## Arizona Science Standards Revision Working Group

Date and time of meeting:

May 30, 2018 8:30 am – 3:30 pm

Scope of work:

On May 30, 2018 a working group of diverse grade level content experts and community members continued the review of public comment received via the public survey after the May 17, 2018 meeting. These committee members reviewed the draft of the 2018 Science Standards\_and addressed public comment/feedback that had been received as of May 28, 2018 via the public survey, which closed at 12:00 p.m. (noon) on May 31<sup>st</sup> 2018.

For this meeting the working group committee reviewed public comment/feedback and

- Identified if the comment was actionable
- Identified what item the comment addressed
- Suggested changes if needed based on public feedback/working group discussion

Work completed:

During the meeting the working group committee worked on grade level content (K-5) public feedback and the introduction section of the draft standards. The working group did not have enough time to address comments on topics of organization, depth-rigor, breadth, 2018 vs 2004 science standards, appendices of the 2018 draft science standards. Working group committee comments are compiled from May 17 - May 30, 2018 and this document begins with sections containing the introduction – high school grade levels.

Artifact:

The document (artifact) is the actual working document from the science working group committee. As the working groups discussed the feedback/comment they determined and comment on the artifact:

- If the item was actionable by the committee (yes/no)
- What the item addressed (specific standard, key concepts, organization, etc.)
- Committee gave their suggestions of how to address the public comment/feedback

Plans for next meeting:

The next working group meeting will continue to focus on public feedback received from the survey in grade levels 6-12 and other general portions of the document as time allows.



Survey Question	12. Please comment on the Introduction section.				
Comment #	Public Comment  Public Comment	Actionable Yes/No	Actionable Yes/No	Suggested Changes	Committee Notes
Comment #	The Introduction itself explains well the design and intended implementation, but on	ACTIONABLE TES/IND	ACTIONABLE TESTINO	Suggested Changes	Committee Notes
	<u> </u>				
	page 4, the Core Ideas, Life Science, L\$ section: evolution is a not a theory, (or a theory in the science discipline). unity and diversity of organisms IS a result of				Dig Idea 10 is the basis for I.4 on Intro n.4 and frame work nn 130 169. Core
	'				Big Idea 10 is the basis for L4 on Intro p 4 and frame work pp 139-168 - Core
	adaptation, which is a component of evolution.	V	Inducation on 4		Idea LS4 pp. 164-168 but discussed in group the differences of chemical evolution, macro evolution and micro evolution.
56		Yes	Introduction pg 4		evolution, macro evolution and micro evolution.
	Messy	No No	comment		
	N/A		comment		
	nobody cares.	No	comment		Book at the state of
	There IS one scientific method, and it works.	No	comment		Broad opinion based
	no comment	No	comment		
123	I feel the first year might be different by after that all should be ok.	No	comment		
	I believe that some of the wording that was added however is not accurate, as				
	mention prior I have concerns with the paragraph at the bottom of page 2 which				
	explains patterns, I strongly disagree with the statement that identifies the Science			Remove "Formerly	
	and Engineering Practices to the scientific method, if anything in our current			known as the scientific	
	document it is related to the Inquiry process not the scientific method. Science has			method" statement	
	changed even since I was in high school 25 years ago, the scientific method is a mode			from beginning of the	The Science and Engineering Practices did not derive from the Scientific
	of communicating findings not the way that science is done.			Science and Engineering	<u> </u>
143		Yes	Introduction pg 2-3	Practices pg. 3	components of scientific literacy.
	Take all the green out. Non- experts clearly wrote the additional pieces and do not				
	have an understanding of the science and engineering practices nor the crosscutting				
145	concepts.	Yes	comment		Public feedback is being reviewed
	The terms cross-cutting and intertwining are confusing at best. This attempt to				
	intermingle three levels of cognition regarding science is very confusing and to what				
	end, at that. Why aren't that standards simply setting out the core concepts needed			Possible	
	for functional literacy and practice in science? Rather than cross-cutting why not			rewording/word	
	simply call them ways of looking at the world?			clarification	
152		Yes	comment	(intertwined)	
	Not being an educator, it was a bit confusing. But once I took the time to read				
154	carefully it was understandable, with some work on my part.	No	comment		
	We should go back to the standards that the committee created and adopt those, not				
157	Diane Douglas's internal review copy.	No	comment		Statement doesn't address Introduction
	Overall, the introduction provides enough information and context to understand the				
	standards. I'm confused by the ADE changes that were made. The example for				
	Patterns doesn't really capture the intent of that practice. I recommend that if an				
	example is included, the ADE allow the working groups of educators to write a better			Rewrite bottom	
	example or to pull one from the Framework, as several examples are cited in that			paragraph on page 2	
	document. I am also confused about the statement about the scientific method, this			using pgs. 85-87 from	
	indicates that there isn't a clear understanding of the practices (even the 2004			the Framework to use	
	standards didn't refer to the scientific method) Please consult with high education			examples from simple to	
	faculty or research documents such as the Framework to better understand why the			complex patterns. See	
	reference to the scientific method is misleading and inappropriate.			comment 143 about	
				Scientific Method	
163		Yes	comment	statement.	
	It looks like it is subtly pushing anthropomorphic climate change. We do not have a				
	significant effect on climate. Look for propaganda that serves political ends. The idea				
	of anthropomorphic climate change is being used to push the destruction of				
	prosperous countries, and capitalism as an engine of prosperity. One statement				
	suggests that we have a significant impact on climate. We do not. The sun is the main				
	driving force, and volcanoes have a significant effect. Carbon dioxide is not a culprit. It			Remove terms "natural	
	is necessary for the sustenance of life, and represents a tiny proportion of the			and human" from E1 on	
	atmosphere. It does not drive climate change.		Standard-core idea for	page 4 in Core Ideas for	
165		Yes	knowing science E1- pa	Knowing Science.	E1 is Big Idea #5. It does not include natural and human in the document
103	I especially like the graphic used in the introduction. It is much better than the NGSS.	1	pa	Samue Science.	
172	respectany like the graphic used in the introduction. It is much better than the NOSS.	No	comment		
1/2	It is well written although shorten this section. Most teachers will skip over this	110	Comment		
100	section	No	comment		
190	Jacobin Jacobi	INO	Comment	I.	

	I				
	It does not tell us how it will be implemented, it says it's up to the district.	No	comment		
184	It has a graph that is laid out nice and very easy to understand.	No	comment		
	would like to see how the teachers are going to break it down to implement it into				
185	the classroom	No	comment		
	If we keep these elements the introduction is good. But if we are making changes				
186	then the introduction needs to change.	No	comment		
187	Seems like it explains the expectations clearly.	No	comment		
188	If you keep this document the same, then the intro fits well.	No	comment		
189	It a lot of words it would be nice to simplify the facts.	No	comment		
190	It shows vertical articulation.	No	comment		
	Fairly lengthy, but thorough.	No	comment		
	While I appreciate the summary, it seems to be a lot of information.	No	comment		
	The introduction focuses around the core ideas. The Science and Engineering				
	Practices are much more rigorous than the Scientific Method and promote creative				
105	problem solving.	No	comment		
133	it focuses around the core ideas. the science and engineering aspect are much more	140	Comment		
100		N =			
	vigorous than the scientific method.	No	comment		
	Way to wordy.	No	comment		
208	Too complicated!!	No	comment		
	The problem part is how they should be implemented because there is no building on				
219	different standards.	No	comment		3Dimensional approach
	The introduction section lists the three dimensions and provides examples along with				
	the goals of the new standards.	No	comment		
225	It is clear.	No	comment		
226	That all grade levels need to be doing science about 60 minutes a day.	No	comment		
227	The introduction is easy to understand.	No	comment		
	Fine.	No	comment		
	Our group felt that there was sufficient information in the introduction section.				
235	_ ,	No	comment		
	The introduction section seems comprehensive and good.	No	comment		
	Should offer a greater clarification of the about the core ideas.	No	comment		
	It was familiar enough but more specifics will be useful.	No	comment		
257	IntroductionPage 2In the first sentence, remove 'between science disciplines' - this	110	comment		
	_ · · · · · · · · · · · · · · · · · · ·				
	contradicts the next sentence, which is the correct interpretation of crosscutting				
	concepts - it is not only within Science - but also between other disciplines.Page 3, 9,				
	21, 33, Appendix 2Remove 'Formerly known as the scientific method' â†' this simply				
	is not the case.Page 5Under the heading, 'The standards are neither curriculum nor				
	instructional practices' the statement 'Therefore, identifying the sequence of				
	instruction at each grade - what will be taught and for how long - requires concerted				
	effort and attention at the local level.' must be heeded by the State Board of				
	Education and Arizona Department of Education. The local school district's will not				
	have the time that is needed with the final standards to do the work that is described				
	in this sentence. We need to begin teaching 3rd, 6th, and 9th grade students using			Remove "science	
	the new standards in August 2018. We won't have the final standards in our hands to			discipline" on page 2.	
	identify 'the sequence of instruction at each grade' with enough time to give the task			Refer to comment 143	
	our 'concerted effort and attention'. This is not what we should be doing for our			about Scientific Method.	
1	students. We will not be able to teach these standards with fidelity on the current			Extend	
	timeline for these standards and the assessments that will accompany them.			transition/implementati	
1	The standards and the assessments that will decompany them.			on timeline with	
			Introduction and	assessment in 2021-	There is a concern by commenter that the delay of standard approval will
305		Voc			There is a concern by commentor that the delay of standard approval will
265		Yes	Appendix	2022.	affect the sequence of instruction and assessment.
267	Awesome except the poorly written example of patterns.	No	comment		See comment 163
_	On page 2 it states that tectonic processes follow a pattern. If this were true, why		l		La transitation of the control of th
275	can't we predict an earthquake or tsunami? INACCURATE!	Yes	Introduction	See comment 163	Validity to commentor's statement
	Page 2 refers to predicting patterns of tectonic movement. While plates have				
	predictable movement we cannot predict outcomes of their movement.				
276		Yes	Introduction	See comment 163	Validity to commentor's statement
277	Although, much of the green verbiage needs to be revised or removed.	No	comment		
279	This portion looks fine to me.	No	comment		
				_	

			1		
	You now have material that used to be in 1st grade (human body) in third grade. If				
	they can handle it in an earlier grade they should. Also there is repetition in things				
	such as plants, which could be repeated learning or each grade level assuming the				
284	other person is teaching it.	Yes	Introduction	For K-2/3-5 groups	Not part of the Introduction.
	In the Core Ideas for knowing science could L4 read something like L4: The theory of				
	evolution seeks to make clear the continuity, unity, and diversity of living and extinct				
	organisms ? This will then encompass that evolution is a continual process that takes				
	time but connects all species?Core Idea U3 for using science makes science seem very				
	commercial.	Yes	Introduction	See comment 56	
				See comment 56	
	No comment.	No	comment	C	
	remove information about scientific method and paragraphs about patterns. Neither	.,		See comment 163 and	
	are correct or make sense.	Yes	Introduction	143	
	The introduction does not provide any details on how this is to be implemented. It				
	lists the basic ideas covered in each grade level.	No	Instruction		
311	These are not what the committee created	No	comment		
	Though the time expectation only addresses the number of minutes per week the				
	standards should be taught and misses the more important number of weeks				
313	required to teach the specified information.	No	Instruction		
	The introduction needs to include vocabulary for each standard Sub-Category (ex:				
	Physical Science, Earth and Space), as well as explicit expectations for what expected			Each Core Idea is	
	of the student in each standard.			explained and	
	of the stadent in each standard.			embedded in the	
				standard is the content-	
220		N =			Vaanda
320		No	Introduction	including key words	Key words
	The introduction gave enough information to be able to understand the layout when I				
	went to my grade level.	No	comment		
	Throughout the document, the science and engineering practices are explained as				
	being 'formerly known as the scientific method,' which is misleading. While the part				
	of the old standards that most closely resembles the practices was the scientific				
	method, they are not the same thing. The 'scientific method' is a linear procedure				
	devised by well-meaning teachers and does not resemble in any real way what				
	scientists actually do. The 'Science and Engineering Practices' are intended to be a				
	comprehensive, non-linear outline of all of the roles and tasks a scientist must do.				
	Without explanation of this key difference, there is a danger of teachers continuing to				
	teach the 'scientific method,' which is contrary to the intent of the standards.				
	teach the scientific method, which is contrary to the intent of the standards.				
220		V	C		
328		Yes	See comment 143		
	It was very clear.	No	comment		
	Not enough information to help suggest how or what steps build to teach the larger				
	pictures.	No	comment		
	This question seems misplaced/should be at the beginning.	No	comment		
	As a new teacher, I'd prefer it to be more explicit in terms of what the standards are			<u> </u>	
351	saying.	no	comment	<u> </u>	
352	Introduction is fine.	No	comment		
	Cross-curricular implementation and possibilities should be emphasized in each				
	content introduction if they will remain grouped by discipline area. Many of the				
	essential standards can be taught in all discipline areas and shouldn't be limited to				
	one specific content area.additionally, Appendix 3 should be acknowledged or present				Comment lacks clarity.
	here to make the big idea/main end goal clear to all what students will be assessed				
		No	sammant		
354		No	comment	1	
	Necessary to understand the coding, scope and sequence. It is very clearly explained.				
355		No	comment		
	The introduction provides a nice overview for all grade levels. Also giving an overview				
	of Crosscutting Concepts, Science and Engineering Practices, and Core Ideas for K-12.				
356		NO	comment	<u> </u>	
	although there is enough information and context to help me understand how the				
	standards are designed, it is hard to follow and additional graphics, such as tables,				
	would help the organization and clarity of the introduction				
358		No	comment		graphic table if what?
536		··-	1	1	10

1 -	had a second and the second of				
	he introduction is very informative and provides background information that is	N.			
360 he		No	comment		
	ave a brief description of what is expected throughout the 3 dimensions of scientific	N.			
362 le	•	No	commwnr		
	he introduction section gives a thorough description of the big ideas that are the				
	asis for the new standards.	No	comment		
	ke that the science and engineering inquiry process is intergrated into a more				
	phesive well rounded process instead of being linear. Like that the introduction				
	early explains both the practices and sources of the core ideas.				
366		No	comment		
į IL	Like that the science and engineering inquiry process is integrated into a more				
cc	phesive process instead of being linear. Like that the introduction clearly explains				
367 bo	oth the practices and sources of the core ideas.	No	comment		
Q	uick overview. Nice to remind teachers of its structure. Not sure it is enough for				
369 te	eachers not familiar with the K-12 Framework.	No	comment		
Tł	hree dimensional teaching is the best, research way to go.The Framework for K-12				
Sc	cience Education and the Working with the Big Ideas of Science Education was a				
	mart decision. On page 2 however where there is information in green the		1		
	stroduction becomes muddy as there are incorrect science examples used. The				
	ratement In Earth and space sciences, tectonic processes follow a pattern is false. If				
	were true we would never be surprised by an earthquake. In science tectonic plate				
	novement is taught not a tectonic PROCESS. The Science and Engineering practices				
	ere never the scientific method and even our 2004 standards don't allude to one				
	ray of doing science which is what the antiquated scientific method does.L4: The				
	, -				
	neory of evolution seeks to make clear the unity and diversity of living and extinct				
	rganisms.Should say The diversity of organisms, living and extinct, is the result of				
	volution. Based on the documents in which the committee use to write the				
	andards, Working with Big Ideas of Science Education, rewriting this statement				
m	nakes it unclear and confusing.				
i					
378		Yes	Intro		see comments 163, 143, 56
	ature of Science is not included in the front matter. Would like to see a comment of				
	eference to the appendix for explanations of what is included in each practice. Some				
	nay not have a clickable document when they are reviewing or making decisions				
at	bout curriculum. On page 4, Each standard is written at the intersection of two core				all explanations are in Appendix and just have to turn pages to the back. The
اء:ا	leas , I would like to see that it is at the intersection of three dimensions and				Constitution to a constitution of the constitu
Ia	leas , I would like to see that it is at the intersection of three dimensions and				Core Ideas is one of the 3 dimensions and intersects with the other two.
	eference the crosscutting concepts too.				Referenced crosscutting concepts and standards will be addressed in the
		Yes	organization		
re 380	eference the crosscutting concepts too.	Yes No	organization comment		Referenced crosscutting concepts and standards will be addressed in the
380 386 Fc	eference the crosscutting concepts too.  ormerly known as the scientific method? What is with this wording?				Referenced crosscutting concepts and standards will be addressed in the
380 386 Fc	eference the crosscutting concepts too.			see comment 163	Referenced crosscutting concepts and standards will be addressed in the
380 re 386 Fc Th 387	eference the crosscutting concepts too.  ormerly known as the scientific method? What is with this wording?	No	comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the
380 re 386 Fc Tr 387 Tr	ormerly known as the scientific method? What is with this wording? he need for examples of crosscutting concepts should be moved to the Appendix. he Introduction makes sense, however there is no consistency within the breadth of	No yes	comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
380 FG 78 78 78 78 78 78 78 78 78 78 78 78 78	eference the crosscutting concepts too.  ormerly known as the scientific method? What is with this wording?  he need for examples of crosscutting concepts should be moved to the Appendix.  he Introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles.	No yes no	comment comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the
78 78 78 78 78 78 78 78 78 78 78 78 78 7	eference the crosscutting concepts too.  commerly known as the scientific method? What is with this wording?  the need for examples of crosscutting concepts should be moved to the Appendix.  the Introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles.  The principles of the consistency within the breadth of the standards that reflects the NGSS principles.	No yes no no	comment comment comment comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
re 380   TH 387   TH 387   TH 389 th 416 im 430 it	eference the crosscutting concepts too.  Domerly known as the scientific method? What is with this wording?  The need for examples of crosscutting concepts should be moved to the Appendix.  The Introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles.  The principles are useful is even a bit long.	No yes no no	comment comment comment comment comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
re 380   TH 387   TH 389 th 416 iir 430 it 435 Ac	eference the crosscutting concepts too.  Description of the scientific method? What is with this wording?  The need for examples of crosscutting concepts should be moved to the Appendix.  The Introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles.  The needs are useful  The seven a bit long.  The dot of the scientific method? What is with this wording?  The needs for examples of crosscutting concepts should be moved to the Appendix.	No yes no no no no	comment  comment  comment  comment  comment  comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
re 380 Fd 386 Fd 386 Fd 387 Fd 387 Fd 389 th 416 im 430 it 435 At 451 W	ormerly known as the scientific method? What is with this wording? he need for examples of crosscutting concepts should be moved to the Appendix. he Introduction makes sense, however there is no consistency within the breadth of he standards that reflects the NGSS principles. hages are useful is even a bit long. dd some more detail about how to age appropriately interpret standards.	yes no no no no no	comment  comment  comment  comment  comment  comment  comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
re 380   386   560   387   387   Th 389   th 416   iii 430   tt 435   Ac 451   W 466   Dc 466	ormerly known as the scientific method? What is with this wording? he need for examples of crosscutting concepts should be moved to the Appendix. he Introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles. hages are useful is even a bit long. dd some more detail about how to age appropriately interpret standards.  Vording is a bit confusing o not understand the introductory explanation.	No yes no no no no	comment  comment  comment  comment  comment  comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
re 380   386   FC   387   Tr   387   Tr   389   th   416   irr   430   tt   435   Ac   451   W   466   DC   M   M	ormerly known as the scientific method? What is with this wording?  he need for examples of crosscutting concepts should be moved to the Appendix.  he Introduction makes sense, however there is no consistency within the breadth of he standards that reflects the NGSS principles.  nages are useful  is even a bit long.  dd some more detail about how to age appropriately interpret standards.  //ording is a bit confusing  o not understand the introductory explanation.  Itore specific information and guidance should be given to help schools navigate how	yes no no no no no	comment  comment  comment  comment  comment  comment  comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
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re 380   71   71   387   71   389   th 416   irr 430   it 435   A451   W 466   D0	eference the crosscutting concepts too.  Description of the constitution of the Appendix.  The need for examples of crosscutting concepts should be moved to the Appendix.  The Introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles.  The introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles.  The introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles.  The introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles.  The introduction makes sense, however there is no consistency within the breadth of the standards of the standards interpret standards.  The introduction makes sense, however there is no consistency within the breadth of the standards in the prediction of the order of the production of the pro	yes no no no no no	comment  comment  comment  comment  comment  comment  comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
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re 380   180	ormerly known as the scientific method? What is with this wording?  the need for examples of crosscutting concepts should be moved to the Appendix.  the Introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles.  The nages are useful is even a bit long.  dd some more detail about how to age appropriately interpret standards.  Fording is a bit confusing ont understand the introductory explanation.  For especific information and guidance should be given to help schools navigate how he transition into the new standards from grade to grade should be executed. There eems to be a great deal more spiraling throughout grade levels, which is an excellent crategy. However, we need specific guidance on how to transition effectively so that undents are not experiencing gaps. This also means that teachers need to be held eccountable for teaching science in elementary grades, and not merely though the	yes no no no no no	comment  comment  comment  comment  comment  comment  comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
re 380   386   FC   389   FC   389   Tr   387   Tr   389   th   416   im   430   it   435   Ac   451   W   466   DC   M   th   se   st   st   st   ac   us	eference the crosscutting concepts too.  cormerly known as the scientific method? What is with this wording?  the need for examples of crosscutting concepts should be moved to the Appendix.  the Introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles.  Inages are useful  is even a bit long.  did some more detail about how to age appropriately interpret standards.  I	yes no no no no no	comment  comment  comment  comment  comment  comment  comment  comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
re 380   386   FC   387   387   387   389   th   416   im   430   it   435   Ac   451   W   466   DC   M   th   se   st   st   ac   us	ormerly known as the scientific method? What is with this wording?  the need for examples of crosscutting concepts should be moved to the Appendix.  the Introduction makes sense, however there is no consistency within the breadth of the standards that reflects the NGSS principles.  The nages are useful is even a bit long.  dd some more detail about how to age appropriately interpret standards.  Fording is a bit confusing ont understand the introductory explanation.  For especific information and guidance should be given to help schools navigate how he transition into the new standards from grade to grade should be executed. There eems to be a great deal more spiraling throughout grade levels, which is an excellent crategy. However, we need specific guidance on how to transition effectively so that undents are not experiencing gaps. This also means that teachers need to be held eccountable for teaching science in elementary grades, and not merely though the	yes no no no no no	comment  comment  comment  comment  comment  comment  comment  comment  instruction and	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
re 380   See 5   See 5	eference the crosscutting concepts too.  commerly known as the scientific method? What is with this wording?  the need for examples of crosscutting concepts should be moved to the Appendix.  the Introduction makes sense, however there is no consistency within the breadth of ne standards that reflects the NGSS principles.  Inages are useful is seven a bit long.  Indoor of the standards that reflects the NGSS principles is seven a bit long.  Indoor of the standards is seven a bit long.  Indoor of the standards is seven a bit confusing on ont understand the introductory explanation.  Incore specific information and guidance should be given to help schools navigate how the transition into the new standards from grade to grade should be executed. There seems to be a great deal more spiraling throughout grade levels, which is an excellent crategy. However, we need specific guidance on how to transition effectively so that cudents are not experiencing gaps. This also means that teachers need to be held excountable for teaching science in elementary grades, and not merely though the see of informational/expository text. Students must experience science through inquiry.	yes no no no no no	comment  comment	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.
re 380   386   56   387   387   71   387   71   389   th 416   im 430   lt 435   A4   451   W 466   D6   56   56   56   56   56   56	ormerly known as the scientific method? What is with this wording? he need for examples of crosscutting concepts should be moved to the Appendix. he Introduction makes sense, however there is no consistency within the breadth of he standards that reflects the NGSS principles. hages are useful is even a bit long. dd some more detail about how to age appropriately interpret standards.  Vording is a bit confusing o not understand the introductory explanation. Hore specific information and guidance should be given to help schools navigate how he transition into the new standards from grade to grade should be executed. There exems to be a great deal more spiraling throughout grade levels, which is an excellent crategy. However, we need specific guidance on how to transition effectively so that rudents are not experiencing gaps. This also means that teachers need to be held excountable for teaching science in elementary grades, and not merely though the se of informational/expository text. Students must experience science through inquiry.	No yes no no no no no no no no	comment  comment  comment  comment  comment  comment  comment  comment  instruction and	see comment 163	Referenced crosscutting concepts and standards will be addressed in the concept box.

