	12/3/2015 8:56 AM
2	63857	12/3/2015 8:47 AM
3	65714	12/2/2015 11:01 PM
4	63841	12/2/2015 5:41 PM
5	63801	12/2/2015 2:59 PM
6	64069	12/2/2015 2:43 PM
7	63869	12/2/2015 2:10 PM
8	65626	12/1/2015 11:32 PM
9	65757	12/1/2015 9:38 PM
10	65757	12/1/2015 7:01 PM
11	65714	12/1/2015 4:05 PM
12	65802	12/1/2015 3:55 PM
13	65721	12/1/2015 3:04 PM
14	63556	12/1/2015 2:37 PM
15	65689	12/1/2015 2:31 PM
16	63334	12/1/2015 2:24 PM
17	65793	12/1/2015 11:17 AM
18	64485	12/1/2015 9:31 AM
19	65616	12/1/2015 6:49 AM
20	63873	11/30/2015 2:16 PM
21	63822	11/30/2015 1:33 PM
22	63801	11/30/2015 1:31 PM
23	63801	11/30/2015 1:23 PM
24	63501	11/30/2015 1:04 PM
25	63801	11/30/2015 12:02 PM
26	63736	11/30/2015 12:00 PM
27	63755	11/30/2015 10:25 AM
28	63736	11/30/2015 10:15 AM
29	63736	11/30/2015 10:11 AM
30	63857	11/29/2015 9:09 PM
31	64068	11/27/2015 9:15 PM
32	64834	11/24/2015 1:00 PM
33	63071	11/24/2015 11:46 AM
34	63385	11/24/2015 8:34 AM

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35	63010	11/21/2015 3:22 PM
36	63080	11/20/2015 3:35 PM
37	64831	11/20/2015 11:04 AM
38	65202	11/20/2015 10:14 AM
39	64489	11/17/2015 10:02 AM
40	64093	11/16/2015 2:40 PM
41	64093	11/16/2015 2:38 PM
42	64093	11/16/2015 2:36 PM
43	64093	11/16/2015 2:35 PM
44	64093	11/16/2015 2:34 PM
45	64093	11/16/2015 2:34 PM
46	64093	11/16/2015 2:30 PM
47	64093	11/16/2015 2:20 PM
48	64093	11/16/2015 2:17 PM
49	64083	11/16/2015 1:58 PM
50	65714	11/16/2015 10:40 AM
51	65026	11/16/2015 9:09 AM
52	63769	11/13/2015 1:42 PM
53	63755	11/13/2015 1:30 PM
54	63662	11/13/2015 1:16 PM
55	63730	11/13/2015 1:15 PM
56	63787	11/13/2015 11:13 AM
57	63730	11/13/2015 11:08 AM
58	63755	11/13/2015 11:03 AM
59	63730	11/13/2015 10:57 AM
60	63755	11/13/2015 10:56 AM
61	63663	11/13/2015 10:54 AM
62	64068	11/13/2015 10:40 AM
63	64503	11/13/2015 10:27 AM
64	63841	11/13/2015 10:15 AM
65	65560	11/13/2015 6:47 AM
66	63108	11/12/2015 1:46 PM
67	65251	11/12/2015 1:14 PM
68	63026	11/11/2015 5:12 PM
69	63141	11/11/2015 5:12 PM
70	63011	11/11/2015 5:12 PM
71	63021	11/11/2015 5:11 PM
72	63134	11/11/2015 5:11 PM
73	64850	11/11/2015 4:06 PM
74	65791	11/10/2015 2:03 PM
75	63051	11/10/2015 12:59 PM

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76	65721	11/9/2015 4:49 PM
77	65721	11/9/2015 4:43 PM
78	65721	11/9/2015 4:42 PM
79	65721	11/9/2015 4:39 PM
80	65542	11/9/2015 2:01 PM
81	64155	11/9/2015 7:02 AM
82	65453	11/6/2015 2:33 PM
83	64601	11/6/2015 9:28 AM
84	64601	11/6/2015 9:00 AM
85	64601	11/6/2015 8:48 AM
86	64759	11/5/2015 1:43 PM
87	64138	11/4/2015 2:09 PM
88	64109	11/4/2015 2:03 PM
89	64133	11/4/2015 1:58 PM
90	64133	11/4/2015 1:30 PM
91	64138	11/4/2015 1:27 PM
92	64133	11/4/2015 1:25 PM
93	64014	11/4/2015 1:22 PM
94	64138	11/4/2015 1:21 PM
95	64110	11/4/2015 1:21 PM
96	64133	11/4/2015 1:18 PM
97	64138	11/4/2015 1:16 PM
98	64133	11/4/2015 1:15 PM
99	64133	11/4/2015 1:14 PM
100	64133	11/4/2015 1:14 PM
101	64138	11/4/2015 1:14 PM
102	64138	11/4/2015 1:14 PM
103	64138	11/4/2015 1:14 PM
104	64133	11/4/2015 1:13 PM
105	64133	11/4/2015 1:12 PM
106	64133	11/4/2015 1:09 PM
107	64133	11/4/2015 1:08 PM
108	64133	11/4/2015 1:08 PM
109	64138	11/4/2015 1:07 PM
110	64133	11/4/2015 1:05 PM
111	65080	11/4/2015 8:09 AM
112	65712	11/3/2015 3:11 PM
113	63025	11/2/2015 12:05 PM
114	65734	11/2/2015 10:52 AM
115	63382	10/30/2015 2:54 PM
116	65251	10/30/2015 8:13 AM

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117	65203	10/29/2015 1:18 PM
118	65807	10/28/2015 9:27 AM
119	64644	10/27/2015 8:43 AM
120	64644	10/27/2015 8:39 AM
121	64644	10/27/2015 8:36 AM

Q197 Which Missouri department of higher education institute do you represent?

Answered: 0 Skipped: 219

#	Responses	Date
	There are no responses.	

Q198 What is your current role at this institution?

Answered: 0 Skipped: 219

#	Responses	Date
	There are no responses.	

Q199 How long have you worked in higher education?

Answered: 0 Skipped: 219

! No matching responses.

Answer Choices	Responses
0-5 Years	0.00% 0
6-10 Years	0.00% 0
11-15 Years	0.00% 0
16-20 Years	0.00% 0
20+ Years	0.00% 0
Total	0

Q200 List any current course(s) you teach:

Answered: 0 Skipped: 219

#	Responses	Date
	There are no responses.	

Q201 Name:

Answered: 0 Skipped: 219

#	Responses	Date
	There are no responses.	