			1		
	This is clear and communicates the ideas behind the cross cutting concepts, core				
	ideas, science and engineering practices as well as the intention of the standards to				
	not be the curriculum or instructionMINUS the key concepts that were added				
512	during the internal review.	no	comment		
	The time allocation is not fully reasonable in most classroom days Science and Social				
	Studies need to be alternated or the 45 minute block needs to be split between them.				
516	'	no	comment		
527	It's written clearly.	no	comment		
	I can understand it but I was on the committee and was specifically educated on the				
530	graphic and the rationale.	no	comment		
	Perfect	no	comment		
	Lengthy.	no	comment		
1001		no	comment		
		110	comment		
	Scientific standards should be based on scientific research and nothing else. Replacing				
	and watering down the proven science of evolution is a disservice to our kids, a				
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO				
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				
1008		no	comment		see comment 56
1017	The referenced to evolution must be reinstated.	no	comment		
	1.Page 1, introduction, 2nd para, 1st sentence, last two words (and various places				
	throughout text) - material world is a better descriptor, includes human created				
	phenomenon not typically found in the natural world.2.Page 3, 1st para, 1st				
	sentence (and various places throughout the text) - 'Suggest deleting Formerly				
	known as the scientific method, What is described in this section as science and				
	engineering practices is a much broader process than the scientific method which is				
	more narrowly limited to the observation and description of phenomena; use of				
	hypotheses to explain phenomena, make predictions and quantify new observations;				
	and use of properly performed and independent experimental tests of the				
	predictions. This practices within the scientific method are not replaced by the				
	described science and engineering practices, but rather are an essential methodology				
	utilized within that process. 3.Page 4 Table Core Ideas for Knowing Science P4 (and				
	various places throughout the text) - As written this core idea does not well reflect				
	what is given as one of the big ideas of science education â€" that the total amount of				
	energy in the Universe remains the same and that energy can neither be created or				
	destroyed. Suggest deleting the added phrase in a closed system' or changing it to 'in				
	the Universe. '4.Page 4 Table Core Ideas for Knowing Science L4 (and various places			#1 - keep as is and	
	throughout the text) - The suggested rewording in 1.4 changes the meaning of the			refer to Big Idea. #2 -	
	statement and should be removed. The original statement succinctly communicated			see comment 143 3.	
	that evolution is responsible for organism unity and diversity. This is current accepted			Remove the phrase	
	· · · · · · · · · · · · · · · · · · ·			"in a colsed system" 4.	
	scientific theory. It is an important organizing concept in scientific research and our			See commetn 56 5.	
	understanding of the natural world. As such it is appropriate to include in life science			Remove the word	
	standards. The revised language in 1.4 misconstrues what the theory of evolution is as			"purpose" from U1 or	
	well uses the word theory in a way that is inconsistent with established scientific			ideas pg 4. Remove	
	meaning. 5.Page 4 Table Core Ideas for Using Science U1 (and various places			the words both	
	throughout the text) - It is generally understood that the purpose of science is to			"postiive and negative"	
1020	explain phenomena and (sometimes) predict not necessarily to always find the cause	yes	Comment	from U4 pg 4	
	This section: One example of a crosscutting concept can be seen within patterns.	,		, ,	
	Patterns are present in all science disciplines and much of science is about explaining				
	observed patterns. In life sciences, classification systems represent patterns. In				
	physical sciences, atomic structure is a pattern. In earth and space sciences, tectonic				
	processes follow a pattern. Using graphs, charts, maps, and statistics in combination				
	with the science and engineering practices, students can use their knowledge of				
	patterns to formulate investigations, answer questions, and make informed				
	predictions about observed phenomena. Is muddled and meaningless. What is a				
	teacher supposed to do with that? atomic structure is a pattern is not something any				
	physicist has said ever. Does the author think this is an episode of Numb3rs?				
		Al.			5
1025	to the state of th	No	Comment		See comment 163
1030	too confusing	No	Comment		

i	It provides enough information if one comes with a let of background knowledge.		1		
1022	It provides enough information if one comes with a lot of background knowledge. I	N	C		
	hope ADE provides training.	No	Comment		
	It needs to show how propaganda has seeped into the standards.	No	Comment		
1048	It is sufficient.	No	Comment		
	1.Page 2. I do like the addition of the discussion of patterns as a crosscutting				
	concept.2.Page 3. The addition of 'Formally known as the scientific method' detracts				
	from the significance of 'science and engineering practices.' As a scientist and science				
	educator, the use of the term scientific method implied that science was like a recipe,				
	going step by step. This is far from how real science is done.3.One thing that I failed				
	to have incorporated into the original draft of the Science Standards (I was on the				
	Standards Committee as well as the NGSS review). In the 40 or so years that I have				
	been a practicing scientist, I never asked a question or defined a problem without first				
	making an observation. In the Framework and NGSS they go so far to use the example				
	of asking the question 'Why is the sky blue?' How can you ask that question without				
	having first made an observation?4.Page 4: The individuals who edited what was				
	presented to them by the Standards Committee clearly do not have an understanding				
	of what a theory is. A theory is based on evidence, not belief!! Evolution is real. There				
	are important details that we are trying to understand: gradual evolution vs.				
	punctuated evolution. Bacteria have gradually evolved to become resistant to				
	antibiotics. Ask the dinosaurs about punctuated evolution! There is a theory called				
	gravitational theory. Gravity is real and the predictions of Einstein, based on				
	observational evidence, have supported his General Theory of Relativity, but there are				
	still experiments going on. 5.Page 9, etc. As others have written, I am not happy with				
	the addition of the 'Key Concepts' column. As has been stated by others, these are				
	just words without connection to crosscutting concepts and as such become a				
	checklist without a deeper understanding of learning.6.In general, because of my				
	area of expertise, I will limit my comments to Earth and Space Science.				
				2. See comment 143 3.	
				Lacks clarity 4. See	
1050		Yes	Core Ideas	comment 56.	5. In progress of edit
	I previously alluded to the confusion caused by writing refer to standard in the				
	standard. Refer to what? This lack of appropriate detail is very harmful to the overall				
	fintegrity of this enormous effort. Critically, under Core ideas for knowing Science point				
	integrity of this enormous effort.Critically, under Core Ideas for Knowing Science point L4 should be strengthened in scope and in direct language. Replace seeks to make				
	L4 should be strengthened in scope and in direct language. Replace seeks to make				
	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the				
1081	L4 should be strengthened in scope and in direct language. Replace seeks to make		Core Ideas	See comment 56	
1081 1082	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.	Yes	Core Ideas	See comment 56	
	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.		Core Ideas	See comment 56	
	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological	Yes	Core Ideas	See comment 56	
	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.	Yes	Core Ideas	See comment 56  See Comment 56	
1082	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.	Yes No			
1082 1085	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all	Yes No			
1082 1085	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate.	Yes No			
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1082 1085	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate.	Yes No Yes	Core Idea		Not enough clarity
1082	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate. It seems like those will need to be doubled or tripled in order for teachers to now teach all of the vocabulary out of context.	Yes No			Not enough clarity
1082 1085 1092	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate. It seems like those will need to be doubled or tripled in order for teachers to now teach all of the vocabulary out of context.  I am not a teacher, but believe it is important to include the teaching of evolution as	Yes No Yes	Core Idea		Not enough clarity
1082 1085 1092	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate. It seems like those will need to be doubled or tripled in order for teachers to now teach all of the vocabulary out of context.  I am not a teacher, but believe it is important to include the teaching of evolution as appropriate at every level.	Yes No Yes	Core Idea	See Comment 56	Not enough clarity
1082 1085 1092 1095	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate. It seems like those will need to be doubled or tripled in order for teachers to now teach all of the vocabulary out of context.  I am not a teacher, but believe it is important to include the teaching of evolution as appropriate at every level.  This section would benefit from examples of how the crosscutting concepts, core	Yes No Yes	Core Idea	See Comment 56	Not enough clarity
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1082 1085 1092 1095	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate. It seems like those will need to be doubled or tripled in order for teachers to now teach all of the vocabulary out of context.  I am not a teacher, but believe it is important to include the teaching of evolution as appropriate at every level.  This section would benefit from examples of how the crosscutting concepts, core ideas, and practices might be represented in a curriculum exemplar.	Yes No Yes No No No	Core Idea  Time  Core Idea  Curriculum - Resources	See Comment 56	Not enough clarity
1082 1085 1092 1095 1096 1133	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate. It seems like those will need to be doubled or tripled in order for teachers to now teach all of the vocabulary out of context.  I am not a teacher, but believe it is important to include the teaching of evolution as appropriate at every level.  This section would benefit from examples of how the crosscutting concepts, core ideas, and practices might be represented in a curriculum exemplar.	Yes No Yes No No No No	Core Idea  Time  Core Idea  Curriculum - Resources Comment	See Comment 56	Not enough clarity
1082 1085 1092 1095 1096 1133	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate. It seems like those will need to be doubled or tripled in order for teachers to now teach all of the vocabulary out of context.  I am not a teacher, but believe it is important to include the teaching of evolution as appropriate at every level.  This section would benefit from examples of how the crosscutting concepts, core ideas, and practices might be represented in a curriculum exemplar.  They are generally well set-up nothing to comment on by me	Yes No Yes No No No	Core Idea  Time  Core Idea  Curriculum - Resources	See Comment 56	Not enough clarity
1082 1085 1092 1095 1096 1133 1140	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate. It seems like those will need to be doubled or tripled in order for teachers to now teach all of the vocabulary out of context.  I am not a teacher, but believe it is important to include the teaching of evolution as appropriate at every level.  This section would benefit from examples of how the crosscutting concepts, core ideas, and practices might be represented in a curriculum exemplar.  They are generally well set-up nothing to comment on by me  The integration of science study, the nature of science, and technology, and the cross	Yes No Yes No No No No No No	Core Idea  Time  Core Idea  Curriculum - Resources  Comment  Comment	See Comment 56	Not enough clarity
1082 1085 1092 1095 1096 1133 1140	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate. It seems like those will need to be doubled or tripled in order for teachers to now teach all of the vocabulary out of context.  I am not a teacher, but believe it is important to include the teaching of evolution as appropriate at every level.  This section would benefit from examples of how the crosscutting concepts, core ideas, and practices might be represented in a curriculum exemplar.  They are generally well set-up nothing to comment on by me  The integration of science study, the nature of science, and technology, and the crosscutting concepts are well explained.	Yes No Yes No No No No No No No	Core Idea  Time  Core Idea  Curriculum - Resources Comment Comment	See Comment 56	Not enough clarity
1082 1085 1092 1095 1096 1133 1140 1164 1165	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate. It seems like those will need to be doubled or tripled in order for teachers to now teach all of the vocabulary out of context.  I am not a teacher, but believe it is important to include the teaching of evolution as appropriate at every level.  This section would benefit from examples of how the crosscutting concepts, core ideas, and practices might be represented in a curriculum exemplar.  They are generally well set-up nothing to comment on by me  The integration of science study, the nature of science, and technology, and the crosscutting concepts are well explained.  No comment	Yes No Yes No No No No No No	Core Idea  Time  Core Idea  Curriculum - Resources  Comment  Comment	See Comment 56	Not enough clarity
1082 1085 1092 1095 1096 1133 1140 1164 1165 1167	L4 should be strengthened in scope and in direct language. Replace seeks to make clear with explains. And change end of sentence to of organisms and the processes by which they speciate and evolve to fit their environments.  No comment.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.  Generally the introduction is strong and helps me understand the standards. With all the ADE additions, I question whether the time frames for instruction are appropriate. It seems like those will need to be doubled or tripled in order for teachers to now teach all of the vocabulary out of context.  I am not a teacher, but believe it is important to include the teaching of evolution as appropriate at every level.  This section would benefit from examples of how the crosscutting concepts, core ideas, and practices might be represented in a curriculum exemplar.  They are generally well set-up nothing to comment on by me  The integration of science study, the nature of science, and technology, and the crosscutting concepts are well explained.	Yes No Yes No No No No No No No	Core Idea  Time  Core Idea  Curriculum - Resources  Comment  Comment  Comment	See Comment 56	Not enough clarity

1100	Commence of the State Office below to the state of the St	N	lcht	ī	
1186	0, · · · · · · · · · · · · · · · · · ·	No	Chart		
	1.Page 2. I do like the addition of the discussion of patterns as a crosscutting				
	concept.2.Page 3. The addition of 'Formally known as the scientific method' detracts				
	from the significance of 'science and engineering practices.' As a scientist and science				
	educator, the use of the term scientific method implied that science was like a recipe,				
	going step by step. This is far from how real science is done.3.One thing that I failed				
	to have incorporated into the original draft of the Science Standards (I was on the				
	Standards Committee as well as the NGSS review). In the 40 or so years that I have				
	been a practicing scientist, I never asked a question or defined a problem without first				
	making an observation. In the Framework and NGSS they go so far to use the example				
	of asking the question 'Why is the sky blue?' How can you ask that question without				
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	antibiotics. Ask the dinosaurs about punctuated evolution! There is a theory called				
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	observational evidence, have supported his General Theory of Relativity, but there are				
	still experiments going on. 5.Page 9, etc. As others have written, I am not happy with				
	the addition of the 'Key Concepts' column. As has been stated by others, these are				
	just words without connection to crosscutting concepts and as such become a				
	checklist without a deeper understanding of learning.6.In general, because of my				
	area of expertise, I will limit my comments to Earth and Space Science.Because of the				
	setup of this form and the fact that I have received a message that my session will end				
	soon. I will call this done and redo this at a time I can input all of my comments.				
	, , ,				
	There does not seem to be a way to save and return, just done.				
1210		Yes	Core Ideas	See comment 1050	
1219	Get rid of intelligent design. Restore references to evolution.	No	Comment		
1221	Again it is to broad to understand exactly what they want.	No	Comment		
1222	Can be improved	No	Comment		
1223	Get rid of intelligent design. Restore references to evolution.	No	Comment		
		No	Comment		
	The theory of evolution needs to be taught in school. Colleges expect students				
	understand and be educated on this subject, and so many careers. Deleting the word				
1237	and using analogies is childish and immature.	No	Comment		
		No			
	I'd have appreciated a bit more detail but I realize how difficult that can while				
1252	maintaining readability, be so it's not a big deal.	No	Comment		
	As a former educator I don't see information on how the standards are intended to be				
1259		No	Curriculum-Resources		
1233	It does not include an understanding of the progression of standards but is thorough	-			
1	and provides a solid overview of the standards and how to use them.				
1278	and provides a solid overview of the standards and now to use them.	NO	Standards		
	Agree	No	Comment		
1207	The introduction has unnecessary information that takes away from the design and	140	Comment		
1201	· · · · · · · · · · · · · · · · · · ·	No	Organiztion		What information?
1291	implementation	No	Organiztion		vviiat iiiiOiiildtiOiif
1222	The introduction under the Life, Physical and Earth and Space Science is not	NI-	C		Not found in internal ration
1293	necessary.	No	Comment		Not found in introduction
1	It provides enough information to know that these are inadequate, politically driven	N.			
1303	standards.	No	Comment	1	

	The following paragraph needs adjustment: One example of a crosscutting concept			
	can be seen within patterns. Patterns are present in all science disciplines and much			
	of science is about explaining observed patterns. In life sciences, classification systems			
	represent patterns. In physical sciences, atomic structure is a pattern. In earth and			
	space sciences, tectonic processes follow a pattern. Using graphs, charts, maps, and			
	statistics in combination with the science and engineering practices, students can use			
	their knowledge of patterns to formulate investigations, answer questions, and make			
	informed predictions about observed phenomena. Classification systems are a result			
	of patterns, not a representation. In all science disciplines, patterns are used in			
	conjunction with data to form an explanation for observed behavior or make a			
	prediction of future behavior. The use of the phrase The science and engineering			
	practices, formerly the scientific method is misleading. Scientists use science			
	practices, not a set method for each experiment. The use of the term scientific			
	method has not been a part of professional scientific practice for decades.			
	· ·			
	· ·			
1305		Yes	CCC	 See comment 163
	The sheer willful ignorance of removing Evolution from the curriculum is mind			 
	bogling. It would put Az students at a vast disadvantage when moving to higher			
	education. If the superintendent's intention is to replace evolutionary theory with			
	intelligent design she should be removed from office and barred from working in			
1211	education for life. Do jot do this.	No	Comment	See comment 56
1511		INU	Continent	Dee Comment 30
	While the introduction appears to mirror the NGSS Standards and NRC Framework,			
	edits such as formerly known as the scientific method, the science and engineering			
	practices illustrate deep ignorance of how scientific practices, from field work to			
	argumentation with evidence, represent a profound shift in understanding of how			
	scientific knowledge is constructed. There never has been the scientific method,			
	despite the stereotypical belief that hypothesis testing is the only method to be			
	taught and learned.			
1315		No	Comment	
1515	I found the Internal Review additions to greatly improve the Introduction section.	140	Comment	
1337		No	Comment	
1557		NO	Comment	
	They do not explain what the process was and who implemented the changes			
	regarding the elimination and playing down of evolution. These changes cannot be			
	accepted. I see no explanation here as to why these changes were made.			
1339		No	Comment	
	This introduction is slightly better than the 2004 standards, but it will not prepare		Professional	
1341	teachers to understand 3-dimensional implementation.	No	Develoment	
	The difference in high school essential standards and standards plus is not clear.2.			
	It is incorrect to refer to the science and engineering practices as formerly the			
	,			
	scientific method 3. I do not believe the following disclaimer is enough to prevent			
	many teachers from using the key concepts as performance objectives, just like the			
	current flawed standard lists. Suggestions for key concepts and connections to other			
	content area standards are included to assist teachers when implementing the			
	Science Standards and are not intended to be the minimum or maximum content			
	limits.			1. Committe with ADE should make a solution to solve the confusion 2. See
1342	<u>,                                    </u>	Yes	Introduction	comment 143 3. See comment 380
1348	Do not alter the standards to weaken true science re: evolution, etc.	No	Comment	
	Original language should remain	No	Comment	
	It is very comprehensive.	No	Comment	
13/0		INO	Continent	
	While I support the removal of the term scientific method , the very wordy			
	replacement, repeated multiple times throughout the document, needs to be			
1384	rethought.	No	Comment	Lacks clarity of "wordy replacement"
1403	Teach evolution. Evolution is science.	No	Comment	 
	The Key Concepts column makes sense. It gives teachers some direction on where to			 
	go with the standard. Without them, we would struggle to come up with reasonable			
	test questions. If I cover waves with light and someone else covers them with springs,			
	the state testing might be confusing for one group or the other.			
111	THE STATE COURS THEFT DE CONTUSINE FOI ONE KIUUD UI LITE ULITEI.	1	1	
1408		No	Key Concepts	See comment 380

	Dear and the second of the sec		1	1	
	If the state allows teaching creationism, they will also have to teach other religion's				
	creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the Maya				
	creation myth, humans are created out of corn.	No	Comment		
1443	No much difference between 2014 and current	No	Comment		
	I have spent some time in the A Framework for K–12 Science Education that I				
	believe these new standards were based on. Someone who has not done so is not				
	likely to understand the difference between big ideas and key concepts unless				
	training are administered or teachers are given more time to review standards before		Professional		
1449	teaching them next year.	No	Develoment		
	I am concerned you didn't even have the expertise to correctly describe the Earth's				
	crust on a public document. I'd be embarrassedtruly I feel for you. Like I saidWhat				
	I am understanding is that we've got teachers with limited knowledge of science				
	writing this curriculum and if that's what you're trying to convey than you did it! Nice!				
	But I don't think that's what you're trying to do. I'd do it for free honestlyI'd review				
	your science materials because I actually care about the children and what they learn.				
	I've definitely got the expertise to write all the Earth Science and Space Science here.				
	If we definitely got the expertise to write all the Earth Science and Space Science here.				
1464		No	Comment		
1464	Mu general comments are included provinced and analytic that	INU	Comment	-	
1 404	My general comments are included previously and apply to the various grade levels.	N-			
1481		No	Comment		
	Evolution should be taught, clearly, in our schools. Anything otherwise is a violation of				
	the separation of church and state.	No	Comment		see comment 56
1485	Organization is okay.	No	Organization		
	I appreciate the attempts to include a broader understanding of the scientific process				
	in the standards, however I do not see that well-reflected in the standards				Science and Engineering pracices are reflected in the introduction as part of 3-
1515	themselves.	No	Comment on SEPs		dimensional learning
1518	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.	No	Comment		see comment 56
	The introduction is clear about how the standards are organized and the importance				
	of the intertwining of core ideas, crosscutting concepts, and scientific practices.				
1538		No	Organization		
1547	Removal/replacement/minimizing evolution is completely unacceptable.	No	Comment		see comment 56
1553	Again, the framing of the verbage is sneaky and backhanded	No	Comment		
1556	Needs to be redrafted to remove intelligent design options.	No	Comment		
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL				
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.				
1575		No	Comment		see comment 56
	Adding and maintaining teaching Evolution needs to be continued.	No	Comment		see comment 56
	There is way too much information that is cluttering up these standards. It is hard to				
	see what is going on and where to start and where to finish. Take a look at New York				
	State standards they are much clearer on what the teacher should be looking at.				
	http://www.p12.nysed.gov/ciai/mst/sci/documents/p-12-science-learning-				
	standards.pdf				
1595	1	No			Arizona Board of Education Directive
	Evolution. PUT IT BACK.	No	Comment		see comment 56
1003	I have concerns about the number of minutes per week listed for teaching science.	140	Comment		see comment 50
	'				
	There are many opportunities for integrating science instruction with reading, writing,				
	and mathematics and the table of minutes does not make clear if this type of				
	integration into other subject areas can be included in number of minutes specified.				
	Especially in schools with half day kindergarten, devoting 90 minutes a week solely to				
	science instruction is not realistic, unless those minutes can be counted as part of an				
	integrated study of reading, writing, and math.			Possible to suggestion	
1605		Yes	Time	to reword pg 6 of intro	Time allotment and implimentation are local control
	Teach Science and facts in Schools not faith and religion.	No	Comment		see comment 56
	No. Too complicated.	No		ļ	Too broad
1641	,	No			
	No comment.	No			
1664	See comment #9	No			

	The unity and diversity of organisms, living and extinct, is the result of evolution. Is				
	clearly the more scientific supported statement and should remain. Removing it				
	would obfuscate the intent of science class in that it would be unclear if teachers are				
	supposed to teach science as it is best understood or adhere to religious opinion.				
1678	- '	No	Comment		see comment 56
	I saw no issues with the changes made to the introduction. I feel it provided more				
1681	clarity.	No	Comment		
	They are satisfactory.	No	Comment		
	Science doesn't require belief. It requires facts. It can be proven and that proof can be				
1694	repeated.	No	Comment		
	The introduction states, Standards are what a student needs to know, understand,				
	and be able to do by the end of each grade. They build across grade levels in a				
	progression of increasing understanding and through a range of cognitive demand				
	levels. While clearly stated, the standards themselves are not nearly comprehensive				
	enough or rigorous enough. You must give more performance related objectives in				
	order for the local districts to develop year long curricula.				Adding PO's was not the intent of the revision. Addition of "learning
1709	order for the local districts to develop year long curricula.	Yes	Standards	No changes	progression may help with clarity. Curriculum and instruction is local control.
1703	To step away from normative terms such as evolution without justifying or in effect	ies	Standards	NO changes	progression may help with clarity. Curriculum and instruction is local control.
	· · ·				
4750	disproving evolution calls into question the method by which the standards were		C		
	designed	No	Comment		see comment 56
	It's acceptable.	No	Comment		
	Please do not muddy the language regarding evolution	No	Comment		see comment 56
1799	Teach Science	No	Comment		
	The original document, before internal review, provided the necessary background				
	about what core concepts were expected in science education.				
1800		No	Core Ideas		Too broad; lacks clarity
	Revert all of Diane Douglas's changes.	No	Comment		
	Continue to teach evolution. Do not remove it to teach creationism	No	Comment		see comment 56
1890	Could use some work	No	Comment		
	These are moronic standards. They are a true disservice to students and educators.				
	Look to Bertha Vasquez who teaches in the Miami, FL school system. She works with				
	Richard Dawkins on teaching evolutionary science to her kids.				
1892					
	The vast majority of the introduction seems well designed, however the actual				
	standards don't seem to completely reflect this. In particular, HS.E2U2.17 doesn't				
	provide specific guidance with regard to theories and scientific evidence surrounding				
	the origin of the universe and HS.L4U2.31 fails to do the same with regard to				
	biological evolution. This leaves the core ideas unsupported. If standards are what a				
	student needs to know, understand, and be able to do , then they should be				
	elaborated upon much more specifically. For example, the Key Concepts listed under				
	HS.L4U2.31 includes artificial but not natural selection.				
1893					
	Yes. They are sufficiently informative. However, throughout the document, the				
	science and engineering practices are followed by the statement: formerly known as				
	the scientific method . This is not the case and the Framework makes this very clear.				
	These are different approaches and should not be conflated. By using this term, it				
	makes it look like we just changed the name. This is absolutely not the case. I would				
	refer the committee to this 2-page summary: http://stemteachingtools.org/brief/32				
1916	2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -				
	Refer to my response to question 17				
	Refer to my response to question 17.				

	Evolution is an accepted theory of science. The striking of this word and replacing it		
	with more generic terminology is misleading and weakens the standards. The		
	redefining of evolution as seeks to make clear the unity and diversity of living and		
	extinct organisms is meaningless and not in alignment with accepted scientific		
	thinking. The term and definition of evolution should remain as is. The reason for		
	renaming of the scientific method to science and engineering is dubious and is not in		
	alignment with accepted scientific thinking. The scientific method is a process by		
	which facts demonstrate proof to validate or disqualify any scientific theory. The term		
	scientific method should remain as is. The elimination of the scientific theory of the		
	origin of the universe, known as the Big Bang is also dubious and not in alignment		
	with accepted scientific thinking. References to the Big Bang should remain as is.The		
	changes outlined above weaken the Arizona K-12 science standards and moves us		
	away from creating a system that provided world-class education. I oppose these		
	changes.		
1922			
152	For someone new to this process, all is very long and not very concrete. I like that the		
	difference between curriculum and standards was explained, for example, but it's not		
	clear to me how much more 'curriculum' the teachers have the freedom to develop		
	given the amount and detail of the standards, which don't just include topics but		
	detailed instructions on what activities the students are supposed to perform.Other		
	specific comments:Page 3, Science and Engineering PracticesThe scientific and		
	engineering practices included in the standards are not 'formerly known as the		
	scientific method'. 'The scientific method' is a formal, specific process founded in the		
	philosophy of science and sometimes known as 'strong inference'. It is the gold		
	standard for how conclusions are drawn, and while many of the practices listed here		
	are in practice relevant, they are not part of the formal scientific method. The		
	scientific method or 'strong inference' method of reasoning requires at its core		
	multiple hypotheses, not a single one, so the next line should be revised to read		
	'hypotheses' if it is included at all.Page 4: Core ideas tableL4: 'the theory of evolution'		
	does not 'make clear' the unity and diversity of organisms, but instead provides an		
	explanation for it. Providing causal explanation is not the same as simply clarifying		
	that diversity exists, which anyway is done by finding lots of different organisms, not		
	by any theory.U3: Why don't you think that 'products' should 'serve human ends'?		
	U4: What are the negative implications of science? Summary table on page 20Why		
	are there no examples for U3, knowledge produced by science is useful for products,		
	in the life science standards? Plenty of examples to choose from, including		
	communicable diseases, medical diagnoses and treatments, agriculture practices,		
	food production and consumption.		
400			
1929			
4034	Vague and misleading regarding Life Science teaching Evolution as a widely accepted		
1930	0 theory in science.		
40	Needs to include consideration of what science CANNOT explain, so that students will		
1945	5 realize the limitations of science.		
	Evolution, not intelligent design, is based in science. Science, not religion, should be		
	5 taught in science classes.		
2008	8 seems fine		

	Basically a good introduction. I take strong exception to the comments on pg 3 that			
	states that the Scientific Method promoting a hypothesis that is tested and then			
	concluded is a linear process. Obviously, the person who wrote that has never			
	performed scientific experiments. And on page 4, the idea that evolution is a theory			
	and that everything has positive and negative effects must be removed. They are			
	both erroneous statements of bias. And tell me, when are products made that do			
	not serve human ends? On page 6 the Dept of Education starts replacing the word			
	Core with Essential - that should be changed back because it again shows a bias and			
	does not reflect an unbiased approach to the need for imparting scientific knowledge			
	to students.			
2013				
	Insufficient detail on scientific concepts.			
	Please revise L4 Evolution theory statement.			
2036	It is understandable.			
2043	All standards need to be included.			
	For high school students, the paragraph on p. 62 states: 'Students in high school			
	should have access to up-to-date information in the field while simultaneously gaining			
	understanding of the historical developments which shaped today's understandings			
	within the field. The Standards for life science encompass the areas of cells and			
	organisms; ecosystems, interactions, energy and dynamics; heredity; and biological			
	diversity.' However, it seems to me that students are expected to understand			
	biological diversity without really knowing how it comes to be. Below the			
	introductory paragraph on p. 63 is a multicolored table. The header on the left of this			
	table appears to summarize, 'The Life Sciences Essential Standards (LSES) (that) are			
	intended for ALL students to learn across 3 credits of high school science courses.'			
	The numbers of these essential standards devoted to different topics within the			
	·			
	entirety of life sciences (pp. 63-68) are: Ecosystems: 2; Cells and organisms: 8;			
	Genetics: 3; Evolution: 1.I find it interesting that all of biology can be captured for			
	high school students with such brevity, but this is how it seems. However, it is even			
	more interesting that while Evolution is considered the most fundamental concept in			
	biology, the single standard on Evolution in the LSES (p. 68) is: 'Obtain, evaluate, and			
	communicate evidence that describes how inherited traits in a population can lead to			
	biological diversity.' This statement is incomplete in almost every way regarding the			
	consensus among biological scientists as to what evolution is and how it occurs.			
	Specifically, there is no mention of what natural selection is, how it works on traits			
	within and among populations of organisms, how it allows for particular heritable			
	traits to be transmitted among generations, and how it may lead to evolutionary			
	change. There are key concepts mentioned within the table that students are			
	supposed to master (e.g., adaptation, artificial selection, competition for mates,			
	coevolution), but there is no clear connection between the standards and how these			
	concepts will be understood.			
	·			
2060				
2062	No comment.			
	This wording is confusing: Phenomena are events or situations that are observed to			
	exist or happen, especially those whose causes or explanations are in question. The			
	causes or explanations are in question or are the causes and explanations unknown			
2093				
	It explains it but the details are hidden, which is wrong. The main point should be in			
2096	the introduction.			
2109	Easy to understand.			
	Evolution is referred to in a misleading way or is removed. This is unacceptable and			
	must be changed. Otherwise, the introduction does provide a useful overview.			
2112				
	ı		ı	I

	In general yes. However, some recent revisions muddy rather than clarify the		
	introduction, and in some cases are factually incorrect. For example: One example of		
	a crosscutting concept can be seen within patterns. Patterns are present in all science		
	disciplines and much of science is about explaining observed patterns. In life sciences,		
	1		
	classification systems represent patterns. No. Classification systems represent		
	evolution relationships among organism in simplified form. In other words, a		
	classification system represents a specific hypothesis of evolutionary relationships.		
	Classifications which merely represent patterns (such as an identification guide which		
	groups flowers by color) are rejected as unscientific. The distinction between artificial		
	and natural (process-based, scientific) patterns is a critical concept which the author		
	of the above revision apparently does not understand		
211	5		
	I have not read the full draft, so have no comment on this		
	We should only be covering evolution in school. Creationism should be kept separate		
215	2 from schools.		
213.			
	Overall the introduction is written well. Changes that need to be made:Pg. 3 delete		
I	formerly known as the scientific method . The practices should not be reduced to a		
	single set of procedures. Possible solution: delete the wording formerly known as		
	scientific method . If a desire to include additional information, insert which includes		
	discussion and use of scientific methods after science and engineering practices .		
	This can be done throughout the document where the words formerly known as		
	scientific method are written in each grade level introductions.		
215	5		
	Understanding the theory of evolution is critical to the fields of medicine, biology, and		
219	applied science like agriculture.		
	Understanding evolution is critical to the fields of medicine, biology, and applied		
220	B science like agriculture.		
	Send the standards back for review.		
226.	Explain evolution.		
	Include more information on Evolution, and omit all mention of Intelligent Design .		
226			
227	Sad but it does say how it should be implemented		
	Teaching creationism, or the misnamed intelligent design, is a violation of the		
	separation of church and state. If you want your kid to learn fantasy send him to		
	Sunday school. Public schools are for fact based subjects that our kids will need to		
	navigate the future, not the failed, undefined, and contradictory philosophies		
227	responsible for most of the earths problems.		
	4 Quite clear as it was written originally. The changes are not clear		
	Not commenting here because my complaint is about Diane Douglas trying to sneak in		
	creationism and Intelligent Design into the state science standards.		
220			
230			
300	Understanding the theory of evolution is critical to the fields of medicine, biology, and		
232	2 more.		
	The removal of facts about evolution has rendered this entire 2018 Science Standard		
	Draft a joke and until this is completely revised and EVOLUTION which is based on		
	substantial facts and evidence is restored its useless. I have no problems with		
	mentioning that Christianity believes otherwise in INTELLIGENT DESIGN but that this		
234	is not supported by facts and evidence.		
	Scrap and start over. Too many bubble concepts. Do you really need an 85 page		
234	document?		
2354			
233	Refer to the Next Generation Science Standards. They NGSS are good standards.		
226	4 These are not.		
2376	Needs to go back to review.		
238	The standards must be reviewed to include elements that are taught in other states.		
			1

		1	
	The introduction is confusing. While the last set of standards was divided into 6		
	strands, this set has 10 core ideas, but they are linked to specific scientific domains,		
	i.e., physical science, life science, earth and space science. The inquiry process has		
2387	been removed as a core idea.		
	It needs review.		
	Why can't the state just adopt the NGSS Standards?		
2400	I Call for the restoration of the ASE's description of evolution, which is scientifically		
	accurate and pedagogically appropriate, unlike the proposed revision. Recommend		
	revisions to the treatment of evolution in passages that seem to have been similarly		
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may		
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)		
2419			
2425	As sent by the 111 science specialists in November 2017 (left unchanged).		
2428	The changes are unacceptable.		
	The introduction is helpful in understanding the purpose and thought process behind		
	the standards. I do worry that this is based on a lot of theory and not so much in		
2463	functional practice.		
	The introduction section gives a nod to the Framework for K-12 Science Education		
ĺ	and a three dimensional approach to science education. However, the core ideas (pg.		
	4) needs to be removed and replaced by disciplinary core ideas being used by the rest		
	· · · · · · · · · · · · · · · · · · ·		
	of the US. The knowing and using science borrowed from the United Kingdom and		
	does not reflect the most current research in science education. I am not sure how or		
	why these were selected. It will do our teachers and students a GRAVE disservice by		
	focusing on content and practices not used and supported by the rest of the nation.		
	Further, the emphasis of certain cross cutting concepts at grade levels also does a		
	disservice. These are meant to be transdisciplinary. More than one cross cutting		
	concept can be emphasized.		
2465	;		
2470	Engineering practices is not the same as scientific method.		
2471	a bit dense for average reader without science knowledge		
2487	Adequate		
	I like the separation of science instruction into three dimensions; it makes the		
	abstract ideas of science more concrete and organized, and shows their		
2499	interconnectedness.		
	See previous comments		
	It's fine.		
	Omitting information on change over time, evolution and the big bang theory,		
2520	completely negates the validity of this document.		
	Outside of previous language the directions are predominately clear.		
2333			
2540	I must reject all changes due to ending appropriate language regarding accepted scientific method		
2540	The Introduction provides a high level view of the concepts. It does not provide an		
1			
1	explanation of how the standards are designed or intended to be implemented. That		
	information would require volumes of content for each topic.		
2550			
	The science and engineering practices were not formerly known as the scientific		
2559	method.		
1	There are many things missing from these standards. Nature of Science is so		
1	important. I was hoping to see an improvement in this area, not just a glancing		
2567	explanation.	 	
2570	Language is confusing.		
2574	Good use of image and examples.		
2570	As a teacher, yes, I'm not sure about as a parent.		
23/3			
	I have not had the opportunity to read the introduction.		

				·
	I was appalled to read formerly known as the scientific method . The scientific			
	method remains the cornerstone of science and being dismissive of the term is not			
	helping! I felt the introduction went into too much detail with examples and was			
	overall too long-winded. I was glad that it refers to energy and matter, unfortunately			
	changes suggested later on in the document now break this reference by replacing			
	energy and matter with stability and change inappropriately where it's use was			
	correct before. I am curious who made these edits as they were clearly not made by			
	scientists.			
2605				
	Yes, the introduction is easy for me to read, but some may find the language or			
2610	format daunting.			
	As I read the introduction it is very reminiscent of the Framework. However, that is			
	not what I necessarily see with all the edits in the rest of the document.			
2611	•			
2011				
2645	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!			
2615	Evolution is real!			
	I disagree with the minimizing of the role Evolution plays in human history and			
	science education. It is not debated in the Science community. The science standards			
	of Arizona need to be compatible with modern scientific fact, not biases or religion. If			
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona			
	Department of Education will omit from Education. That is limiting future generations			
	of American thinkers, who face scientific truths of the world and use the scientific			
	method for progression of humanity. Please revise the k-12 science standards to fit			
	current scientific fact, so that future generations will posses the knowledge they have			
	_ · · · · · · · · · · · · · · · · · · ·			
	the right to recieve from their Education department. Thank you.			
2618				
	The introduction does a good job explaining the strands and the naming conventions.			
2619				
	The standards as revised by staff compromise their intent and therefore compromise			
	the ability of Arizona students to deal with the modern world.			
2624	· ·			
	The introduction is good, up until the point where it is edited to make the language			
26/12	on what evolution is and how it is to be taught less clear.			
2042	There is no mention of the scientifically accepted concepts of evolution or natural			
	selection. These are core concepts in biology that help explain vital parts of life			
	science. It is unacceptable to not include them.			
	It makes it seem like Science is an afterthought.			
	The introduction to each grade level is adequate at this time.			
2658				
	State additions help considerably. Before was too vague. A standard needs to be well-			
	defined. How it is taught and how kids' understanding is assessed is left to the			
2665	teachers as it should be.			
		1	1	

Survey					
Question	14. Please comment on the Appendices.	_			
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
38	Good inclusion of Science and Engineering practices.				
	Again, the internal review edits only damage the rigor and our ability to accurately				
65	teach real science concepts.				
66					
69	N/A				
80	again, no one cares				
89	Not needed				
	In the appendix about the practices:The scientific method and the scientific practices				
	are NOT the same thing. Remove any references to the scientific method. THE				
	scientific method does not exist; there are many scientific ways to answer questions,				
108	not just one.				
114	no comment	·			

	However I believe that L4 from the Core Ideas for Knowing Science needs to be			
	changed back into the correct wording from the Big Ideas that were used. The			
	diversity of organisms, living and extinct, is the result of evolution.			
143				
_	Appendix 1 It seems unethical to document that they are using the K-12 Framework			
	for Science Education and put all their own verbiage in for explaining the CCC. If they			
	are going to footnote it they should probably use the experts language. Appendix 2 is			
	perfect Appendix 3 page 77 P4 Should not be allowed to be modified from the original			
	statement. It should say: The total amount of energy in the Universe is always the			
	same but can transferred from on energy store to another during an event. Page 78			
	L4 Should be back to the original : The diversity of organisms, living and extinct, is the			
	result of evolution. Appendix 4 and 5 are good.			
145				
	The very fact that an appendix is even needed speaks to the need for revision of the			
	standards themselves. It reads more like a complex legal document than a solid			
	framework for core scientific knowledge acquisition and practice.			
152				
152	We should go back to the standards that the committee created and adopt those, not			
157	- · · · · · · · · · · · · · · · · · · ·			
157	Diane Douglas's internal review copy.			
	In general, the appendices are an excellent addition to the standards. Add a citation			
	to the ADE additions in Appendix 1. Remove the inappropriate ADE addition of			
	scientific method from Appendix 2. Please consult with appropriate experts in higher			
	education for all ADE changes made in Appendix 3 to ensure scientific accuracy and			
163	appropriateness.			
	Inaccuracy in the appendix regarding E1: This in turn leads to movement of the			
	plates which form the Earth's crust , PLEASE NOTE: THE PLATES ARE NOT JUST CRUST,			
	THEY ARE THE UPPER MANTLE AND THE CRUST, THIS IS CALLED THE LITHOSPHERE!			
	ALSO NOTE REDUCING THE CHANGES THAT OCCUR ON THE EARTH TO FORMATION			
	AND WEATHERING OF ROCK IS OVERSYMPLIFYING A VERY COMPLEX WORLD!			
171				
	in Appendix 3 with respect to Earth Science I strongly disagree with explanation of the			
	core ideas. For instance when it states that the plate of the earth are made up of the			
	crust: this is completely incorrect! The plates are composed of the lithosphere: the			
	· · · · · · · · · · · · · · · · · · ·			
	crust and the upper part of the mantle! And if simplifies climate as a result of energy			
	from the sun: there is a list of more than 30 things that affect climate, most of which			
	have nothing to do with the energy from the sun. And to reduce the processes that			
	occur on earth to the formation and weathering of rock is so shallow. So much for			
	breadth, depth and rigor of these standards. Once again to reduce all of geology,			
	meteorology and astronomy to two core ideas is just despicable. We live on the			
	Earth, we need to spend more time teaching our students the facts about the Earth.			
	Today much of what people know about the Earth comes from media, where the facts			
	are in question other portions of the appendices, at least the general parts are okay, I			
	cannot speak to the specific core ideas for physical science or life sciences.			
172				
	Needs to be written in form of objectives in a sentence			
100	We need more defined standards. Is an investigation a new term for designing an	+		
101	experiment?			
181	,		-	
	They should break it down into grade levels. It is extremely overwhelming to look at it			
	all as a whole.	-		
	needs to be labeled better			
	It is helpful			
	They are required, if you keep this as is.			
189	Better labeling would be helpful. More organized formatting.			
190	It's not user friendly or grade specific. To overwhelming and wordy.			
	They are not helpful for me because again, there are no examples of what this means,			
	exactly. Just more definitions, which is not helpful to me when I am planning a lesson.			
191				
		1	1	

		1	T
195	Explains and summarizes the core concepts and practices. Good examples and explanations.		
	yes, it explains and summarizes the the core concepts and practices.		
	Too complicated!! Should not require any appendices.		
200	I like the specific nature of the new science/engineering process. This will help align		
218	instruction across schools		
220	The Appendices provide greater details on the science and engineering practices.		
220			
	They are a good source for reference.		
	Fine.		
	Our team has questions about the DO in this area.		
250	The Appendices does not content to the content of the standards.		
	The overall map for each grade level bonding is good and the map linking other		
252	disciplines is organized.		
257	Appendices are always useful.		
	Appendix 1Pages 71-73Restore to what the teachers asked for. Remove the additions		
	by ADE.Appendix 3Pages 77-79Restore to what the teachers asked for. Remove the		
265	additions by ADE.		
	Awesome except strange and inaccurate wording of the evolution big ideal		
267			
	I particularly liked the section about crosscutting concepts as it lays out a few ideas		
269	and purpose of the focus.		
	Although, I would like more information to help me fully teach these topics.		
277			
	These should be in chart format to make it easier to reference.		
2/3	science vs engineering is goodHowever the other would be for scientists, not		
204			
284	teachers/students		
	They are very helpful and probably should be much more strongly referenced in the		
	introduction so they are not missed.		
	No comment.		
	Return language about evolution to original language		
	These are not what the committee created		
317	They seem to be adequate		
	There was more information in the Appendices which gave me a stronger		
	understanding of the science standards and what is to be implemented in the		
326	classroom.		
	The wording of the explanation of Core Idea L4 on page 78 is confusing and		
	inaccurate. First, the phrase 'are believed to' is used, which represents a fundamental		
	misunderstanding of the nature of scientific theory. Science does not deal in 'beliefs,'		
	but rather analysis and interpretation of empirical evidence. In fact, this is the only		
	instance in the whole document of the use of the word 'believe.' Secondly, while the		
	explanation would read better if the words 'are believed to' were deleted, 'Over		
	countless generations changes resulting from natural diversity within a species lead to		
	the selection of those individuals best suited to survive under certain conditions' is		
	still inaccurate. The generations are not 'countless,' which is a meaningless word. One		
	can, in fact, count generations. Also, the changes do not 'result from natural diversity,'		
	they are caused by random mutation, which in turn contributes to the cause of		
	genetic diversity within a species.		
328			
520	I didn't realize that they were even there at first so you may want to have a more		
	clear reference to them. Most educators will look at their section of the standards and		
331	little else.		
	Easy to follow.		
335	Lasy to tollow.	1	<u> </u>

	There are a couple specific wording changes that should be made: Any theory or				
	model is provisional and subject to revision in the light of new data even though it	1	1	1	
	may have led to predictions in accord with data in the past. This statement should say	1	1	1	
	any theory, model, or LAW is provisional because all science follows the same rules.	1	1	1	
	There any many scientific laws that have been overturned through the	1	1	1	
ł	_ · · · ·	1			
ł	years.Regarding L4: The theory of evolution seeks to make clear the unity and	1			
i	diversity of living and extinct organisms. Which states, changes are believed to lead	1	1	1	
1	to I see no other laws theories or models that use the phrase are believed to.	1	1	1	
i	Please change the wording to be consistent. For instance, Gravity is believed to	1	1	1	
i	cause objects to fall and According to Coulomb's law, it is believed that opposite	1	1	1	
i	charges repel and like charges attract. Or remove the phrase in the statement on	1	1	1	
i	evolution.	1	1	1	
342		1	1	1	
	I feel the appendices should be made to match each specific grade level.				
343		<del></del>			
252	The Appendices is very lengthy and not an easy read. Maybe one or two sentences to	1			
352	get the point across.	<del></del>		<del>                                     </del>	
	The purpose of the appendices is unclear. Are, for example, the P1 core ideas what	1	1	1	
	every students should know and this is where assessment will be pulled from? (which	1	1	1	
354	would be awesome)	<u> </u>			
	#2 is especially helpful to think about the differences between science and		1	1	
1	engineering. #3 can guide middle school and high school teachers of other subjects	1	1	1	
355	integrate science.	1	1	1	
	The appendices would benefit from having the information in a graphic format more				
ĺ	than just text. Use of charts or tables would help make the appendices are more	1			
250	· · · · · · · · · · · · · · · · · · ·	1			
358	3 effective resource	<del> </del>			
1	It would be helpful if the appendices were to be specific to each grade level rather	1	1	1	
359	than a general statement for all.	<b></b>			
i	The appendices provide additional information on the cross cutting ideas, science and	1	1	1	
360	engineering practices and core ideas.	1		1	
ĺ	Explains all the different parts of the science curriculum and the components of the				
362	standards draft.	1			
	The appendices are a useful tool for understanding. They are one of the few parts of				
ĺ	the standards that I feel like give practical examples of what these ideas *look like* in	1			
365	a classroom.	1			
303				<del>                                     </del>	
200	I believe the appendices add understanding by distinguishing between science and	1			
366	engineering practices in pages 74-78.	<b></b>		<u> </u>	
ł	I believe the appendices add understanding by distinguishing between science and	1			
	engineering practices in pages 74-78				
376	They are fine statements, but not necessarily super helpful.				
İ	The Framework for K-12 Science Education and the Working with the Big Ideas of	1	1	1	
378	Science Education was a smart decision.	1	1	1	
	Would like to see Nature of Science information .				
	The cross curricular references to ELA and Math are extremely useful for students to				
387	learn all concepts across all areas.	1	1	1	
	I don't care			<u> </u>	
		<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	
497	Appendices are vital to understand the standards	f	<del> </del>	<del>                                     </del>	
İ	The words that were added in green, in quotation marks here are unnecessary and	1	1	1	
l	aren't indicative of actual science stating the words believed to lead are not a	1	1	1	
l	scientific statement and should be removed as in the original draft. Over countless	1	1	1	
İ	generations changes resulting from natural diversity within a species are believed to	1	1	1	
i	lead to the selection of those individuals	1	1	1	
512	4	1	1	1	
550	Perfect				
1001					
	Scientific standards should be based on scientific research and nothing else. Replacing				
l	and watering down the proven science of evolution is a disservice to our kids, a	1	1	1	
1		1	1	1	
1	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO	Í	1	1	
		1		l .	
1008	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				

As any to a programme, their activations as the communities of the common of 11 st. 4.00 May by 7.77 paragraph Ar ex comment 19 - 45.3 May by 7.77 paragraph Ar		27 8		
Comment 19 - 48 - 30 Dates 27 9. The paragraph 6" ere comment 19 - 48.3 Bage 80, 3rd 1010 till garagraph 6" ere comment 19 - 48.5 As with much of this document, before define the Appendices were clear an condition, the effect sold orime-example within to pain clearly or rigo, and at time seem because the world is too large and complex to comprehend all at once, unless one were trying to undermine students perception of our knowledge of the world.  1075 1080 1090 1090 1090 1090 1090 1090 1090		27. Plage 75, 1st paragraph, first sentence â€" see comment 19 - #2.28. Plage 78, 5th		
1000 full paragraph 84 "see comment 19 - 86.  As with mixed of this document, before editing the Appendices were clear an concise. The otits and unnecessary workings with no gain in Centry or rigor, and at time scenn grared toward weakening science. For example, be either collection of excess the world is tool rape and complex to commenter and at conce, unless one excess the world is tool rape and complex to commenter and at conce, unless one excess the world is tool rape and complex to commenter and at conce, unless one excess the world is tool rape and complex to commenter.  1010 Sent and the state of the state of the world.  1010 Sent and the state of the world.  1012 Sent and the state of the world.  1018 The paragraph of the state of the world.  1019 The comment.  1019 The comment.  1010 Sent comment.  1015 The paragraph of the state of the state of the state of the world.  1015 The paragraph of the state of t				
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1274 significant additions beyond what the group proposed.  1278 Solid and helpful.	1200			
1278 Solid and helpful.	1274			
1291 Once again too much information that takes away from the main focus.				
1291 Under L4 need to reinstate the original text and take out are believed to .				
	1293			
Yes the appendices appear to supplement these inadequate, politically driven	1202			
1303 standards.				
1304 I especially like appendix three.	1304	I especially like appendix three.		

	The use of the phrase The science and engineering practices, formerly the scientific		
	method is misleading. Scientists use science practices, not a set method for each		
	experiment. The use of the term scientific method has not been a part of		
	professional scientific practice for decades.In Appendix 3, the following paragraph		
	needs adjustment: Core Ideas for Knowing ScienceP1: All matter in the Universe is		
	T = -		
	made of very small particles. Atoms are the building blocks of all normal matter, living		
	and non-living. The behavior and arrangement of the atoms explains the properties of		
	different materials. In chemical reactions atoms are rearranged to form new		
	substances. Each atom has a nucleus, containing neutrons and protons, surrounded		
	by electrons. The opposite electric charges of protons and electrons attract each		
	other, keeping atoms together and accounting for the formation of some compounds.		
	Physicists and astronomers have begun to investigate other types of matter, dark		
	matter, antimatter, and negative matter, which are also thought to be made up of		
	very small particles. Those particles may or may not be atoms and tend to react		
	differently to forces than normal matter. The inclusion of the final two sentences is		
	not developmentally appropriate to a K-12 science standards document as such topics		
	far exceed the boundaries of high school physics. Also in Appendix 3: L4: The theory of		
	evolution seeks to make clear the unity and diversity of living and extinct		
1	organisms.Over countless generations changes resulting from natural diversity within		
	a species are believed to lead to the selection of those individuals best suited to		
	survive under certain conditions. Species not able to respond sufficiently to changes		
	in their environment become extinct. Evolution is a scientifically sound explanation		
	·		
	for the alteration of species over time. This is not up for debate within the scientific		
	community.		
1305			
	The sheer willful ignorance of removing Evolution from the curriculum is mind		
	bogling. It would put Az students at a vast disadvantage when moving to higher		
	education. If the superintendent's intention is to replace evolutionary theory with		
	intelligent design she should be removed from office and barred from working in		
1211	education for life. Do jot do this.		
1311	While drawn from the NRC Framework, he appendices are too vague and presented		
	I		
	without research-based evidence to support the claims. They will be of little use to		
	teachers who themselves are unfamiliar with the NRC document or experienced in		
1315	doing science.		
	The Appendices supply additional insights that can help teachers and ultimately		
	students by adding context in the relevant areas. I especially like the Internal Review		
	changes and additions, they very much improved the draft.		
1337			
1339	Again, lack of reference to evolution is a major flaw.		
	While the appendices are helpful, they are not linked in a way that will engage many		
	educators, and still fall short of providing the background and examples needed to		
1241	make informed curricular choices.		
1341			
	1. The science and engineering practices are not the same as the scientific method!2.		
	This whole section in the Core Ideas is flawed, particularly with the insertion of are		
	believed to: L4: The theory of evolution seeks to make clear the unity and diversity of		
	organisms, living and extinct, is the result of evolution organisms. Over countless		
	generations changes resulting from natural diversity within a species are believed to		
1	lead to the selection of those individualsbest suited to survive under certain		
1	conditions. Species not able to respond sufficiently to changes in their environment		
1	become extinct. 3. I disagree that the following is the main or only purpose of science:		
1	U1: Science's purpose is to find the cause or causes of phenomena in the natural		
1	world. 4. Appendix 4 points out interdisciplinary connections, but there is nothing on		
1			
	health standards, which are found throughout the document.		
1342			
	Do not alter the standards to weaken true science re: evolution, etc.		
1366	Original language should remain		

1403 Teach evolution. Evolution is science.		
If the state allows teaching creationism, they will also have to teach other religion's		
creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example, in the Maya		
1426 creation myth, humans are created out of corn.		
1443 No much difference between 2014 and current		
Like I said, I think appendix 3? Ya that one reviewreviewreviewPage 79 is		
· · · · · · · · · · · · · · · · · · ·		
disgraceful. It embarrasses me for you. I'll fix it for freehonestly I would. It's that		
1464 bad.		
I couldn't see that it added very much. I like the idea of a glossary in the current		
1485 standards better		
The strange mix of descriptive child development and prescriptive or aspirational		
formulation in the text makes it challenging to unpack. Further, statements of fact		
should be justified with a citation to a reliable source, rather than merely stated.To		
understand this distinction between descriptive and prescriptive text, let me give two		
examples: As students age, their ability to analyze and predict outcomes strengthens		
is a descriptive statement of child development (and one which is accurate and		
uncontroversial, but still needs a citation). Conversely, In high school, nuclear		
processes are introduced along with conservation laws related specifically to nuclear		
processes is more in line with a standard or prescriptive statement. It is sometimes		
unclear what the intent of a passage is; if descriptive statements are going to be be		
made to justify ideas, they should be cited to scientific sources, as any academic work		
would do.		
1515		
1518 EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.		
Yes, they help to define some concepts. Please make L4 in Appendix 3 more direct,		
such as Over generations, changes resulting from natural diversity within a species to		
lead to the selection of those individuals best suited to survive under certain		
1533 conditions.		
Appendix 4 on equity and diversity is admirable. However, I think it still suffers from a		
deficit framing of some students. I do like the use of opportunity gap rather than		
achievement gap, but it still paints students from low socioeconomic status and		
other marginalized communities as lacking in critical experiences rather than that		
science instruction has failed to make adequate connections to their strengths.		
1538		
1547 Removal/replacement/minimizing evolution is completely unacceptable.		
1553 See above		
1556 This needs to be redrafted to benefit the education of our children.		
NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL		
ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.		
1575		
1579 L4 is highly problematic.		
1583 Adding and maintaining teaching Evolution needs to be continued.		
There is way too much information that is cluttering up these standards. It is hard to		
see what is going on and where to start and where to finish. Take a look at New York		
State standards they are much clearer on what the teacher should be looking at.		
http://www.p12.nysed.gov/ciai/mst/sci/documents/p-12-science-learning-		
standards.pdf		
1595		
We HAVE read our history of science, haven't we? This is unconstitutional - teach		
1603 evolution!	 	
1628 Teach Science and facts in Schools not faith and religion.		

This complicated. The entire organization is too complicated. The NSE version is less to, but all that conceplicated in the less out may not be too. Group on the light glade to solve the last of the				
socked the most important idea in satures that we want students in high school corner to involve. For Earth Signate, came up with 13. All, but two and each such air and deal with in other science course, to 1.1 OVREAP with other chieses Science deal with in other science course, to 1.1 OVREAP with other chieses Science the course of the course of these science courses from these.  1609  1619  1620  1630  1640  1650		Too complicated. The entire organization is too complicated. The NSF version is less		
science to Innov. Not Parth & Space, Cance up with 13. ALL but two are ideas that are does with in other science users to 11 VEMPA with other science; once courses, the manner were designed to the science of the scie		so, but still too complicated. It does not need to be so. Open up the Big Ideas to		
dealt with in other science courses (or 1 OVERLAP with other sciences). Once we come up with a corn of these big lieds, we can extend those in soft centered science compets, then anyow them down TO FT into specific science core courses from these courses.    1564   No.		include the most important ideas in science that we want students in high school		
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the degree that the standards themselves are well-written. I have already mentioned				
	1	l =		
specific problems with the standards that make them less than useful to students and		· · · · ·		
1893 teachers.				
1918 Refer to my response to question 17.	1010	ID-6-11-1-11-11-11-11-11-11-11-11-11-11-11	I	

	Evolution is an accepted theory of science. The striking of this word and replacing it		
	with more generic terminology is misleading and weakens the standards. The		
	redefining of evolution as seeks to make clear the unity and diversity of living and		
	extinct organisms is meaningless and not in alignment with accepted scientific		
	thinking. The term and definition of evolution should remain as is. The reason for		
	renaming of the scientific method to science and engineering is dubious and is not in		
	alignment with accepted scientific thinking. The scientific method is a process by		
	which facts demonstrate proof to validate or disqualify any scientific theory. The term		
	scientific method should remain as is. The elimination of the scientific theory of the		
	origin of the universe, known as the Big Bang is also dubious and not in alignment		
	with accepted scientific thinking. References to the Big Bang should remain as is.The		
	changes outlined above weaken the Arizona K-12 science standards and moves us		
	away from creating a system that provided world-class education. I oppose these		
	changes.		
1922			
1929	Didn't read so can't comment.		
	Good discussion of Science vs. Engineering. However, Core Idea L4 presents evolution		
	· · · · · · · · · · · · · · · · ·		
	as a theory, which is technically incorrect, and fails to mention other proposed		
1945	explanations of origins and development.	ļ	
	Evolution, not intelligent design, is based in science. Science, not religion, should be		
1995	taught in science classes.		
	Appendix 1 is questionable with the extensive comments by the Dept of Education.		
	How about having a discussion about this appendix with the original drafters of the		
	document? Appendix 3, L4 is so biased and anti-science that it is incomprehensible to		
	a real scientist. Repeat after me, Evolution is NOT a theory , now write it 1000 times		
	so you get the idea correct.Appendix 3, U1 should be rewritten to state The purpose		
	of Science is to understand the cause or causes of phenomena in the natural world.		
	Appendix 3, U3, should keep to serve human ends because that is precisely what the		
	purpose is. If not, then please explain other purposes. Appendix 3, U4, should remove		
	both positive and negative from the statement		
2013			
	Ambivalent.		
	They seem adequate.		
2043	All standards need to be included.		
2062	No comment.		
	I take exception to the wording of L4 in Appendix 3: Core Ideas: generations changes		
1	resulting from natural diversity within a species are believed to lead to the selection		
	resulting from natural diversity within a species are believed to lead to the selection of those individuals best suited to survive under certain conditions. It's not a belief		
	resulting from natural diversity within a species are believed to lead to the selection of those individuals best suited to survive under certain conditions. It's not a beliefit's a scientific process that has been shown to be true by living evidence.		
2093	resulting from natural diversity within a species are believed to lead to the selection of those individuals best suited to survive under certain conditions. It's not a beliefit's a scientific process that has been shown to be true by living evidence.		
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2096	resulting from natural diversity within a species are believed to lead to the selection of those individuals best suited to survive under certain conditions. It's not a beliefit's a scientific process that has been shown to be true by living evidence.  They do explain what is meant by certain terms, which is important.		
2096 2112	resulting from natural diversity within a species are believed to lead to the selection of those individuals best suited to survive under certain conditions. It's not a beliefit's a scientific process that has been shown to be true by living evidence.  They do explain what is meant by certain terms, which is important.  The appendices are useful.		
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2096 2112 2127 2139 2152 2156 2163	resulting from natural diversity within a species are believed to lead to the selection of those individuals best suited to survive under certain conditions. It's not a beliefit's a scientific process that has been shown to be true by living evidence.  They do explain what is meant by certain terms, which is important.  The appendices are useful.  I have not read the full draft, so have no comment on this  Why is theory added in front of evolution? To be accurate and consistent the word theory (as in a scientific theory) would need to be added to all science concepts.  Otherwise it's use here and in other parts tries to suggest to the reader that they are using it with a different meaning more related to the term hypothesis - which it has well surpassed.  We should only be covering evolution in school. Creationism should be kept separate from schools.  The Learning Progressions of the Practices may want to be included as an appendix.  Hopefully the appendices will be incorporated into lesson planning and not ignored.		

	Understanding evolution is critical to the fields of medicine, biology, and applied			
2208	science like agriculture.			
	The Appendix 2 - delete scientific method; NGSS has a progression document for the			
	practices which would be helpful for teachers to see how these practices develop over			
	time.Appendix 3 - These 14 core ideas come from Working with Big Ideas in Science			
	Education and should cite the words/descriptions from the Working with Big Ideas in			
	Science Education. Possible Solution: Restore committee's version			
2242				
	Send the standards back for review.			
2262	Explain evolution ze			
	Provide more information on Evolution, and omit anything to do with Creationism or			
2265	Intelligent Design .			
	Teaching creationism, or the misnamed intelligent design, is a violation of the			
	separation of church and state. If you want your kid to learn fantasy send him to			
	Sunday school. Public schools are for fact based subjects that our kids will need to			
	navigate the future, not the failed, undefined, and contradictory philosophies			
2273	responsible for most of the earths problems.			
	Not commenting here because my complaint is about Diane Douglas trying to sneak in			
	creationism and Intelligent Design into the state science standards.			
2306				
	Refer reply in 20 above.			
	So now we're not teaching dinosaurs and extinction?			
2354				
2551	Refer to the Next Generation Science Standards. They NGSS are good standards.			
2364	These are not.			
	Needs to go back to review.			
	The standards must be reviewed.			
2304				
2207	While the appendices provide greater detail, the overall framework of the standards			
2387	are lacking details.			
	There is no section for acknowledging the work of past scientists or making			
	connections as to how science builds on itself through acquisition of knowledge.			
2400				
	I Call for the restoration of the ASE's description of evolution, which is scientifically			
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend			
	revisions to the treatment of evolution in passages that seem to have been similarly			
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
2419				
2425	As sent by the 111 science specialists in November 2017 (left unchanged).			
	The changes are unacceptable.			
	I don't enjoy having to reference around multiple locations within an 84 page			
1	document to attempt to construct a meaningful trajectory for how to do my job. This			
	would be exceptionally confusing to a newer teacher with very little support from			
2463	colleagues.			
	Please replace Appendix 3: Core Ideas with disciplinary core content that more closely			
	mirrors the disciplinary core content in A Framework for K-12 Science Education .			
1	Also, the way the standards are currently written, appendix 2 does not hold much			
	weight. It should! But the approach of knowing and using science does not fully			
1	allow for all the practices to be incorporated into the standards.			
2465				
	Helpful supplements to further explain the concepts.			
2518	They're fine.			
1	Omitting information on change over time, evolution and the big bang theory,			
2520	completely negates the validity of this document.			
	They are very repetitive of the introductory material in the beginning and in each			
2574	section.			
	It's a lot of extra unnecessary information. The description of a what a pattern is is			
	particularly cringe-worthy to read. It reads like it was written by someone who never			
2581	took a science class before.			
			_	

2582 I have not had the opportunity to read the appendices.		
Yes, it is good to see specific line items written out instead of just numbers for		
concepts that those who refer to each of the concepts frequently will use.		
2610		
STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!		
2615 Evolution is real!		
I disagree with the minimizing of the role Evolution plays in human history and		
science education. It is not debated in the Science community. The science standards		
of Arizona need to be compatible with modern scientific fact, not biases or religion. If		
Evolution is being wrongfully omitted I grieve to know what other facts the Arizona		
Department of Education will omit from Education. That is limiting future generations		
of American thinkers, who face scientific truths of the world and use the scientific		
method for progression of humanity. Please revise the k-12 science standards to fit		
current scientific fact, so that future generations will posses the knowledge they have		
the right to recieve from their Education department. Thank you.		
2618		
I didn't find them all that helpful. They are quite wordy and I'm not sure most		
2619 teachers would even take the time to read them.		
The appendices could function as the standards.		
The standards as revised by staff compromise their intent and therefore compromise		
the ability of Arizona students to deal with the modern world.		
2624		
Most of them are good, except for the edits that involve speculative statements		
about dark matter and anti-matter, and that state that the Universe is not a closed		
2642 system.		
There is no mention of the scientifically accepted concepts of evolution or natural		
selection. These are core concepts in biology that help explain vital parts of life		
2649 science. It is unacceptable to not include them.		
Teachers in this state do not need Appendices. They need education to be fully		
funded so that there are Science Labs and Materials, in all Science Classrooms.		
2653		
2658 n/a		

Public Comment Non-Survey	Public comment received outside of the survey				
	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes

vey estion	16. What would you like the working group to consider as they revise the Kindergart	en 2018 DRAFT DRAFT DR	AFT Science Standards?		
		Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	Reword to say, Observe and ask questions That is how students formulate their			Insert: Observe, ask	
	own questions through observations. They are naturally curious.			questions, and	
6		Yes	K.l2.u2.6; k.l4u2.7	explain	
38	Lots of standards in PS that seem above k, like sound waves.	No			
40		No			
	Page 11, return to using the word observe and add describe (DOK level), instead of				The use of the practices as the standard in the writing is
	the suggested ask questions about - this is too informal and not appropriate for a				essential; "describe" is more curricular and not a
	STANDARD of learning.	Yes		Keep as is	scientific/engineering practice
	No evolution?	No			Too broad for consideration
100	More hands on activities	No			Curricula/instruction
		no			
124	n/a	no			
	I believe that standard K.P2U2.1 is not developmentally appropriate that way that it is				
	written, or how I interpret it. I also believe that the key concepts are misleading and				
	should be developed at the district level, reaching from standards to curriculum.		k.p2u2.1 & key		
143		Yes	concepts		
	Where there were internal changes there needs to be attention paid to the				committee needs to look at progressions (Framework/Big
145	developmental appropriateness. Please re-check	yes			Ideas)
	We should go back to the standards that the committee created and adopt those, not				
157	Diane Douglas's internal review copy.	no			
162	Adopt NGSS standards	no			
	Please provide some examples of text or activity ideas that could be used to teach				
166	each standard.	no			curricula/instruction
	I trust the work of Science Specialists who devoted their time and energy to improve				
	Arizona's science standards and request their direct incorporation as new standards.				
168	, ,	no			
170	Funding	no			
	Because we don't have lots of weather issues in Arizona, I would like to see a rock				
172	and mineral standard added to kindergarten.	no			Rocks/minerals addressed in 1st grade
	The very first kinder standard has become both a life and physical science standard.				
	Additionally, to investigate entails planning and conducting experiments. The				
	language should be refined to reflect the true science/engineering practice.				
177		yes			re-write standard
181	Challenging.	no			
	Hands on instructions to inspire an inquisitive mind.	no			Curricula/instruction
	The Key concepts should be dropped from every grade level.	no			
	Same as above - too complicated!!	no			
	I'd like us to implement the Next Generation Science Standards, already in use in				
211	many states and districts. https://www.nextgenscience.org/	no			
	Examples of what type of device Kindergarteners would create to extend/improve	-			
	their senses.	no			curricula/instruction
	The standards allow for flexibility for various learner proficiency levels.	no			
	needs more break down in each standard	no			curricula/instruction
		no			
	Too much room for interpretation. How can they measure whether the students				
252	mastered the standards	no			assessment issue
	There are too many standards for the Kinder group. They will not have time to cover	110			assessment issue
250	all of those topics.	no			

	Iv: 1		1	1	T
	KindergartenPage 9, 21, 33Remove last sentence: 'Suggestions for key conceptsor			_	
	maximum content limits. Pages 12, 15, 19, 24, 28, 31, 37, 41, 45Remove these			Remove	
	connections - as soon as standards change the Science standards need to be			"Connections to	If the other academic disciplines change their standards prior
	changed. Each group of standards needs to be stand alone. If ADE wants to have			other Academic	to the next adoption of science standards it is very difficult to
	another document that does a crosswalk of all of the standards in another document,			Standards" from	amend current science standards. It is our understanding that
	that would be more appropriate than the Science Standards.			document OR put in	the appendix would be easier to modify than the standards
265		ves		as an Appendix	after adoption.
	No, Kindergartners brains are not developed to evaluate.	no		, , , , , , , , , , , , , , , , , , ,	
	Some of the revisions are not grade level appropriate. Obtaining and evaluating body				
	systems does not make sense at this level. If we want them to understand that the				
	human body has different systems that have different basic functions, great! Let's re-				There is not evidence in the Framework or the Big Ideas that
276	word it to say that!	ves	K.L1.U1.5	Remove standards	this standard should be addressed in K-2.
270	I think it is great to start them out early with supporting their reasoning. Our purpose	yes	K.LI.01.3	Nemove standards	triis standard should be addressed in K-2.
	, , , , , , , , , , , , , , , , , , , ,				
	is for students to think. The internet has made everyone lazy so the crosscutting				
	concept of problem solving should be in every grade level.				
279		no			
	That Kindergarten students need as much Kinesthetic activity as possible to enrich				
	their learning.	no			
	These are not what the committee created	no			
326	Wait to Test.	no			
	Weather should be moved or at least added to 2nd grade. I think it's good for them				
	to have an introductory discussion/unit on weather, but it needs to come up again				
	and they shouldn't be getting into all the specifics of precipitation.				
334	1 , , , , , , , , , , , , , , , , , , ,	yes	k.e1u1.3	Keep as is	
	They look good.	no			
	The K standards do not flow into first grade. The K standards are vague compared				
	to the first grade standards. On first grade standards it states that KL2U2.7 concepts				
	were taught however the K standard does not include soil, sand, and rocks.				
359	1				Noods to be addressed by 1st grade
		no no			Needs to be addressed by 1st grade
383	Introducing scientific method early	no			
	Please consider removing the key concepts section. This makes the model more like				
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
	inquiry based.	no			
435	N/a	no			
	Should leave Kindergarten out of science. Let them focus on reading, writing and				
451	tying their shoes.	no			
486	Providing appropriate vocabulary to connect to the standards.	no			
	Remove the wording their associated body parts isn't necessary and takes away				
	from the idea of physical science. The body parts don't need to be explicitly				
	connected for students and should be discovered through inquiry by students. This				
	causes teachers to tell students more than necessary.				
512	· ·	Yes		Comment #143	
	nothing	no			
330	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,	··· <del>·</del>			
	evidenced by the replication of self copying dna in science labs and modern genetic				
	engineering efforts is wrong. Period. Evolution through natural selection over millenia				
1001	is a scientific fact.	no			does not portain to grade level
1001		IIU		-	does not pertain to grade level
	Scientific standards should be based on scientific research and nothing else.				
	Replacing and watering down the proven science of evolution is a disservice to our				
1	kids, a disservice to our teachers, and a disservice to our educational body. STOP				
	TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				
1008		no			does not pertain to grade level
1020	7. Page 9, 2nd paragraph â€" see comment 19 - #2.	?			

			I
I have already commented on several sections, another change is the insertion of			
positively or negatively to discussing human impact on species extinction. Except for			
domestic examples like cows, pigs and chickens or pests like cockroaches and mice, I			
am unaware of a case where humans have positively impacted species abundance, so			
why is this addition necessary?			
	no		does not pertain to grade level
	no		
Evolution is not just a theory, it is well established fact by science. Making Biological			
evolution to Theory of Evolution is a step backwards not an improvement.			
	no		does not pertain to grade level
1091 A kindergartner's level of understanding of the Theory of Evolution.	no		does not pertain to grade level
Without ADE additions, this would be a strongly agree. Connections to other			
academic disciplines. • <b>B</b> emove entirely from the document. This belongs in a			
support document or curriculum adopted locally.•®hese do not belong in a			
standards document. They become obsolete as soon as any of the standards from			
referenced disciplines are updated and approved by the state board.•∆dditionally,			
many of the connections cited don't actually align to the standards within the grade			
level. Key concepts Column•What ADE added are not actually concepts, they are			
random vocabulary terms which may or may not be aligned to the standards and in			
many cases are not appropriate for the grade level. •Remove they key concepts			
column from the document.•₫ ADE requires that the key concepts column			
remains, select the actual concepts from the Framework or Big Ideas documents,			
since those documents are research-based and used in the development of the			
standards.•®Key concepts, if included must represent concepts from all three			
dimensions, and not just the content of science. •Below is an example for K.E1U1.3			
Follow this process for each of the kindergarten standards, not just the example			
below.Remove list of vocabulary terms from the Key Concepts column and replace			
with the actual concepts related to this standard that represent all three			
dimensions:•™eather is the combination of sunlight, wind, snow or rain, and			
temperature in a particular region at a particular time. People measure these			
conditions to describe and record the weather and to notice patterns over time.			
• <b>P</b> atterns in the natural world can be observed, used to describe phenomena, and			
used as evidence. •\scientists look for patterns and order when making			
observations about the world. •®se observations to describe patterns in the			
natural world in order to answer scientific questions.•Ask questions based on			
observations to find more information about the natural world.			
	yes	organization	in progress
Evolution is a scientific fact! To remove or try to water the process down from our			
education standards is unacceptable! If we want current or new high dollar business			
to come to Arizona we must have high standards for our school curriculum. Good			
and factual science is a must for our standards!			
	no		does not pertain to grade level
, , ,	no		curriculum/instruction
	no		
I would like to see the working group think about the standards from the point of			
view of a kindergartner through second grader. The standards tend to reflect the idea			
of beginning with what we want students to know when they graduate and then			
working backwards, instead of working from the beginning up.			
	yes	k-12 progression	developmentally appropriate based upon the framework
	no		
, ,	yes	K-12 progression	based upon research from the framework
	no		curriculum
1186 The kids are 5!!!! And the teachers are not science teachers.	no	1	

1196 Actual and complete science education	no		
1219 Get rid of intelligent design. Restore references to evolution.	no		does not pertain to grade level
1221 I'm not a kindergarten teacher.	no		
1222 Not utilize language in re Darwinism, natural selection or evolution.	no		does not pertain to grade level
Nothing in the proposed revisions for any grade are acceptable if they include			
intelligent design or any other form of religious creationism by any other name, and			
if references to evolution have been deleted or treat it as only a theory.			
1223	no		does not pertain to grade level
1226 Don't revise.	no		account persum to grade level
Consistently misses the importance of asking questions and questioning theories.			
1278	no		curriculum/instruction
	no		too broad
Strengthen the Standards. Eliminate any inkling about creationism or intelligent			
1298 design - these teachings are for (some) churches.	no		does not pertain to grade level
Throw these terrible standards out and adopt instead the excellent Next Generation			does not pertain to grade level
1303 Science Standards developed by STEM professionals.	no		AZ Board of Education directive
The addition of the Key Concepts column add vocabulary words that would normally			712 Board of Education directive
be the decision of local districts. This column is unnecessary and superfluous.			
1305	yes	organization	changes in progress
I believe it would serve the children of AZ better if we would just adopt the Next	yes	Organization	Changes in progress
1309 Generation Science Standards.	no		based upon the framework
The sheer willful ignorance of removing Evolution from the curriculum is mind	110		based apon the namework
bogling. It would put Az students at a vast disadvantage when moving to higher			
education. If the superintendent's intention is to replace evolutionary theory with			
intelligent design she should be removed from office and barred from working in			
1311 education for life. Do jot do this.	no		does not pertain to grade level
The edits in this section range from laughable to egregious in relation to scientific	110	+	does not pertain to grade level
knowledge and practice. For example, on p. 10: light and sound are not impacted by			
the senses; five senses obtain a range of data from the natural world, not only light,			docan't state "imposted" rather hady narts can "datast" light
1315 sound, and vibrations.			doesn't state "impacted" rather body parts can "detect" light, sound, and vibrations
The Internal Review provided excellent additional development and clarification. The	no		Souria, and vibrations
1337 Internal Review should be adopted.	no		
Evolution must be introduced at the kindergarten level as it is a basic concept in			based upon research from the framework not developmentall
1339 science.	no		appropriate
At every grade level I see a structural problem with organization and connections.			
Specifically, life sciences and earth sciences are being misrepresented, or are lacking			
proper depth. The anecdotal examples given in the key concepts column will leave			
many teachers just implementing a snapshot of random material instead of			
embedding and utilizing the understanding and applications of science as a means to			
inspire and drive learning in other subject areas.			.
1341	yes	organization	in progress
1366 Original language should remain	no	<del> </del>	1 1001
	no		see comment 1001
If the state allows teaching creationism, they will also have to teach other religion's			
creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the			
1426 Maya creation myth, humans are created out of corn.	no	<del> </del>	see comment 1001
1443 No much difference between 2014 and current	no	<del> </del>	
Kids learn the most and the fastest. Don't take it easy on them. I learned			
multiplication in kindergartenthen againI came from another country. As long as			
1464 you do it in a fun way than the kids will love it.	no	instruction	
It's hard to compare grades the way this is constructed. I didn't notice until I studied			
the old version and saw that the differences in grades are immediately apparent on			supplemental resource comparing across grade levels could be
1485 the charts.	yes	organization	made available

It's great that the students will learn about health! They also should learn a little			
It's great that the students will learn about health! They also should learn a little			
about the environment that supports them and how to interact with it			addressed at the proof of the level
The word observe is consistently replaced by ask questions about , it would be	no		addressed at the next grade level add "observe, and ask questions" back into life science
		standard	•
1506 stronger to say observe and ask questions about .	yes	standard	stadards K.I2U2.6 and K.L4U2.7
1517 Bring back the word evolution.  1518 EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.	no		see comment 1001
	no		see comment 1001
hands on involvement in experiment and founding principals of observation and			in about the control of
1529 hypothesis and experimentation	no		instruction
1547 Removal/replacement/minimizing evolution is completely unacceptable.	no		see comment 1001
1553 Actual science	no	too broad	1.4004
1556 Remove all religious references.	no		see comment 1001
NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL			
ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.			
1575	no		see comment 1001
1583 Adding and maintaining teaching Evolution needs to be continued.	no		see comment 1001
I would like to see more of the engineering design process and computational			
thinking to be included in these standards and all the science standards. The earlier			
we get students to start thinking this way the better off they will be. We need to be			
preparing our students for a future of technology!			
1595	yes	K-12 progression	see if addressed in math standards
1603 Evolution. Get the idea?	no		see comment 1001
Narrow the scope. The educational focus in Kindergarten should be on reading,			
writing, and math while making connects through those disciplines to scientific ideas.			
1605	no		AZ State Board of Education question
1628 Teach Science and facts in Schools not faith and religion.	no		see comment 1001
1641 N/A	no		
1645 No comment.	no		
1660 Fix evolution standards.	no		see comment 1001
1664 See comment #9	no		
1681 I have no issues. Seems appropriate.	no		
See earlier general comments about the importance of including Evolution as the			
1689 underlying explanation of all aspects of Biology.	no		see comment 1001
Science doesn't require belief. It requires facts. It can be proven and that proof can			
1694 be repeated.	no	Religion	
1793 Please do not muddy the language regarding evolution	no	Evolution	see comment 1001
Evolution has been amply confirmed by science, just like photosynthesis or relativity.			See comment 2002
It's absurd to use ambiguous or tentative language. These are very bad revisions that			
were made, they clearly weren't endorsed by the writing committee, and it's			
somewhat disrespectful to them to make these changes.Please don't avoid eduction			
1795 on evolution.	no	Evolution	see comment 1001
Restore all original language referencing evolution proposed by the committee of	110	Evolution	See comment 1001
1796 educators with expertise in science education.	no	Evolution	see comment 1001
	no no		see comment 1001
1799 Teach Science not religion	no	religion	
The original document, before internal review, provided the necessary background			
about what core concepts were expected in science education.		[c. ]	D 15
1800	yes	Standard	Reconsider edits
1811 Revert all of Diane Douglas's changes.	yes	Standard	Reconsider edits
1859 Continue to teach evolution. Do not remove it to teach creationism.	no	Evolution	see comment 1001
1886 Outside my area	no		
Science at this grade level should be competitive to the rest of the nation. It is lacking			
1890 in quality content and scientific community standards.	no	Comment	too broad
1892 Children are never too young to learn science.	no	comment	
I think children could handle higher level science at this age since they are so curious			
1900 at this age.	no	comment	

1918 Refer to my response to question 17.	no		
Evolution is an accepted theory of science. The striking of this word and replacing it	no no	<del>                                     </del>	
, , , , , , , , , , , , , , , , , , ,			
with more generic terminology is misleading and weakens the standards. The			
redefining of evolution as seeks to make clear the unity and diversity of living and			
extinct organisms is meaningless and not in alignment with accepted scientific			
thinking. The term and definition of evolution should remain as is. The reason for			
renaming of the scientific method to science and engineering is dubious and is not in			
alignment with accepted scientific thinking. The scientific method is a process by			
which facts demonstrate proof to validate or disqualify any scientific theory. The			
term scientific method should remain as is. The elimination of the scientific theory of			
the origin of the universe, known as the Big Bang is also dubious and not in alignment			
with accepted scientific thinking. References to the Big Bang should remain as is. The			
changes outlined above weaken the Arizona K-12 science standards and moves us			
away from creating a system that provided world-class education. I oppose these			
changes.			
***************************************			
1922	no	comment	see comment 1001
I only put 'disagree' because they seem overly ambitious given the teacher training			
1929 and resources available at this level.	no	curriculum resources	
Evolution is presented as a theory, which is technically incorrect, and the curriculum		- Control Courtes	
fails to mention other proposed explanations of origins and development.			
		avalution	see semment 1001
1945	no	evolution	see comment 1001
1953 Teach proper evolution	no	evolution	see comment 1001
1955 Critical thinking; must know that there something it is called Science	no	comment	
1990 Evolution must continue to be taught.	no	evolution	see comment 1001
Evolution, not intelligent design, is based in science. Science, not religion, should be			
1995 taught in science classes.	no	evolution	see comment 1001
Nothing should be taught within or alongside science that does not have the same			
factual basis that all the core concepts included in the draft have. Non-science or			
pseudoscience, has no place in factual science learning for our youth.			
2000	no	comment	
2008 I trust the experts who wrote these standards	no	comment	
Kindergarten children are generally 5-6 years old. The do not need to know how to			
make predictions and it is ridiculous to put standards for children that are clearly			
beyond the scope of most toddlers. The concept that there are only 5 senses is			
archaic and should be removed. Many respected scientists agree that there are more			there can be more than 5 senses (vistibular sense of balance)
2013 (than 5 senses.	yes	standard	so remove the number 5 in standard K.P2U2.1
Introduce more scientific concepts. Introduce introductory scientific theory and	yes	Standard	30 Temove the number 3 in standard K.i 202.1
2015 philosophy.	no	comment	not developmentally appropriate for kindergarten
2020 You can do much more here.	no		not developmentally appropriate for kindergarten
		comment	con commont 1001
2032 Evolution	no	evolution	see comment 1001
Again, creationism has no place in sound science teaching. It is retrogressive and			1 1001
2036 intellectually suspect.	no	evolution	see comment 1001
2043 All standards need to be included.	no	comment	
2062 No comment.	no		
Include Kindergarten teachers in the working group.			They are included, the people reviewing these comments are
2093	yes	other	former kindergarted teachers
In kindergarten children should already be experimenting and developing a love of			
science. They need to learn that science begins with curiosity. There should be			
flexibility to allow students to drive their own investigation of something they are			
2096 curious about.	no	curriculum	
No form of creationism should be taught in public schools period. It s			
unconstitutional & will waste more tax payer \$ when it inevitably ends up going to			
2099 court & gets shot down.	no	religion	
2000 Four & Sets Shot down.	Inc	i cupion	

			T
This section seems fine, however, I would include more emphasis on observation . As			
an educator, scientist, and a father, one thing I am constantly getting my students,			
colleagues, and child to do is simply observe their surrounding. I think the idea of			
observing and trusting your observation is critical for problem solving and the sooner			
it starts, the better.			
2112	yes	standard	Refer to comment 1506
2115 No specific recommendations for this level	no	comment	
2127 I have not read the full draft, so have no comment on this	no	comment	
We should only be covering evolution in school. Creationism should be kept separate			
2152 from schools.	no	evolution	see comment 1001
Include all of the crosscutting concepts (CCC) that could be aligned with the			
standard(s) in the actual table. The introduction gives guidance of the CCC's for			
kindergarten, however they need to be integrated into the standards or they will not			
be taught as deemed in the introduction (3-dimensional instruction)			
2156	yes	standard	inprogress
Understanding evolution is critical to the fields of medicine, biology, and applied	7-5		
2208 science like agriculture.	no	evolution	see comment 1001
	no	curriculum	see comment 1001
2259 Send the standards back for review.	ves	currenam	they are currently in review
2262 Explain evolution.	no	evolution	see comment 1001
'	no	evolution	see comment 1001
	110	evolution	see comment 1001
Not commenting here because my complaint is about Diane Douglas trying to sneak			
in creationism and Intelligent Design into the state science standards.			
2306	no	comment	
Do not include intelligent design as part of the option for teaching science. Not			
2335 supported scientifically.	no	comment	
2345 Refer reply in 20 above.	no		
'	no		
2354	no		
Refer to the Next Generation Science Standards. They NGSS are good standards.			
2364 These are not.	no	comment	AZ Board of Education directive
It is obvious that science teachers and kinder teachers were not around when the			
2372 green revisions were made.	no	comment	
2378 Needs to go back to review.	yes	comment	in progress
We must start to educated all standards taught across the country, starting in the			
2384 earliest levels of education.	no	comment	
Please consider what is developmentally appropriate for kindergartners and develop			
2387 their natural curiosity.	no	curriculum	
2410 I don't know, I'm sorry, I don't teach K!	no	comment	
I Call for the restoration of the ASE's description of evolution, which is scientifically			
accurate and pedagogically appropriate, unlike the proposed revision. I Recommend			
revisions to the treatment of evolution in passages that seem to have been similarly			
weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
2419	no	evolution	see comment 1001
2425 As sent by the 111 science specialists in November 2017 (left unchanged).	no	comment	
2428 The changes are unacceptable.	no	comment	
	110		
Kindergarten should be a time for learning how to interact with others and behave in			
Kindergarten should be a time for learning how to interact with others and behave in school and not be so heavily focused on academic content. Our obsession with			
· · · · · · · · · · · · · · · · · · ·			
school and not be so heavily focused on academic content. Our obsession with			
school and not be so heavily focused on academic content. Our obsession with getting standards 'mastered' at such a young age is actually counter productive. Look	no	curriculum	
school and not be so heavily focused on academic content. Our obsession with getting standards 'mastered' at such a young age is actually counter productive. Look at international research and look into brain mapping studies.  2443		curriculum	
school and not be so heavily focused on academic content. Our obsession with getting standards 'mastered' at such a young age is actually counter productive. Look at international research and look into brain mapping studies.		curriculum	in progress

2515	Practical application of science, science experiments. Be very hands on.	no	curriculum	
2518	I couldn't care less about Kindergarten.	no	comment	
	Omitting information on change over time, evolution and the big bang theory,			
2520	completely negates the validity of this document.	no	evolution	see comment 1001
2529	Include health standard that includes body awareness	no	other	see Arizona Health Standards
	Lack of engineering standards and design thinking concepts within the document.			
2539		no	comment	not develomentally appropriate for kindergarten
2540	Revised text	no	comment	
	All the standards should be aligned with each grade level and grow in rigor as the			
	student moves through the higher grade levels. The content, though, should be			
2582	similar in all grade levels.	no	comment	content should be grade appropriate,
2607	Do not attempt to deny or water down the concepts of evolution.	no	evolution	see comment 1001
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!			
2615	Evolution is real!	no	evolution	see comment 1001
	I disagree with the minimizing of the role Evolution plays in human history and			
	science education. It is not debated in the Science community. The science standards			
	of Arizona need to be compatible with modern scientific fact, not biases or religion. If			
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona			
	Department of Education will omit from Education. That is limiting future generations			
	of American thinkers, who face scientific truths of the world and use the scientific			
	method for progression of humanity. Please revise the k-12 science standards to fit			
	current scientific fact, so that future generations will posses the knowledge they have			
	the right to recieve from their Education department. Thank you.			
2618		no	evolution	see comment 1001
	Put back in the word observe . At this age, learning to make proper observations is			
2642	'	yes	standard	see comment 1506
	Reword to say, Observe and ask questions That is how students formulate their			
	own questions through observations. They are naturally curious.			
2669		yes	standard	see comment 1506

urvey Juestion	17. What would you like the working group to consider as they revise the 2018 DRAI	FT Physical Science Standard	s in the Kindergarten 2	018 DRAFT Science Stan	dards?
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
6	Well done.			no	
	Consider where some of the content shows up in NGSS and then keep it there.				
38				no	
40	The world where we love. Not just your classroom.	no			
89	Redo	no			
103	Simplify!	no			
114	no comment	no			
124	n/a	no			
	I am just wondering if the wording of K.P2U2.1 changes this to a Life standard?			See comment Q16 -	
143		yes		143	
	We should go back to the standards that the committee created and adopt those, not				
157	Diane Douglas's internal review copy.	no			
162	Adopt NGSS standards	no			
	Needs some revision about how to teach vibrations and how to design a tool to				
	extend the senses; that is not clear on what extending the senses means.				
166		no			Curricula/instruction
170	Funding	no			
	by adding mineral and rocks to this grade, you also have a link to physical standards:				
172	we use our sensed to identify rocks and minerals	no			Rocks & Minerals addressed in 1st grade; curricula/instruc

189	Hands on instructions to inspire an inquisitive mind.	no			
	Simplification.	no			
200	I like the critical thinking part, teachers will have teach their K students to do it	110			
246	• .	no			
	Should include observations	no			
	No revisions needed.	no			
	Provide a measure that teachers can use to see if they have mastered this standard				
252	Trovace a measure that teachers can use to see it they have mastered this standard	no			
	None	no			
250	Page 10Remove Key Concepts ColumnUnder K.P2U2.1 remove 'five' and 'their			see comment Q-16 -	
265	associated body parts' - this is Physical Science, not Life Science.	ves		143	
	Nothing	no		1.0	
	What I have mentioned in number 23.	no			
	These are not what the committee created	no			
	Wait to Test.	no			
	No suggestions.	no			
333	We would like to add with prompting and support to many of these standards like in				The suggested wording does align with the Science &
359	our LAS standards	yes		Keep as is	Engineering Practices
	Please consider removing the key concepts section. This makes the model more like	700		Neep do io	Engineering Fractices
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
390	inquiry based.	no			
330	Include the idea of energy that we use in our everyday lives.				Energy and Matter is a crosscutting concept that can be
	include the lack of chergy that we use in our everyady intest				addressed in any individual lesson(s) as stated in the
412		yes		Keep as is	introductory of the Kindergarten standards on pg. 10
	N/a	no		Recp us is	introductory of the kindergarten standards on pg. 10
733	Remove the wording their associated body parts isn't necessary and takes away	110			
	from the idea of physical science. The body parts don't need to be explicitly				
	connected for students and should be discovered through inquiry by students. This				
	causes teachers to tell students more than necessary. Remove the key concepts as				
	this unnecessary and is more about implementation and should NOT be the intention				
512	of the standards.	yes		see comment 143	
	nothing	no		See comment 145	
330	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,				
	evidenced by the replication of self copying dna in science labs and modern genetic				
	engineering efforts is wrong. Period. Evolution through natural selection over millenia				The L4 addressed at K level focuses only on how plants and
1001	is a scientific fact.	no	evolution		animals respond to their environment.
1001	Scientific standards should be based on scientific research and nothing else.	110	Cvoidtion		animais respond to their environment.
	Replacing and watering down the proven science of evolution is a disservice to our				
	kids, a disservice to our teachers, and a disservice to our educational body. STOP				
	TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				
1008	TRAING TO ENASE SCIENCE WITH TOOK PERSONAL RELIGIOUS BELLETS.	no	evolution		see comment 1001
	Not reviewed.	no	comment		See comment 1001
1001	Evolution is not just a theory, it is well established fact by science. Making Biological		Comment		
	evolution to Theory of Evolution is a step backwards not an improvement.				
1085	Theory of Evolution 13 a Step backwards not an improvement.	no	evolution		see comment 1001
	A kindergartner's level of understanding of the Theory of Evolution.	no	evolution		see comment 1001
1031	Standards 1 is no longer a physical science standard and no longer makes sense due	IIIO	evolution		See comment 1001
1002	to the ADE changes.	no	other		need more informaton
1092	Evolution is a scientific fact! To remove or try to water the process down from our	IIIO	Oute		neca more illiorillatori
	education standards is unacceptable! If we want current or new high dollar business				
	· ·				
	to come to Arizona we must have high standards for our school curriculum. Good				
4443	and factual science is a must for our standards!		avalutian		see comment 1001
1113		no	evolution		see comment 1001
1140		no			
1165	No comment	no	comment	İ	

That while people have widely different views on matters of faith, the scientific			
community is 99% percent in agreement that evolution is a demonstrable fact.			
1167	no	evolution	see comment 1001
1171 Only SCIENCE in Science class!	no	comment	
1186 The teachers are not science teachers.	no	comment	
1196 See above	no		
1219 Get rid of intelligent design. Restore references to evolution.	no	evolution	see comment 1001
1221 I am not a kindergarten teacher.	no	comment	
Nothing in the proposed revisions for any grade are acceptable if they include			
intelligent design or any other form of religious creationism by any other name, and			
if references to evolution have been deleted or treat it as only a theory.			
1223	no	evolution	see comment 1001
1226 Don't revise.	no	comment	
Throw these terrible standards out and adopt instead the excellent Next Generation			
1303 Science Standards developed by STEM professionals.	no	other	AZ Board of Education directive
Investigate how the five senses and their associated body parts can detect light,			
sound, and vibrations even when they come from far away; use the collected			
evidence to develop and support an explanation. This standard is awkwardly written.			consider revising standard K.P2U2.1. students should be led to
Our sense of smell, for example, does not detect light, sound or vibrations from far			detect how their senses detect their environment. see
1305 away.	yes	standard	comment 2013 regarding elimination of only 5 senses.
I believe it would serve the children of AZ better if we would just adopt the Next			
1309 Generation Science Standards.	no	other	see comment 1303
The sheer willful ignorance of removing Evolution from the curriculum is mind			
bogling. It would put Az students at a vast disadvantage when moving to higher			
education. If the superintendent's intention is to replace evolutionary theory with			
intelligent design she should be removed from office and barred from working in			
1311 education for life. Do jot do this.	no	evolution	see comment 1001
1315 Get a scientific expert to rewrite the content or undo the edits.	yes	comment	in progress
The Internal Review provided excellent additional development and clarification. The			
1337 Internal Review should be adopted.	no	comment	
1366 Original language should remain	no	comment	too broad
1403 Teach evolution. Evolution is science.	no	evolution	see comment 1001
If the state allows teaching creationism, they will also have to teach other religion's			
creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the			
1426 Maya creation myth, humans are created out of corn.	no	religion	
1443 nothing	no		
1477 No intelligent design.	no	comment	
They also should learn a little about the environment that supports them and how to			
interact with it, this is critical! We only have one plane, and humans are destroying			
1500 it!	no	comment	addressed in other grade levels
In this section there is the statement light and sound are impacted by the senses .			
1506 My understanding is that it is the other way around.	yes	standard	see comment 1305
1517 Ditto	no		
1518 EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.	no	evolution	see comment 1001
understanding earth science and space science principals like planetary bodies and			
1529 the functions of natural cycles	no	comment	addressed in other grade levels
K.P2U2.1 - The addition of five for five senses and the addition of their associated			
body parts is confusing. A better revision might be Investigate how the human body			
senses light, sound and vibrations when when they come from far away.		1	see comment 1305. the suggested revision would limit senses
1538	yes	standard	to only humans, not animals.
1547 Removal/replacement/minimizing evolution is completely unacceptable.	no	evolution	see comment 1001
1553 A better working understanding of the world around then and its origins	no	comment	too broad
1556 Remove all religious references.	no	religion	

NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL			
ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.  1575		raliaian	
15/3 Adding and maintaining teaching Evolution needs to be continued.	no no	religion evolution	see comment 1001
We have moved all of our other standards up so that what used to be first grade	IIIO	evolution	see comment 1001
standards are now in Kindergartenm but in science. The five senses are something			
students learn through out life and are not needed in these standards. This si			
1595 something that is taught in Preschool these days.	a. yes b. no	a. standard b. comment	a. standard is supported by the framework
1603 I could say evolution again, you know.	no	evolution	see comment 1001
1628 Teach Science and facts in Schools not faith and religion.	no	religion	See comment 1001
1641 N/A	no	religion	
1645 No comment.	no		
1660 Fix evolution standards.	no	evolution	see comment 1001
1664 See comment #9	no	evolution	See comment 1001
1681 N/a	no		
1694 Only facts based on repeatable scientific tests.	no	comment	
1777 More observation and sense of wonder.	no	instruction	
1793 Please do not muddy the language regarding evolution	no	evolution	see comment 1001
Restore all original language referencing evolution proposed by the committee of		evolution	See comment 1001
1796 educators with expertise in science education.	no	evolution	see comment 1001
1799 Teaching Science not religion	no	religion	See comment 1001
The original document, before internal review, provided the necessary background		rengion	
about what core concepts were expected in science education.			
1800	no	comment	too broad
1811 Revert all of Diane Douglas's changes.	no	comment	too broad
1859 Continue to teach evolution. Do not remove it to teach creationism.	no	evolution	see comment 1001
1886 Outside my area	no	comment	See comment 1001
Science at this grade level should be competitive to the rest of the nation as well as	ino ino	Comment	
internationally. It is lacking in quality content and scientific community standards. I			
would like to see future STEM careers considered starting at the beginning of these			
1890 curriculum grades.	no	comment	too broad
1892 Add evolution. Even young children can get the concept.	no	evolution	see comment 1001
1900 All children should have at the minimum 30 minutes PE daily.	no	comment	PE Standards
1918 Refer to my response to question 17.	no	- Comment	1 2 Startage
Since the E&SS standards talk about precipitation, I'd like to see something about			
kindergarten students being able to identify three states of matter: solid, liquid, gas.			
1923	no	comment	addressed in first grade
1953 Teach proper evolution	no	evolution	see comment 1001
1955 scientific method	no	comment	occ comment 2002
Evolution, not intelligent design, is based in science. Science, not religion, should be	-	1	
1995 taught in science classes.	no	evolution	see comment 1001
Nothing should be taught within or alongside science that does not have the same	-		
factual basis that all the core concepts included in the draft have. Non-science or			
pseudoscience, has no place in factual science learning for our youth.			
2000	no	comment	
Make it fun!! Make it exciting. Make it something that children will thrive on.			
2013	no	Instruction	
2015 Ambivalent.	no	comment	
2032 Evolution	no	evolution	see comment 1001
2043 All standards need to be included.	no	comment	too broad
2062 No comment.	no	comment	
2079 Science.	no	comment	

For Illusions should add the condition may be also as side of the should as			
For all science standards, the working group should consider if the standards are			
developmentally appropriate for the age group and if they are based on current			
science practices and scientific knowledge. There is no room for non-evidentiary (i.e.			
religious) belief in science. How do classroom teachers feel about the teachability of			
2093 these standards?	no	comment	classroom teachers were involved in this process
2112 Emphasis on observation!	no	instruction	see comment 1506
2127 I have not read the full draft, so have no comment on this	no	comment	
We should only be covering evolution in school. Creationism should be kept separate			
2152 from schools.	no	evolution	see comment 1001
The focus of K.P2.U2.1 is a life science standard and not a physical science standard.			
This standard as written focuses on 3 senses (touch, sight, hearing - not taste/smell).			
If the standard is about the senses then it maybe better suited in a health standard			
and not science. Possible solutions: Plan and conduct an investigation to collect			
evidence that vibrating materials can make sound and that sound can make materials			
vibrate. Make observations to construct an explanation that objects can be seen only			
when illuminated.			
2156	no	comment	see comment 1305
2259 Send the standards back for review.	ves	comment	in progress
2262 Explain evolution.	no	evolution	see comment 1001
2265 Include Evolution, omit Creationism and Intelligent Design .	no	evolution	see comment 1001
Not commenting here because my complaint is about Diane Douglas trying to sneak	110	evolution	See comment 1001
in creationism and Intelligent Design into the state science standards.			
2306		sammant	
	no	comment	
Developmentally appropriate amounts of standards so students have necessary			DE etcudende
2314 amounts of recess and learning through play	no	comment	PE standards
2345 Refer reply in 20 above.	no	comment	
2348 dinosaurs	no	comment	
2351 Where is the physics??	no	comment	not developmentally appropriate in kindergarten
2354	no		
Refer to the Next Generation Science Standards. They NGSS are good standards.			
2364 These are not.	no	comment	see comment 1303
Consider that these are 6 year olds and the information needs to at their level. They			
also need to hear the appropriate science language, not the language of a			
2372 businessperson or politician.	no	comment	science vocabulary is included in standards
2378 Needs to go back to review.	yes	comment	in progress
Keep religious beliefs out of science standards. Children should be introduced to the			
2380 principles of objective science at the earliest age.	no	religion	
Evolution and climate change are commonly adopted science standards. They must			
2384 not be left out.	no	evolution	see comment 1001
Science classes must include the scientific research published in high ranking, peer-			
reviewed journals of climate change, evolution, and mechanisms of natural selection			
if student are to have a better understanding of the scientific process, theories, and			
major mechanisms at work in our world. It is also essential preparation for higher			
education as these are subjects that will be taught heavily in entry level biology class,			
sometimes spanning an entire semester, and make up more advanced science course			
such as organic evolution. It is imperative to a student's education in science that			
large scientific fields such as evolution and climate change research not be censored			
like banned books.			
2390	no	evolution	see comment 1001
I Call for the restoration of the ASE's description of evolution, which is scientifically	IIU	evolutiOH	see comment 1001
accurate and pedagogically appropriate, unlike the proposed revision.l Recommend			
revisions to the treatment of evolution in passages that seem to have been similarly			
weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)		[ [	
2419	no	evolution	see comment 1001

2428	The changes are unacceptable.	no	comment	too broad
	The physical science standards are actually more life science standards about human			
	body senses. Nationally at Kindergarten, students are exploring forces of pushes and			
2465	pulling.	yes	k-12 progression	developmentally appropriate based upon the framework
2487	N/A	no		
2515	see above.	no		
2518	I couldn't care less about Kindergarten.	no	comment	
	Omitting information on change over time, evolution and the big bang theory,			
2520	completely negates the validity of this document.	no	evolution	see comment 1001
	adding design thinking to address K.P2U3.2 to build a foundation for this type of			revise K.p2U3.2 to include "define problems and design
2539	scientific thinking for students.	yes	standard	solutions"
2540	Revised text	no	comment	too broad
	Due to changes made during the internal review, K.P2U2.1 is no longer a physical			
2559	science standard but a life science standard.	Yes	standard	see comment 1305
	I would like more of a focus on the scientific method. Natural sciences were called			
	Natural philosophy for a reason where philosophy refers to the love of knowledge			
	and/or truth. This is a core concept which needs to be there from the beginning. How			
	do we know that something is true? Please watch this			
	https://www.youtube.com/watch?v=Yk5IWzTfWeM it is a great explanation and			
2605	entitled how do we know what is true .	no	comment	too broad
2607	Do not attempt to deny or water down the concepts of evolution.	no	evolution	see comment 1001
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!			
2615	Evolution is real!	no	evolution	see comment 1001
	I disagree with the minimizing of the role Evolution plays in human history and			
	science education. It is not debated in the Science community. The science standards			
	of Arizona need to be compatible with modern scientific fact, not biases or religion. If			
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona			
	Department of Education will omit from Education. That is limiting future generations			
	of American thinkers, who face scientific truths of the world and use the scientific			
	method for progression of humanity. Please revise the k-12 science standards to fit			
	current scientific fact, so that future generations will posses the knowledge they have			
	the right to recieve from their Education department. Thank you.			
2618		no	evolution	see comment 1001
2642	This section is good as is.	no	comment	
2669	Well done.	no	comment	

Survey Question	18. What would you like the working group to consider as they revise the 2018 DRAFT Earth and Space Science Standards in the Kindergarten 2018 DRAFT Science Standards?						
C	Dublic Comment	Astisus bla Vas Ala	Maria Addisasad	Current of Change	Committee Nation		
		Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes		
6	Include reading and preparing for weather forecasts.	no			Curricula/instruction		
40	The same.	no					
89	Redo	no					
103	SimIlify	no					
114	no comment	no					
124	n/a	no					
143	I think the Earth and Space Science Standards look good.	no					
	Kindergarten students can not plan out an investigation- return to original- Observe,						
	record and ask questions.				not applicable - there is not a standards in K earth/space		
145		No			science that states to "Plan an investigation"		

	We should go back to the standards that the committee created and adopt those, not				
157	Diane Douglas's internal review copy.				
	Adopt NGSS standards	no no			
	Looks great!	no			
	Funding	no			
170	if you add rocks/minerals to this grade, you have a way to link the life science to	110			
172	earth science: living vs. non-living.	Yes		Keep as is	Minerals/Rocks in 1st grade; curricula/instruction decision
	Hands on instructions to inspire an inquisitive mind.	no		keep as is	Minerals/Rocks in 1st grade; curricula/instruction decision
	Simplification.	no			
	No revisions needed.	no			
	great				
		no			
	None	no			
	Remove Key Concepts Column	no			
	Nothing	no			
	Nothing in particular.	no			
	These are not what the committee created	no			
	Wait to Test.	no			
335	No suggestions.	no			
	Make sure you are using consistent verbiage throughout especially in the key concept				
359	areas (I.E 4th grade Key concepts)	no			
	Please consider removing the key concepts section. This makes the model more like				
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
	inquiry based.	no			
	Make sure to include the idea of climate change.	no			
435	N/a	no			
	Remove the key concepts as this unnecessary and is more about implementation and				
	should NOT be the intention of the standards.	no			
550	nothing	no			
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,				
	evidenced by the replication of self copying dna in science labs and modern genetic				Does not pertain to this grade level. L4 addressed at k level
	engineering efforts is wrong. Period. Evolution through natural selection over millenia				focuses only on how plants and animals respond to their
1001	is a scientific fact.	no	evolution		environment.
	Scientific standards should be based on scientific research and nothing else.				
	Replacing and watering down the proven science of evolution is a disservice to our				
	kids, a disservice to our teachers, and a disservice to our educational body. STOP				
	TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				
1008		no	evolution		see comment 1001
1031	Include climate change	no	standard		2nd grade standard
	They need to learn about the damaging effects of fossil fuels on the environment.	· ·			
1041		no	comment		not developmentally appropriate
	Page 11, K.E1U1.3 and 4: I am happy with the addition of 'and ask questions.' I just			_	
	hope that this was not added to encourage students to question the science concepts				
1050	related to their observations.	no	comment		
1081	Not reviewed.	no			
	Evolution is not just a theory, it is well established fact by science. Making Biological				
	evolution to Theory of Evolution is a step backwards not an improvement.				
1085		no	evolution		see comment 1001
1091	A kindergartner's level of understanding of the Theory of Evolution.	no	evolution		see comment 1001
	Standard 4: Influence is an inappropriate term. Impact was accurate	yes	standard		revise standard K.E1U1.4 to state "impact"
	Evolution is a scientific fact! To remove or try to water the process down from our				t
	education standards is unacceptable! If we want current or new high dollar business				
	to come to Arizona we must have high standards for our school curriculum. Good				
	and factual science is a must for our standards!				
			l	1	I .
1113		no	evolution		see comment 1001

1165 No comment	no	comment	
That while people have widely different views on matters of faith, the scientific		Comment	
community is 99% percent in agreement that evolution is a demonstrable fact.			
1167	no	evolution	see comment 1001
1171 Only SCIENCE in Science class!	no	curriculum	
1186 the teachers are not science teachers.	no	comment	
1196 Climate change	no	comment	too broad
1221 Not a kindergarten teacher.	no	comment	100 2.000
Nothing in the proposed revisions for any grade are acceptable if they include		comment	
intelligent design or any other form of religious creationism by any other name, and			
if references to evolution have been deleted or treat it as only a theory.			
1223	no	evolution	see comment 1001
1226 Don't revise.	no	comment	
Throw these terrible standards out and adopt instead the excellent Next Generation			
1303 Science Standards developed by STEM professionals.	no	other	AZ Board of Education directive
I believe it would serve the children of AZ better if we would just adopt the Next			
1309 Generation Science Standards.	no	other	See comment 1303
The sheer willful ignorance of removing Evolution from the curriculum is mind			
bogling. It would put Az students at a vast disadvantage when moving to higher			
education. If the superintendent's intention is to replace evolutionary theory with			
intelligent design she should be removed from office and barred from working in			
1311 education for life. Do jot do this.	no	evolution	see comment 1001
1315 Get a scientific expert to rewrite the content or undo the edits.	yes	standard	under revision
The Internal Review provided excellent additional development and clarification. The	,		
1337 Internal Review should be adopted.	no	comment	
1339 Clearly include teaching the concept of evolution.	no	evolution	see comment 1001
1366 Original language should remain	yes	standard	under revision
1403 Teach evolution. Evolution is science.	no	evolution	see comment 1001
If the state allows teaching creationism, they will also have to teach other religion's			
creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the			
1426 Maya creation myth, humans are created out of corn.	no	religion	
1443 nothing	no		
1517 Ditto	no		
1518 EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.	no	evolution	see comment 1001
providing hard science concepts with strong reference to robust science vocabulary			
1529	no	comment	too broad
1547 Removal/replacement/minimizing evolution is completely unacceptable.	no	evolution	see comment 1001
1553 Same as above except on a universal level	no	comment	too broad
1556 Remove all religious references.	no	religion	
NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL			
ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.			
1575	no	religion	
1583 Adding and maintaining teaching Evolution needs to be continued.	no	evolution	see comment 1001
We should include an investigation or something that would include the students			
studying and making conclusions. Plan and conduct an investigation to determine the			
1595 effect of sunlight on Earth's surface	no	curriculum	
1603 How about some anthropogenic climate change too?	no	standard	2nd grade standard
1628 Teach Science and facts in Schools not faith and religion.	no	religion	
	110		T
1641 N/A	no		
·		comment	
1641 N/A	no	comment evolution	see comment 1001
1641 N/A 1645 No comment.	no no		see comment 1001
1641 N/A 1645 No comment. 1660 Fix evolution standards.	no no no		see comment 1001
1641 N/A 1645 No comment. 1660 Fix evolution standards. 1664 See comment #9	no no no no		see comment 1001 too broad

1702 Please do not muddy the language regarding evalution	no	evolution	see comment 1001
1793 Please do not muddy the language regarding evolution	110	evolution	see comment 1001
Restore all original language referencing evolution proposed by the committee of		and the same	
1796 educators with expertise in science education.	no	evolution	see comment 1001
1799 Teach Science, not religion	no	religion	
The original document, before internal review, provided the necessary background			
about what core concepts were expected in science education.			
1800	yes	standard	under revision
1811 Revert all of Diane Douglas's changes.	yes	standard	under revision
1859 Continue to teach evolution. Do not remove it to teach creationism.	no	evolution	see comment 1001
1877 Evolution!	no	evolution	see comment 1001
1886 Outside my area	no	comment	
Science at this grade level should be competitive to the rest of the nation as well as			
internationally. It is lacking in quality content and scientific community standards. I			
would like to see future STEM careers considered starting at the beginning of these			
1890 curriculum grades.	no	comment	too broad
1892 Make them better, not worse.	no	comment	too broad
1900 Teach evolution all oter is pseudo-science	no	evolution	see comment 1001
1918 Refer to my response to question 17.	no		
1941 Specific teachings on the big bang theory should be instituted.	no	comment	not developmentally appropriate in K
1953 Teach proper evolution	no	evolution	see comment 1001
1955 scientific method	no	comment	too broad
Evolution, not intelligent design, is based in science. Science, not religion, should be			
1995 taught in science classes.	no	evolution	see comment 1001
Nothing should be taught within or alongside science that does not have the same			
factual basis that all the core concepts included in the draft have. Non-science or			
pseudoscience, has no place in factual science learning for our youth.			
2000	no	comment	too broad
Make it fun!! Make it exciting. Make it something that children will thrive on. Also		Comment	100 0.000
2013 make it something that a child can relate to.	no	instruction	
2015 Ambivalent.	no	comment	
2032 Evolution	no	evolution	see comment 1001
2043 All standards need to be included.	no	comment	too broad
2062 No comment.	no	comment	too broad
2079 Science.	no	comment	
2093 See above.	no	Comment	
Emphasis on observation!	110		add "observe and ask questions" to like science standards
2112	wos.	standard	K.L2U2.6 and K.I4U2.7
2127 NO teaching of intelligent design (ie creationism) in any classroom.	yes no		K.LZOZ.0 dilu K.14OZ.7
We should only be covering evolution in school. Creationism should be kept separate		religion	
		ovalution	soo commont 1001
2152 from schools.  some mythological alien did not make the sky blue, explain with science, as a parent in the sky blue, explain with science with the sky blue, explain with science with the sky blue, explain with science with the sky blue, explain with science with the sky blue, explain with science with the sky blue, explain with science with the sky blue, explain with science with the sky blue, explain with science with the sky blue, explain with science with the sky blue, explain with science with science with the sky blue, explain with science w	no	evolution	see comment 1001
		sammant	too broad
2180 did along with math and basic earth science.	no	comment	too broad
2259 Send the standards back for review.	yes	standard	under revision
2262 Explain evolution.	no	evolution	see comment 1001
Include Evolution (where relevant), omit Creationism and Intelligent Design .			
2265	no	evolution	see comment 1001
Teaching creationism, or the misnamed intelligent design, is a violation of the			
separation of church and state. If you want your kid to learn fantasy send him to			
Sunday school. Public schools are for fact based subjects that our kids will need to			
navigate the future, not the failed, undefined, and contradictory philosophies			
2273 responsible for most of the earths problems.	no	religion	
Not commenting here because my complaint is about Diane Douglas trying to sneak			
in creationism and Intelligent Design into the state science standards.			
2306	no	comment	too broad
2345 Refer reply in 20 above.	no		

2354	no		
It is impossible to understand geology without a basic understanding of evolution.			
2360	no	evolution	see comment 1001 geology is not taught in kindergarten
Refer to the Next Generation Science Standards. They NGSS are good standards.			881
, , ,	no	comment	see comment 1303
Consider that these are 6 year olds and the information needs to at their level. They			
also need to hear the appropriate science language, not the language of a			
2372 businessperson or politician.	no	comment	science vocabulary is included in the standards
2378 Needs to go back to review.	ves	standard	under review
2380 Keep religious beliefs out of science standards.	no	religion	
Climate change is a crucial concept that should be taught to all kindergarten students.	-		
2384	no	comment	in 2nd grade standards
Science classes must include the scientific research published in high ranking, peer-			
reviewed journals of climate change, evolution, and mechanisms of natural selection			
if student are to have a better understanding of the scientific process, theories, and			
major mechanisms at work in our world. It is also essential preparation for higher			
education as these are subjects that will be taught heavily in entry level biology class,			
sometimes spanning an entire semester, and make up more advanced science course			
such as organic evolution. It is imperative to a student's education in science that			
large scientific fields such as evolution and climate change research not be censored			
like banned books.			
	no	evolution	see comment 1001
I Call for the restoration of the ASE's description of evolution, which is scientifically		evolution.	500 0011111011 1001
accurate and pedagogically appropriate, unlike the proposed revision. I Recommend			
revisions to the treatment of evolution in passages that seem to have been similarly			
weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
· · · · · · · · · · · · · · · · · · ·	no	evolution	see comment 1001
2428 Stick to actual science and stop dumbing down our children!	no	comment	too broad
2487 N/A	no		
2515 see above	no		
2518   couldn't care less about Kindergarten.	no	comment	
Omitting information on change over time, evolution and the big bang theory,			
2520 completely negates the validity of this document.	no	evolution	see comment 1001
2539 N/A	no		
2540 Revised text	no	comment	
2607 Do not attempt to deny or water down the concepts of evolution.	no	evolution	see comment 1001
STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!			
2615 Evolution is real!	no	evolution	see comment 1001
I disagree with the minimizing of the role Evolution plays in human history and			
science education. It is not debated in the Science community. The science standards			
of Arizona need to be compatible with modern scientific fact, not biases or religion. If			
Evolution is being wrongfully omitted I grieve to know what other facts the Arizona			
Department of Education will omit from Education. That is limiting future generations			
of American thinkers, who face scientific truths of the world and use the scientific			
method for progression of humanity. Please revise the k-12 science standards to fit			
current scientific fact, so that future generations will posses the knowledge they have			
the right to recieve from their Education department. Thank you.			
2618	no	evolution	see comment 1001
2642 This section is good as is.	no	comment	
2669 Include reading and preparing for weather forecasts.	no	instruction	

urvey uestion	19. What would you like the working group to consider as they revise the 2018 DRAF	T Life Science Standards	in the Kindergarten 2018	DRAFT Science Standard	s?
omment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	Redo	no			
103	Simplify	no			
	Evolution section is weak and watered down. It needs to be strengthened.				
114		no			
124	1 n/a	no			
	K.L1U1.5 - again this standard seems to reach beyond the conceptual level of a				
	kindergartnerWhat is meant by obtain here? What are they to obtain? Investigate				
	might be a more appropriate word for what I think the outcome is supposed to				
	be.Key Concepts for K.L4U2.7 - how is farming related to specialized structures found			see comment Q#16 -	•
143	on plants and animals	yes	k.l1.u1.5; kl4.u2.7	276	
	K.L2U2.6 take out properties of as it is redundant. Living and non-living things do				
	not have properties but rather characteristics. Does not need this additional			Remove the words	
145	language.	Yes	k.l2.u2.6	"properties of"	Properties is used incorrectly as noted in the public comme
	We should go back to the standards that the committee created and adopt those, not				
157	7 Diane Douglas's internal review copy.	no			
162	2 Adopt NGSS standards	no			
166	Looks great!	no			
170	Funding	no			
189	Hands on instructions to inspire an inquisitive mind.	no			
208	Simplification.	no			
253	I do not feel that these standards are appropriate for this grade level.	no			
	maybe too much	no			
	Move the body systems standard to a higher grade level in order to give the			see comment Q#16 -	
258	Kindergarteners a realistic load.	yes		276	
	Page 11Remove Key Concepts ColumnRemove K.L1U1.5 - how will students 'Obtain'				
	how the human body has different systems that carry out life processes? Also, since				
	it is in green, the teacher's did not indicate that this is a standard that should be			see comment Q#16 -	
26	taught at the Kindergarten level.	ves		276	
	Obtaining and evaluating body systems does not make sense at this level. If we want	,			
	them to understand that the human body has different systems that have different				
	basic functions, great! Let's re-word it to say that!Each standard must be age-				
	appropriate, the revisions make them so they are not.			see comment Q#16 -	
276		yes		276	
	Nothing	no		2.0	
	Nothing in particular.	no			
	I These are not what the committee created	no			
	Wait to Test.	no			
	No suggestions.	no			
33.	I would like to add something in earth and space sciences about how the earth	110			
	rotates around the sun and a shadow is dependent on the location of the sun to an				
	object. Also add in K.L2U2.6 classifying and sorting is is such an important skill that				
	young learners need to practice. Also properties and states of matter should be				
	introduced in kindergarten. sink and float experiments are appropriate and so				
	fascinating to young learners. Kindergarten is so experiential they need a little bit of				
					Earth & Sup system is addressed in 2nd goods. Supporting
	everything so 1.P3U1.3 can be broken down into 2 pieces so kindergarten students				Earth & Sun system is addressed in 2nd grade; Suggestion for
	can understand that objects can be moved with out touching them.	v. 1			classifying & sorting is an instructional decision; properties
359		Yes/no			matter are addressed in 2nd grade
	I would prefer if age appropriate sex ed started in kindergarten, but that seems to be				L
383	a different subject than just life science.	no			This should be addressed in the health academic standards

			,	T
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
390	inquiry based.	no		
	Evolution should be front and center from an early stage in life. It promotes logical			
412	thinking skills.	no		
435	N/a	no		
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	no		
550	nothing	no		
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,			
	evidenced by the replication of self copying dna in science labs and modern genetic			Does not pertain to this grade level. L4 addressed at K level
	engineering efforts is wrong. Period. Evolution through natural selection over millenia			focuses only on how plants and animals respons to their
1001	is a scientific fact.	no	evolution	envrionment
	Scientific standards should be based on scientific research and nothing else.			
	Replacing and watering down the proven science of evolution is a disservice to our			
	kids, a disservice to our teachers, and a disservice to our educational body. STOP			
	TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.			
1008	TRAING TO ERASE SCIENCE WITH TOOK FERSONAL RELIGIOUS BELIEFS.	no	evolution	see comment 1001
	Evolution should be included	no	evolution	see comment 1001
	As far as I know, they are OK.	no	comment	see comment 1001
1081		ПО	comment	
	Evolution is not just a theory, it is well established fact by science. Making Biological			
	evolution to Theory of Evolution is a step backwards not an improvement.			
1085		no	evolution	see comment 1001
1091	A kindergartner's level of understanding of the Theory of Evolution.	no	evolution	see comment 1001
	We need to start teaching children about all aspects of life including evolution from			
	the very beginning.	no	evolution	see comment 1001
1165	No comment	no	comment	
	That while people have widely different views on matters of faith, the scientific			
	community is 99% percent in agreement that evolution is a demonstrable fact.			
1167		no	evolution	see comment 1001
1171	Only SCIENCE in Science class!	no	comment	
1186	The teachers are not science teachers.	no	comment	
	Environmental studies should include information regarding human impact.			
1190		no	comment	2nd grade standard
1196	Evolution	no	evolution	see comment 1001
1219	Get rid of intelligent design. Restore references to evolution.	no	evolution	see comment 1001
	Not a kindergarten teacher	no	comment	
	Nothing in the proposed revisions for any grade are acceptable if they include			
	intelligent design or any other form of religious creationism by any other name, and			
	if references to evolution have been deleted or treat it as only a theory.			
1223	, , , , , , , , , , , , , , , , , , , ,	no	evolution	see comment 1001
	Don't revise.	no	comment	
1120	Please see my earlier comments (Qu 13/17) regarding the scope of evolution	-		
1252	education.	no	evolution	see comment 1001
1232	Throw these terrible standards out and adopt instead the excellent Next Generation			555 5511115115 1991
1202	Science Standards developed by STEM professionals.	no	other	AZ Board of Education directive
1303	Obtain, evaluate, and communicate how the human body has different systems that	IIIO	ouici	AZ BODITO OF EQUICATION DIFFECTIVE
	carry out life processes. A kindergartner evaluating how the human body has			
1205	different systems that carry out life processes is not developmentally appropriate.			And housed
1305		no	comment	too broad
	I believe it would serve the children of AZ better if we would just adopt the Next			. 4202
1309	Generation Science Standards.	no	comment	see comment 1303

The sheer willful ignorance of removing Evolution from the curriculum is mind			
bogling. It would put Az students at a vast disadvantage when moving to higher			
education. If the superintendent's intention is to replace evolutionary theory with			
intelligent design she should be removed from office and barred from working in			
1311 education for life. Do jot do this.	no	evolution	see comment 1001
1315 Get a scientific expert to rewrite the content or undo the edits.	yes	comment	under revision
The Internal Review provided excellent additional development and clarification. Th			
1337 Internal Review should be adopted.	no	comment	
This applies to the Distribution of K-2 standards - page 20:' L4: The theory of			
evolution seeks to make clear the unity and diversity of living and extinct			
organisms. 'This is imprecise. In each section this should read 'The study of evolution			
seeks to demonstrate…¹ First, evolution is an established scientific theory. A			
scientific theory differs from the 'street' use of theory, which indicates a 'guess'			
about causation or relationship. In contrast, a scientific theory can be tested and			
potentially disproved. These tests are rigorous observational or experimental			
attempts to demonstrate that the scientific theory cannot explain a pattern in nature	-		
Failure to disprove or refute the scientific theory increases confidence in it, although			
it cannot be considered as proven. Two things distinguish evolution as a 'scientific			
theory' from the more general use of 'theory.' First, as inferred above, it can be			
tested and potentially falsified using experiment or observation. Second, it has been			
tested time and time again, in many systems and with many organisms, for well over			
150 years, and has withstood those tests. It has not been disproven. Thus it is the			
STUDY of evolution â€" mechanisms of organic change, intrinsic or environmental			
characteristics driving or influencing the nature or rate of change, etc. (studies of			
which serve to 'test' the underlying theory) â€" that have provided evidence of 'the			
unity and diversity of living and extinct organisms.'			
1338	no	evolution	see comment 1001
<u> </u>			
1339 Clearly include teaching the concept of evolution.	no	evolution	see comment 1001
1366 Original language should remain	no yes	evolution comment	see comment 1001 under revision
1366 Original language should remain 1403 Teach evolution. Evolution is science.	no	evolution	see comment 1001
1366 Original language should remain  1403 Teach evolution. Evolution is science.  If the state allows teaching creationism, they will also have to teach other religion's	no yes	evolution comment	see comment 1001 under revision
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1556 Remove all religious references.	no	religion	
NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL			
ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.			
1575	no	religion	
1583 Adding and maintaining teaching Evolution needs to be continued.	no	evolution	see comment 1001
Hey here is a thought: Let's talk about climate change! Communicate solutions that			
will reduce the impact of humans on living organisms and non-living things in thelocal			
1595 environment.	no	standard	2nd grade standard
1603 Actual SCIENCE would help. NOT RELIGION.	no	religion	
1628 Teach Science and facts in Schools not faith and religion.	no	religion	
1641 N/A	no		
1645 No comment.	no	comment	
1660 Fix evolution standards.	no	evolution	see comment 1001
1664 See comment #9	no		
1672 See first comment	no		
1678 Pure foolishness	no	comment	too broad
1681 N/a	no		
See earlier general comments about the importance of including Evolution as the			
1689 underlying explanation of all aspects of Biology.	no	evolution	see comment 1001
1694 Only facts based on repeatable scientific tests.	no	comment	too broad
As I mentioned in Question 15, I would like to see changes made to the way evolution			
1739 is described in the Draft	no	evolution	see comment 1001
1793 Please do not muddy the language regarding evolution	no	evolution	see comment 1001
Evolution has been amply confirmed by science, just like photosynthesis or relativity.			
It's absurd to use ambiguous or tentative language. These are very bad revisions that			
were made, they clearly weren't endorsed by the writing committee, and it's			
somewhat disrespectful to them to make these changes. Please don't avoid eduction			
1795 on evolution.	no	evolution	see comment 1001
Restore all original language referencing evolution proposed by the committee of			
1796 educators with expertise in science education.	no	evolution	see comment 1001
1799 Teach Evolution, not Creationism	no	evolution	see comment 1001
The original document, before internal review, provided the necessary background			
about what core concepts were expected in science education.			
1800	yes	comment	revision in progress
1811 Revert all of Diane Douglas's changes.	yes	comment	revision in progress
1859 Continue to teach evolution. Do not remove it to teach creationism.	no	evolution	see comment 1001
Life Science standards should be strictly and wholly secular in nature and follow the			
1890 most up to date science community's recommendations.	no	comment	too broad
1892 Evolution is all there is.	no	evolution	see comment 1001
1900 Children love these subjects. Make it intersting.	no	instruction	
1918 Refer to my response to question 17.	no		
1926 Darwin please.	no	evolution	see comment 1001

	K.L1U1.5 It says 'Obtain, evaluate, and communicate how the human body has			
	different systems that carry out life processes.' - this wording leaves some to be			
	desired, and we are not shown what previous wording was. You presumably mean			
	'obtain information about'? What are kindergardeners supposed to do to 'evaluate'?			
	Are they evaluating the information about the human body, or evaluating the			
	systems of the human body? What value is being measured here?K.L2U2.6 'air, food,			
	water, energy' are not 'properties of non-living' things. This needs at least rephrasing			
	but also clarification. Air is a non-living thing, but what are kids now learning about			
	how it is different from living things?K.L4U2.7 Key concepts listed bear no			
	relationship to the topic of the standard.K.L2U2.6 and K.L4U2.7 both remove the			
	term 'observe' - why? Observation, particularly careful, thorough observation, is one			
	of the most important skills as scientist and anyone who seeks to understand and			
	evaluate evidence. Information does not come from asking questions and explaining			
	alone - information is actually gathered by careful observations (or researching			
	sources).			First part of comment addresses curriculum and instruction.
				revise standard K.L2U2.6 and K.L4U2.7 to add the word
1929		yes	standard	"observe" back in.
	Specifically Charles Darwins theory of evolution must be taught. It forms the			
	foundation of life science scientific inquiry. By not teaching Darwins theory of			
1941	evolution you diminish the quality of education for our children.	no	evolution	see comment 1001
	Strengthen the teaching of evolution and global change to reflect the science of these			
1944	subjects.	no	evolution	see comment 1001
	Evolution is presented as a theory, which is technically incorrect, and the curriculum			
	fails to mention other proposed explanations of origins and development.			
1945		no	evolution	see comment 1001
	Teach proper evolution	no	evolution	see comment 1001
	scientific method critical for those inclined to medicine, biology	no	comment	too broad
1555	Evolution, not intelligent design, is based in science. Science, not religion, should be	110	Comment	100 51000
1995	taught in science classes.	no	evolution	see comment 1001
1555	Nothing should be taught within or alongside science that does not have the same	110	CVOIDUOII	see comment 1001
	factual basis that all the core concepts included in the draft have. Non-science or			
	·			
2000	pseudoscience, has no place in factual science learning for our youth.			
2000		no	comment	too broad
	STOP calling Evolution a theory. It is not, and it is wrong to spout such			
	nonsense.STOP thinking that everything has both a positive and negative effect -			
	those are often subjective concepts and should be removed from the document.			
2013		no	evolution	see comment 1001
2015	Ambivalent.	no	comment	
	Introduce evolution	no	evolution	see comment 1001
2030		no		
2032	Evolution	no	evolution	see comment 1001
2036	As above.	no		
2043	All standards need to be included.	no	comment	too broad
2062	Evolution as scientific fact instead of Creationism needs to be added back.	no	evolution	see comment 1001
2079	The science of evolution.	no	evolution	see comment 1001
2093	See above.	no		
	See previous comments on the treatment of evolutionary biology.	no	evolution	see comment 1001
	Emphasis on observation!	no	instruction	
	I have not read the full draft, so have no comment on this	no	comment	
	We should only be covering evolution in school. Creationism should be kept separate			
2152	from schools.	no	evolution	see comment 1001
2132		1	0.0.00001	Dec somment 1001

Г	T	I	T T	
	K.I1U1.5 Human body systems is not a part of the Framework or the Working with Big			
	Ideas for this standard. Delete. This should be included in Health			
	Standards.K.L2.U2.6 - Delete properties, insert characteristics. Living and non living			
	organisms do not have properties; they have characteristics.			
2156		yes	standard	consider revising or deleting standard K.L1U1.5
	Don't eliminate references to evolution, as it's necessary to understand life sciences.			
2203	, ,	no	evolution	see comment 1001
	Understanding evolution is critical to the fields of medicine, biology, and applied			
2208	science like agriculture.	no	evolution	see comment 1001
	Evolution must be taught.	no	evolution	see comment 1001
	· ·			
	Send the standards back for review.	Yes	comment	under revision
2262	Explain evolution.	no	evolution	see comment 1001
	Include Evolution, omit ANY MENTION OF Creationism and Intelligent Design .			
2265		no	evolution	see comment 1001
	Teaching creationism, or the misnamed intelligent design, is a violation of the			
	separation of church and state. If you want your kid to learn fantasy send him to			
	Sunday school. Public schools are for fact based subjects that our kids will need to			
	navigate the future, not the failed, undefined, and contradictory philosophies			
2273	responsible for most of the earths problems.	no	religion	
	Not commenting here because my complaint is about Diane Douglas trying to sneak		rengion	
	in creationism and Intelligent Design into the state science standards.			
2200	In creationism and intelligent besign into the state science standards.			
2306	S	no	comment	
	Sex education should begin at this age including awareness of other's (LGBTQ ect)			
	and to remove stigma of sex and masturbation. Research shows that toddlers and			
	people of all ages masturbate and repressing this and sexual orientation and gender			
	identity has a strong correlation to mental health issues in adults.			
2314		no	comment	see Health Standards
2345	Refer reply in 20 above.	no		
2354		no		
	Children in Kindergarten should be introduced to basic concepts in evolutionary			
2360	theory.	no	evolution	see comment 1001
	Refer to the Next Generation Science Standards. They NGSS are good standards.			
2264	These are not.	no	other	see comment 1303
2304		110	otilei	See comment 1303
	Consider that these are 6 year olds and the information needs to at their level. They			
	also need to hear the appropriate science language, not the language of a			
	businessperson or politician.	no	comment	scientific vocabulary is included
	Needs to go back to review.	yes	comment	revision in progress
	Keep religious beliefs out of science standards.	no	religion	
2384	Climate change and evolution must be adopted as standard curriculum.	no	evolution	see comment 1001
	Science classes must include the scientific research published in high ranking, peer-			
	reviewed journals of climate change, evolution, and mechanisms of natural selection			
	if student are to have a better understanding of the scientific process, theories, and			
	major mechanisms at work in our world. It is also essential preparation for higher			
	education as these are subjects that will be taught heavily in entry level biology class,			
	sometimes spanning an entire semester, and make up more advanced science course			
	· · · · · · · · · · · · · · · · · · ·			
	such as organic evolution. It is imperative to a student's education in science that			
	large scientific fields such as evolution and climate change research not be censored			
	like banned books.			
2390		no	evolution	see comment 1001
	I Call for the restoration of the ASE's description of evolution, which is scientifically			
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend			
	revisions to the treatment of evolution in passages that seem to have been similarly			
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
2419	·	no	evolution	see comment 1001
2-13		l <u>-</u>		

ence standards

Public Comment Non-Survey	ublic comment received outside of the survey				
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes

rvey Question	21. What would you like the working group to consider as they revise the First Grade	2 2020 2.3.4 1 Science Standards:			
mment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
45	Please follow the National science education standards.	No			
89	9 No comment	no			
	Evolution section is weak and watered down. It needs to be strengthened.				
114	4	no			
124	4 n/a	no			
	I question if conceptually first graders can plan and carry out investigations. I believe				Include the learning progression for
	that they can investigate different phenomena however I do not think that they are				A Framework for the SEP's that
	conceptually able to plan their own investigation at this age.				delineate the expectations for the
					SEPs at grade band as a resource
143	3	yes		Keep as is	appendix
	Put back in 'In this grade level, students learn how objects can impact other objects				
	from a distance or by contact with each other, how organisms interact with Earth,		1.p3.u1.3, 1.l1.u1.6,		The current draft standards addre
145	and how life systems have cycles.	Yes	and 1.l2.u1.8	Keep as is	these concepts as written.
	We should go back to the standards that the committee created and adopt those, not				
157	7 Diane Douglas's internal review copy.	No			
162	2 Adopt NGSS standards	no			
	I trust the work of Science Specialists who devoted their time and energy to improve				
	Arizona's science standards and request their direct incorporation as new standards.				
168	B	no			
170	D Funding	no			
185	would like a check list to be able to follow along	no			
189	A more clearer perimeters to teach within.	no			
	Please provide a starting point. The Big Ideas are great, however there is a concern				Assessment boundary or learning
	that information and concepts will be overlooked.				progession could be added to pro
193	3	yes			clarity of standard
	Make sure the first grade standards continue to build on the kinder standards.				
197	7	no			
203	The Key concepts should be dropped from every grade level.	no			
208	Simplification.	no			
	I'd like us to implement the Next Generation Science Standards, already in use in				
213	many states and districts. https://www.nextgenscience.org/	no			
253	Allow students to think critically throughout each standard of the lesson.	no			
252	What resources are available to teach these standards	no			
	Page 9, 21, 33Remove last sentence: 'Suggestions for key conceptsor maximum				
	content limits. 'Pages 12, 15, 19, 24, 28, 31, 37, 41, 45Remove these connections - as				
	soon as standards change the Science standards need to be changed. Each group of				
	standards needs to be stand alone. If ADE wants to have another document that				
	does a crosswalk of all of the standards in another document, that would be more				
	appropriate than the Science Standards.			see comment Kinder	
265	** *	yes		Q16 - 265	
	Is this too much for first grade? It seems heavy in extensive, important concepts.	7		-,	
269	Take a second look to consider.	no			
	I think it is great to start them out early with supporting their reasoning. Our purpose				
	is for students to think. The internet has made everyone lazy so the crosscutting				
	concept of problem solving should be in every grade level.				
279		no			
	1 Nothing	no			
	Nothing in particular.	no			
	1 These are not what the committee created	no			
	2 Make the connections to the health standards more clear	no			
	6 Wait to Test.	no			

335	No suggesstions	no		
352	The standards work for the grade level.	no		
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
390	inquiry based.	no		
	Not specific enough. Too broad and can leave too much interpretation for later grade			
433	levels to struggle with	no		
435		no		
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	no		
	nothing	no		
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,			
	evidenced by the replication of self copying dna in science labs and modern genetic			Does not pertain to this grade level.
	engineering efforts is wrong. Period. Evolution through natural selection over millenia			L4 addressed at K level focuses only
	is a scientific fact.			on how plants and animals respost to
1001		no	evolution	their environment.
1001	Scientific standards should be based on scientific research and nothing else.		evolution	their environment.
	Replacing and watering down the proven science of evolution is a disservice to our			
	kids, a disservice to our teachers, and a disservice to our educational body. STOP			
	TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.			
1008	TRAING TO ENGL SCIENCE WITH TOOKT ENGOTWIE RELIGIOUS BELLETS.	no	evolution	see comment 1001
1000	Evolution is not just a theory, it is well established fact by science. Making Biological	110	evolution	300 0011111011 1001
	evolution to Theory of Evolution is a step backwards not an improvement.			
1085	evolution to Theory of Evolution is a step backwards not an improvement.	no	evolution	see comment 1001
	A first grader's level of understanding of the Theory of Evolution.	no	evolution	see comment 1001
1031	Without ADE additions, this would be a strongly agree.Connections to other		everation.	300 0011111011 1001
	academic disciplines. •Bemove entirely from the document. This belongs in a			
	support document or curriculum adopted locally.•⊞hese do not belong in a			
	standards document. They become obsolete as soon as any of the standards from			
	referenced disciplines are updated and approved by the state board.•Additionally,			
	many of the connections cited don't actually align to the standards within the grade			
	level. Key concepts Column•M/hat ADE added are not actually concepts, they are			
	random vocabulary terms which may or may not be aligned to the standards and in			
	many cases are not appropriate for the grade level. acceeding to the standards and in			
	column from the document.• <b>B</b> ADE requires that the key concepts column			
	remains, select the actual concepts from the Framework or Big Ideas documents,			
	since those documents are research-based and used in the development of the			
	standards.•tikey concepts, if included must represent concepts from all three			
	dimensions, and not just the content of science. Below is an example for 1.P3U1.3			
	Follow this process for each of the first grade standards, not just the example			
	below.Remove list of vocabulary terms from the Key Concepts column and replace			
	with the actual concepts related to this standard that represent all three			
	·			
	dimensions:•Mith guidance, plan and conduct an investigation in collaboration with peers. •Bcientists use different ways to study the world. •Bushes and pulls			
	can have different strengths and directions. •Bushing or pulling on an object can			
	change the speed or direction of its motion and can start or stop it. •働/hen objects touch or collide, they push on one another and can change motion. •遇 bigger push			
	. ,,			
	or pull makes things speed up or slow down more quickly. •§imple tests can be			
	designed to gather evidence to support or refute student ideas about causes.			
1092		yes	organization	key concepts are being revised

Evolution is a scientific fact! To remove or try to water the process down from our			
education standards is unacceptable! If we want current or new high dollar business			
to come to Arizona we must have high standards for our school curriculum. Good			
and factual science is a must for our standards!  1113		avalution	see semment 1001
	no no	evolution evolution	see comment 1001 see comment 1001
1148 Evolution is not a theory.	no		see comment 1001
1165 No comment  That while people have widely different views on matters of faith, the scientific	110	comment	
community is 99% percent in agreement that evolution is a demonstrable fact.			
1167		evolution	500 somment 1001
1171 Only SCIENCE in Science class!	no no	comment	see comment 1001 too broad
1186 See kindergarten comments.	no	Comment	too broad
1196 Actual science standards	no	comment	
1219 Get rid of intelligent design. Restore references to evolution.	no	evolution	see comment 1001
1221 Make them more understandable	no	comment	too broad
1222 Not utilize language in re Darwinism, natural selection or evolution.	no	evolution	see comment 1001
Nothing in the proposed revisions for any grade are acceptable if they include	110	evolution	see comment 1001
intelligent design or any other form of religious creationism by any other name, and			
if references to evolution have been deleted or treat it as only a theory.			
1223	no	evolution	see comment 1001
1226 Don't revise.	no	comment	3cc comment 1001
Consistently omits the focus on investigating and justifying using evidence to support		Comment	
1278 hypothesis.	no	comment	too broad
Creationism and intelligent design are okay for churches, not for public education.		comment	too broad
Do you think that I can study through medical school if I learned intelligent design?			
1298	no	religion	
Throw these terrible standards out and adopt instead the excellent Next Generation		rengion	
1303 Science Standards developed by STEM professionals.	no	other	AZ Board of Education direc
The addition of the Key Concepts column add vocabulary words that would normally			
be the decision of local districts. This column is unnecessary and superfluous.			
1305	yes	organization	under revision
I believe it would serve the children of AZ better if we would just adopt the Next			
1309 Generation Science Standards.	no	other	see comment 1303
The sheer willful ignorance of removing Evolution from the curriculum is mind			
bogling. It would put Az students at a vast disadvantage when moving to higher			
education. If the superintendent's intention is to replace evolutionary theory with			
intelligent design she should be removed from office and barred from working in			
1311 education for life. Do jot do this.	no	evolution	see comment 1001
1315 Get a scientific expert to rewrite the content or undo the edits.	yes	standard	under revision
The Internal Review provided excellent additional development and clarification. The	e		
1337 Internal Review should be adopted.	no	comment	
1339 Clearly include teaching the concept of evolution.	no	evolution	see comment 1001
1366 Original language should remain	yes	comment	under revision
1403 Teach evolution. Evolution is science.	no	evolution	see comment 1001
1 100 Teach evolution 2 volution is science.			
If the state allows teaching creationism, they will also have to teach other religion's	•		
If the state allows teaching creationism, they will also have to teach other religion's	no	religion	
If the state allows teaching creationism, they will also have to teach other religion's creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the	no no	religion evolution	see comment 1001
If the state allows teaching creationism, they will also have to teach other religion's creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the 1426 Maya creation myth, humans are created out of corn.		Ţ	see comment 1001 see comment 1001
If the state allows teaching creationism, they will also have to teach other religion's creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the 1426 Maya creation myth, humans are created out of corn.  1443 evolution should be included in all grades	no	evolution	•

			T	
	If first grade is supposed to be about cycles, why do the Earth science standards focus			
	on properties of Earth materials? Maybe add a cross-cutting concept focus that			
	addresses properties of materials, such as energy and matter.			
1538				
1547	Removal/replacement/minimizing evolution is completely unacceptable.			
1553	See above			
1556	Remove all religious references.			
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL			
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.			
1575				
1583	Adding and maintaining teaching Evolution needs to be continued.			
	I would like to see more of the engineering design process and computational			
	thinking to be included in these standards and all the science standards. The earlier			
	we get students to start thinking this way the better off they will be. We need to be			
	preparing our students for a future of technology!			
1595	, , , , , , , , , , , , , , , , , , , ,			
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.			
	Teach Science and facts in Schools not faith and religion.			
1641				
	No comment.			
	Fix evolution standards.			
	See comment #9			
	See first comment			
	No issues. Seems appropriate.			
	See earlier general comments about the importance of including Evolution as the			
	underlying explanation of all aspects of Biology.			
	Science doesn't require belief. It requires facts. It can be proven and that proof can			
	be repeated.			
	Please do not muddy the language regarding evolution			
	Evolution has been amply confirmed by science, just like photosynthesis or relativity.			
	It's absurd to use ambiguous or tentative language. These are very bad revisions that			
	were made, they clearly weren't endorsed by the writing committee, and it's			
	somewhat disrespectful to them to make these changes.Please don't avoid eduction			
	on evolution.			
	Restore all original language referencing evolution proposed by the committee of			
	educators with expertise in science education.  The sooner kids learn about real science, the better off they will be.			
	,			
	The original document, before internal review, provided the necessary background			
	about what core concepts were expected in science education.			
1800	December 11 of Diseas December 1 of Diseas December 1			
-	Revert all of Diane Douglas's changes.			
	Continue to teach evolution. Do not remove it to teach creationism.			
	See above			
	Life Science standards should be strictly and wholly secular in nature and follow the			
	most up to date science community's recommendations, including the scientifically			
	proven models of evolution and Darwinism.			
	Keep the science in science. Looking toward religious groups is moronic.			
	Start teaching the fundamental of evolution.			
1918	See my comments			

	Evolution is an accepted theory of science. The striking of this word and replacing it		
	with more generic terminology is misleading and weakens the standards. The		
	redefining of evolution as seeks to make clear the unity and diversity of living and		
	extinct organisms is meaningless and not in alignment with accepted scientific		
	thinking. The term and definition of evolution should remain as is. The reason for		
	renaming of the scientific method to science and engineering is dubious and is not in		
	alignment with accepted scientific thinking. The scientific method is a process by		
	which facts demonstrate proof to validate or disqualify any scientific theory. The		
	term scientific method should remain as is. The elimination of the scientific theory of		
	·		
	the origin of the universe, known as the Big Bang is also dubious and not in alignment		
	with accepted scientific thinking. References to the Big Bang should remain as is.The		
	changes outlined above weaken the Arizona K-12 science standards and moves us		
	away from creating a system that provided world-class education. I oppose these		
	changes.		
	1922		
	They're in first grade. Some of your standards seems more appropriate for 2nd or		
	1923 3rd.		
	Evolution is presented as a theory, which is technically incorrect, and the curriculum		
	fails to mention other proposed explanations of origins and development.		
	1945		
	1953 Teach proper evolution.		
	1955 Critical thinking; must know that there something it is called Science		
	Evolution, not intelligent design, is based in science. Science, not religion, should be		
	1995 taught in science classes.		
	Nothing should be taught within or alongside science that does not have the same		
	factual basis that all the core concepts included in the draft have. Non-science or		
	· ·		
	pseudoscience, has no place in factual science learning for our youth.		
	2000		
	On pg 13, first paragraph, unnecessarily restricts concepts. What is wrong with		
	survival as a concept? On pg 14, what is wrong with evaluating habitats? Also,		
	groups are classified by differences as well as by similarities.		
	2013		
	Introduce more scientific concepts. Elaborate upon scientific theory and philosophy.		
	2015		
	2030 L4		
	2032 Evolution		
<del>                                     </del>	2036 as above.		
	2043 All standards need to be included.		
	2062 No comment.		
	2079 Science.		
	2093 See item 24.	 	 
	Add science that is also social science. Anthropology, archaeology, sociology, human	 	 
	2096 development etc		
	2115 No specific recommendations for this level		
	2127 I have not read the full draft, so have no comment on this		
	There are some concepts that may be difficult for first graders to grasp. The working		
	of the standard should be looked at in order to make it friendly for the students and		
	2146 teacher.		
1	We should only be covering evolution in school. Creationism should be kept separate		

Include all of the crosscutting concepts (CCC) that could be aligned with the standard(s) in the actual table. The introduction gives guidance of the CCC's for kindergarten, however they need to be integrated into the standards or they will not	
kindergarten, however they need to be integrated into the standards or they will not	
be taught as deemed in the introduction (3-dimensional instruction)	
2156	
Understanding the theory of evolution is critical to the fields of medicine, biology,	
2199 and applied science like agriculture.	
Understanding evolution is critical to the fields of medicine, biology, and applied	
2208 science like agriculture.	
2259 Send the standards back for review.	
2262 Explain evolution.	
2265 Include Evolution, omit Creationism and Intelligent Design .	
Please consider removing 1 P2u2.2 and 1 L3u2.9, these concepts are too complex for	
first graders. First graders don't need to start thinking about genetics yet!	
2292	
Not commenting here because my complaint is about Diane Douglas trying to sneak	
in creationism and Intelligent Design into the state science standards.	
2306	
2314 See kindergarten sections	
2345 Refer reply in 20 above.	
2354	
Refer to the Next Generation Science Standards. They NGSS are good standards.	
2364 These are not.	
2378 Needs to go back to review.	
2380 Keep religious beliefs out of science standards.	
2384 Include all commonly adopted science standards.	
Please consider what is developmentally appropriate and develop their natural	
2387 curiosity.	
2410 Don't teach first, sorry!	
I Call for the restoration of the ASE's description of evolution, which is scientifically	
accurate and pedagogically appropriate, unlike the proposed revision. I Recommend	
revisions to the treatment of evolution in passages that seem to have been similarly	
weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may	
in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)	
2419	
2428 Stick to actual science and stop dumbing down our children!	
Get rid of the knowing and using science and key concepts. Integrate more the three	
2465 dimensions of A Framework for K-12 Science Education.	
2471 evolution rather than theory of	
2487 Restore 1.L4U4.11 to original terminology.	
2467 Restore 1.1404.11 to original terminology.  2515 see above	
2515   See above   2518   Couldn't care less about First Grade.	
Omitting information on change over time, evolution and the big bang theory,	
2520 completely negates the validity of this document.	
2529 Include health standard that includes body awareness	
How are key concepts different than vocabulary lists, as they could be focused on in	
that way leaving out inquiry entirely. In 1.L4U4.11 is argument and evidence of	
authors claim taught as a 1st grade ELA skill? If not this would be difficult to do just in	
2539 science.	
All the standards should be aligned with each grade level and grow in rigor as the	
student moves through the higher grade levels. The content, though, should be	
2582 similar in all grade levels.	
2607 Do not attempt to deny or water down the concepts of evolution.	
STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!	
2615 Evolution is real!	

	I disagree with the minimizing of the role Evolution plays in human history and		
	science education. It is not debated in the Science community. The science standards		
	of Arizona need to be compatible with modern scientific fact, not biases or religion. If		
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona		
	Department of Education will omit from Education. That is limiting future generations		
	of American thinkers, who face scientific truths of the world and use the scientific		
	method for progression of humanity. Please revise the k-12 science standards to fit		
	current scientific fact, so that future generations will posses the knowledge they have		
	the right to recieve from their Education department. Thank you.		
2618			
2642	This section is good	<u>'</u>	_

mment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	Please follow the National science education standards.	no			
	No comment	no			
	n/a	no			
124	n/a	no			
	I question if conceptually first graders can plan and carry out investigations. I believe				
	that they can investigate different phenomena however I do not think that they are				
	conceptually able to plan their own investigation at this age.			See comment Q21-	
143		yes		C143	
	We should go back to the standards that the committee created and adopt those, not				
157	Diane Douglas's internal review copy.	no			
162	Adopt NGSS standards	no			
170	Funding	no			
189	A more clearer perimeters to teach within.	no			
197	Be specific with language.	no			
208	Simplification.	no			
250	should offer key concepts to include instead of saying refer to standard	no			
252	good	no			
	Page 13Remove Key Concepts ColumnUnder 1.P2U1.1 - what did the green type				
	replace - will 1st grade really plan investigations, or just carry them out? What did				
	the teachers have here? Unless it was a grammatical fix, it should be returned to			See Comment Q21-	
265	what the teachers asked for.	yes		C143	
281	Nothing	no			
292	Nothing in particular.	no			
311	These are not what the committee created	no			
326	Wait to Test.	no			
335	no suggestions	no			
352	They need more clarification.	no			
	Please consider removing the key concepts section. This makes the model more like				
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
390	inquiry based.	no			
	N/a	no			
	Remove the key concepts as this unnecessary and is more about implementation and				
512	should NOT be the intention of the standards.	no			
	nothing	no			

		I	I	
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,			
	evidenced by the replication of self copying dna in science labs and modern genetic			
	engineering efforts is wrong. Period. Evolution through natural selection over millenia			
10	001 is a scientific fact.			
	Scientific standards should be based on scientific research and nothing else.			
	Replacing and watering down the proven science of evolution is a disservice to our			
	kids, a disservice to our teachers, and a disservice to our educational body. STOP			
	TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.			
1(	008			
	Evolution is not just a theory, it is well established fact by science. Making Biological			
	evolution to Theory of Evolution is a step backwards not an improvement.			
	085			
10	O91 A first grader's level of understanding of the Theory of Evolution.			
	Standard 4. Solutions is an inappropriate term that implies that friction is a problem			
10	092 that needs to be solved. Ways is the correct term.			
	Evolution is a scientific fact! To remove or try to water the process down from our			
	education standards is unacceptable! If we want current or new high dollar business			
	to come to Arizona we must have high standards for our school curriculum. Good			
	and factual science is a must for our standards!			
1	113			
1	165 No comment			
	That while people have widely different views on matters of faith, the scientific			
	community is 99% percent in agreement that evolution is a demonstrable fact.			
1	167			
1	171 Only SCIENCE in Science class!			
1	186 See kindergarten comments.			
1.	219 Get rid of intelligent design. Restore references to evolution.			
1.	221 Don't teach 1st.			
	Nothing in the proposed revisions for any grade are acceptable if they include			
	intelligent design or any other form of religious creationism by any other name, and			
	if references to evolution have been deleted or treat it as only a theory.			
1.	223			
1	226 Don't revise.			
	Throw these terrible standards out and adopt instead the excellent Next Generation			
1	303 Science Standards developed by STEM professionals.			
	I believe it would serve the children of AZ better if we would just adopt the Next			
1	309 Generation Science Standards.			
	The sheer willful ignorance of removing Evolution from the curriculum is mind			
	bogling. It would put Az students at a vast disadvantage when moving to higher			
	education. If the superintendent's intention is to replace evolutionary theory with			
	intelligent design she should be removed from office and barred from working in			
1.	education for life. Do jot do this.			
13	Get a scientific expert to rewrite the content or undo the edits.			
	The Internal Review provided excellent additional development and clarification. The	 		
1.	337 Internal Review should be adopted.			
1.	339 Clearly include teaching the concept of evolution.			
17	366 Original language should remain	-		
1	403 Teach evolution. Evolution is science.			
	If the state allows teaching creationism, they will also have to teach other religion's	 		
	creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the			
1	and a second second second second second second second second second second second second second second second			
	426 Maya creation myth, humans are created out of corn.			
	426 Maya creation myth, humans are created out of corn. 443 evolution should be included in all grades			
14				

	Climate change should be included in any physical science or earth science class.  1526		
	1.P4U3.4 - This standard seems too abstract for 1st grade. It seems like this standard		
	· ·		
	was just added to try to include a P4 standard for 1st grade when maybe this idea		
	should not be addressed until later. I could see a standard related to solutions to		
	increasing or reducing friction to make an object move faster or slower because it fits		
	better with 1.P3U1.3 and is less abstract.		
	1538		
	1547 Removal/replacement/minimizing evolution is completely unacceptable.		
	1553 See above		
	1556 Remove all religious references.		
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL		
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.		
	1575		
	1583 Adding and maintaining teaching Evolution needs to be continued.		
	I would like to see these standards blend together better so it would be easier for the		
	teacher to teach them. The physics concept could be taught in 2nd grade for		
	example. For teh engineering design process: whet not have students think about		
	how they can use light and sound to solve problems?		
	1595		
	1603 See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.		
	1628 Teach Science and facts in Schools not faith and religion.		
	1641 N/A		
	1645 No comment.		
	1660 Fix evolution standards.		
	1664 See comment #9		
	1681 N/a		
	1694 Only facts based on repeatable scientific tests.		
	1793 Please do not muddy the language regarding evolution		
	Restore all original language referencing evolution proposed by the committee of		
	1796 educators with expertise in science education.		
	The original document, before internal review, provided the necessary background		
	about what core concepts were expected in science education.		
	1800		
	1811 Revert all of Diane Douglas's changes.		
	1859 Continue to teach evolution. Do not remove it to teach creationis		
	1886 See above		
	Life Science standards should be strictly and wholly secular in nature and follow the		
	most up to date science community's recommendations. Our children need the		
	opportunity to receive competitive and challenging educations at a playing field level		
	1890 to the rest of the nation.		
	1892 It is the same for every grade. Improve science; don't make it worse.		
	1918 Refer to my response to question 17.		
-	1953 Teach proper evolution		
<u> </u>	Critical thinking; must know that there something it is called Science. scientific		
	1955 method		
	Evolution, not intelligent design, is based in science. Science, not religion, should be		
	1995 taught in science classes.		
	Nothing should be taught within or alongside science that does not have the same		
	factual basis that all the core concepts included in the draft have. Non-science or		
	pseudoscience, has no place in factual science learning for our youth.		
	2000		
	2015 Ambivalent.		
	2032 Evolution		

2062	No comment.		
	Science from real scientists.		
	See item 24.		
	NO teaching of intelligent design or creationism in any classroom! Religious		
	instruction belongs at home.		
	We should only be covering evolution in school. Creationism should be kept separate		
	from schools.		
	Send the standards back for review.		
	Explain evolution.		
	Include Evolution, omit Creationism and Intelligent Design .		
	Teaching creationism, or the misnamed intelligent design, is a violation of the		
	separation of church and state. If you want your kid to learn fantasy send him to		
	Sunday school. Public schools are for fact based subjects that our kids will need to		
	navigate the future, not the failed, undefined, and contradictory philosophies		
	responsible for most of the earths problems.		
	Not commenting here because my complaint is about Diane Douglas trying to sneak		
	in creationism and Intelligent Design into the state science standards.		
2306	in creationism and intelligent besign into the state science standards.		
	Defer reply in 20 above		
	Refer reply in 20 above.		
2354	Defeate the Next Consention Science Standards They NCSS are good standards		
	Refer to the Next Generation Science Standards. They NGSS are good standards.		
	These are not.		
	Needs to go back to review.		
	Keep religious beliefs out of science standards.		
	Please revise.		
	Science classes must include the scientific research published in high ranking, peer-		
	reviewed journals of climate change, evolution, and mechanisms of natural selection		
	if student are to have a better understanding of the scientific process, theories, and		
	major mechanisms at work in our world. It is also essential preparation for higher		
	education as these are subjects that will be taught heavily in entry level biology class,		
	sometimes spanning an entire semester, and make up more advanced science course		
	such as organic evolution. It is imperative to a student's education in science that		
	large scientific fields such as evolution and climate change research not be censored		
	like banned books.		
2390			
	I Call for the restoration of the ASE's description of evolution, which is scientifically		
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend		
	revisions to the treatment of evolution in passages that seem to have been similarly		
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may		
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)		
2419			
	Stick to actual science and stop dumbing down our children!		
2487	,		
	see above		
	I couldn't care less about First Grade.		
	Omitting information on change over time, evolution and the big bang theory,		
	completely negates the validity of this document.		
	When are simple machines introduced as a concept? I see they are to be used in		
	design but without a supporting standard or sub standard to introduce them.		
2539			
	These physical science standards lack continuity, I understand the theme of causal		
	relationships, but the reality of having materials for these isolated experiences is		
	unrealistic.		
2607	Do not attempt to deny or water down the concepts of evolution.		

	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!		
2615	Evolution is real!		
	I disagree with the minimizing of the role Evolution plays in human history and		
	science education. It is not debated in the Science community. The science standards		
	of Arizona need to be compatible with modern scientific fact, not biases or religion. If		
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona		
	Department of Education will omit from Education. That is limiting future generations		
	of American thinkers, who face scientific truths of the world and use the scientific		
	method for progression of humanity. Please revise the k-12 science standards to fit		
	current scientific fact, so that future generations will posses the knowledge they have		
	the right to recieve from their Education department. Thank you.		
2618			
2642	This section is good		

urvey Question	23. What would you like the working group to consider as they revise the Earth and	d Space Science Standards in the First Grade Scie 1	ence Standards?		
omment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	5 Please follow the National science education standards.	no			
	9 No comment	no			
11-	4 n/a	no			
12-	4 n/a	no			
	no comments	no			
	Develop and use models about how living things use resources to grow and survive; TAKE OUT design and evaluate habitats for organisms using earth materials. Changes the whole meaning of this- take it out			Make additional standard for "Design & evaluate habitats for organisms using earth materials" under Life Sciences OR move that statement back to the original standard (1.E1.U1.5 where it was prior to internal review) "Use earth materials to design and evaluate suitable habitats for	Is the focus on habitats or the foc
14	5	Yes	1.l2.u2.7	organisms."	on earth materials
	We should go back to the standards that the committee created and adopt those, not				
15	7 Diane Douglas's internal review copy.	no			<u> </u>
16	2 Adopt NGSS standards	no			
17	0 Funding	no			
18	9 A more clearer perimeters to teach within.	no		_	
19	7 Include a lot of experiments that are inviting and interesting for students.	no			
	good	no	1		

265	Page 14Remove Key Concepts Column	no		
	Nothing	no		
	Nothing in particular.	no		
	These are not what the committee created	no		
	Wait to Test.	no		
	no suggestions	no		
	We like the standards!	no		
		IIIO		
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
	inquiry based.	no		
435		no		
	Remove the key concepts as this unnecessary and is more about implementation and			
	should NOT be the intention of the standards.	no		
	nothing	no		
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,			
	evidenced by the replication of self copying dna in science labs and modern genetic			
	engineering efforts is wrong. Period. Evolution through natural selection over millenia			
	is a scientific fact.			
	Scientific standards should be based on scientific research and nothing else.			
	Replacing and watering down the proven science of evolution is a disservice to our			
	kids, a disservice to our teachers, and a disservice to our educational body. STOP			
	TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.			
1008				
	Climate change needs to be included			
	Page 14, 1.E1U1.5: While it is important to 'Obtain, evaluate, and communicate,' the			
	removal of the word Investigate implies that a student can just 'obtain' this			
	information from a book or the Internet and not carry out their own investigations			
	which is critical for real understanding			
	Evolution is not just a theory, it is well established fact by science. Making Biological			
(	evolution to Theory of Evolution is a step backwards not an improvement.			
1085				
1091	A first grader's level of understanding of the Theory of Evolution.			
	Evolution is a scientific fact! To remove or try to water the process down from our			
	education standards is unacceptable! If we want current or new high dollar business			
f	to come to Arizona we must have high standards for our school curriculum. Good			
ş	and factual science is a must for our standards!			
1113				
1165	No comment			
	That while people have widely different views on matters of faith, the scientific			
	community is 99% percent in agreement that evolution is a demonstrable fact.			
1167				
	Only SCIENCE in Science class!			-
1186	See kindergarten comments.			
1196	Climate change			
1219	Get rid of intelligent design. Restore references to evolution.			
1221	Don't teach 1st			
ſ	Nothing in the proposed revisions for any grade are acceptable if they include			
Ī	intelligent design or any other form of religious creationism by any other name, and			
į	if references to evolution have been deleted or treat it as only a theory.			
1223				
1	Don't revise.			
1226	Don't revise.		ė – – – – – – – – – – – – – – – – – – –	
	I would like them to use newst time line dates for varied rock formations.			
1245				

I believe it would serve the children of AZ better if we would just adopt the Next  1309 Generation Science Standards.  The sheer willful ignorance of removing Evolution from the curriculum is mind bogling. It would put Az students at a vast disadvantage when moving to higher education. If the superintendent's intention is to replace evolutionary theory with intelligent design she should be removed from office and barred from working in education for life. Do jot do this.  1311 Get a scientific expert to rewrite the content or undo the edits.  The Internal Review provided excellent additional development and clarification. The 1337 Internal Review should be adopted.	
The sheer willful ignorance of removing Evolution from the curriculum is mind bogling. It would put Az students at a vast disadvantage when moving to higher education. If the superintendent's intention is to replace evolutionary theory with intelligent design she should be removed from office and barred from working in education for life. Do jot do this.  1315 Get a scientific expert to rewrite the content or undo the edits.  The Internal Review provided excellent additional development and clarification. The Internal Review should be adopted.  1339 Clearly include the teaching of the concept of evolution.	
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intelligent design she should be removed from office and barred from working in  1311 education for life. Do jot do this.  1315 Get a scientific expert to rewrite the content or undo the edits.  The Internal Review provided excellent additional development and clarification. The  1337 Internal Review should be adopted.  1339 Clearly include the teaching of the concept of evolution.	
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1311 education for life. Do jot do this.  1315 Get a scientific expert to rewrite the content or undo the edits.  The Internal Review provided excellent additional development and clarification. The 1337 Internal Review should be adopted.  1339 Clearly include the teaching of the concept of evolution.	
1315 Get a scientific expert to rewrite the content or undo the edits.  The Internal Review provided excellent additional development and clarification. The 1337 Internal Review should be adopted.  1339 Clearly include the teaching of the concept of evolution.	
The Internal Review provided excellent additional development and clarification. The 1337 Internal Review should be adopted. 1339 Clearly include the teaching of the concept of evolution.	
1337 Internal Review should be adopted.  1339 Clearly include the teaching of the concept of evolution.	
1339 Clearly include the teaching of the concept of evolution.	
1366 Original language should remain	
1403 Teach evolution. Evolution is science.	
If the state allows teaching creationism, they will also have to teach other religion's	
creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the	
1426 Maya creation myth, humans are created out of corn.	
1443 evolution should be included in all grades	
1517 Ditto	
1518 EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.	
Climate change should be included in any physical science or earth science class.	
1526	
1547 Removal/replacement/minimizing evolution is completely unacceptable.	
1553 See above	
1556 Remove all religious references.	
NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL	
ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.	
1575	
1583 Adding and maintaining teaching Evolution needs to be continued.	
1595 These seem to be lacking a lot! There is only one standard?	
1603 See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.	
1628 Teach Science and facts in Schools not faith and religion.	
1641 N/A	
1645 No comment.	
1660 Fix evolution standards.	
1664 See comment #9	
1681 N/a	
1694 Only facts based on repeatable scientific tests.	
1793 Please do not muddy the language regarding evolution	
Restore all original language referencing evolution proposed by the committee of	
1796 educators with expertise in science education.	
The original document, before internal review, provided the necessary background	
about what core concepts were expected in science education.	
1800	
1811 Revert all of Diane Douglas's changes.	
1859 Continue to teach evolution. Do not remove it to teach creationism.	
1877 Evolution	
1886 See above	
Life Science standards should be strictly and wholly secular in nature and follow the	
most up to date science community's recommendations. Our children need the	
opportunity to receive competitive and challenging educations at a playing field level	
1890 to the rest of the nation.	
1918 Refer to my response to question 17.	
we should not eliminate detailed studies of evolution as it pertains to plants, animals	
1948 and humans. These are scientific facts that must be taught.	
1953 Teach proper evolution	

	Tana a sa a sa a sa a sa a sa a sa a sa		1	
	Critical thinking; must know that there something it is called Science. scientific			
1955	method			
	Evolution, not intelligent design, is based in science. Science, not religion, should be			
1995	taught in science classes.			
	Nothing should be taught within or alongside science that does not have the same			
	factual basis that all the core concepts included in the draft have. Non-science or			
	pseudoscience, has no place in factual science learning for our youth.			
2000	, ,			
	Ambivalent.			
	Evolution			
	All standards need to be included.			
	No comment.			
	Science from real scientists			
2093	See item 24.			
	We should only be covering evolution in school. Creationism should be kept separate			
2152	from schools.			
	From the Life Sciences (1.L2U2.7) - Create a standard that states: Using earth			
2156	materials, design and evaluate a habitat for organisms.			
2259	Send the standards back for review.			
2262	Explain evolution.			
	Include Evolution (where relevant), omit Creationism and Intelligent Design .			
2265	, "			
2203	Teaching creationism, or the misnamed intelligent design, is a violation of the			
	separation of church and state. If you want your kid to learn fantasy send him to			
	, , , , , , , , , , , , , , , , , , , ,			
	Sunday school. Public schools are for fact based subjects that our kids will need to			
	navigate the future, not the failed, undefined, and contradictory philosophies			
2273	responsible for most of the earths problems.			
	Not commenting here because my complaint is about Diane Douglas trying to sneak			
	in creationism and Intelligent Design into the state science standards.			
2306				
2345	Refer reply in 20 above.			
2354				
	Refer to the Next Generation Science Standards. They NGSS are good standards.			
2364	These are not.			
	Needs to go back to review.			
	Please revise.			
2384	Science classes must include the scientific research published in high ranking, peer-			
	, , ,			
	reviewed journals of climate change, evolution, and mechanisms of natural selection			
	if student are to have a better understanding of the scientific process, theories, and			
	major mechanisms at work in our world. It is also essential preparation for higher			
	education as these are subjects that will be taught heavily in entry level biology class,			
	sometimes spanning an entire semester, and make up more advanced science course			
	such as organic evolution. It is imperative to a student's education in science that			
	large scientific fields such as evolution and climate change research not be censored			
	like banned books.			
2390				
	I Call for the restoration of the ASE's description of evolution, which is scientifically			
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend			
	revisions to the treatment of evolution in passages that seem to have been similarly			
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
2419				
2428	Stick to actual science and stop dumbing down our children!			

The way it is worded is more of a life sciences standard. The Framework suggests		
Earth science ideas of events on Earth (pg. 178). More closely related to the way in		
which the current draft reads, the Framework has the concept that wind and water		
can change the shape of the land. The resulting landforms, together with the		
materials on the land, provide homes for living things. (pg. 180)		
2465		
2487 N/A		
2515 see above		
2518 I couldn't care less about First Grade.		
Omitting information on change over time, evolution and the big bang theory,		
2520 completely negates the validity of this document.		
1.E1U1.5 This standard no longer represents the intersection indicated in the coding.		
The Core Idea is about how materials on Earth change based on natural and human		
processes. This standard is now memorization/fact recall and regurgitation. E1: The		
composition of the Earth and its atmosphere and the natural and human processes		
occurring within them shape the Earth's surface and its climate.		
2559		
2607 Do not attempt to deny or water down the concepts of evolution.		
STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!		
2615 Evolution is real!		
I disagree with the minimizing of the role Evolution plays in human history and		
science education. It is not debated in the Science community. The science standards		
of Arizona need to be compatible with modern scientific fact, not biases or religion. If		
Evolution is being wrongfully omitted I grieve to know what other facts the Arizona		
Department of Education will omit from Education. That is limiting future generations		
of American thinkers, who face scientific truths of the world and use the scientific		
method for progression of humanity. Please revise the k-12 science standards to fit		
current scientific fact, so that future generations will posses the knowledge they have		
the right to recieve from their Education department. Thank you.		
2618		
2642 This section is good		

Survey Question	24. What would you like the working group to consider as they revise the Life Scie	nce Standards in the First Grade Science Standards?			
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
45	Please follow the National science education standards.	no			
	1.L4U4.11 - this exact standard is found in the 4th grade standards, 4.L4U4.12				Although same as 4th grade, the actual learning progression from Framework & Big Ideas provide the assessment boundary for the content
56		yes	1,l4u4.11	keep the same	in the standard
89	No comment	no			
	Evolution section is weak and watered down. It needs to be strengthened.				
114		no			
124	n/a	no			
	1.L4U4.11I don't think that the addition of or entire species is necessary. Based on my understanding or extinction if an organism is extinct then that species is also			remove the phrase	
143	extinct.	yes	1.l4u4.11	"or entire species"	

	1L4U2.10 Classification of vertebrates and invertebrates is again developmentally				
	inappropriate. Gets wordy when adding positively and negatively all over the place.				
				Character	
	When discussing impacts it is implied that you would discuss both.			Change wording to	committee is considering this,
					Classifying animals/plants into
ļ.				model to describe	vertebrate/invertebrates is beyond
				how plants and	grade level; however, in Framework
ļ				animals are grouped	animals/plants exist in different
145		yes	l1.l4u2.10	by characteristics"	places in land and in water
	We should go back to the standards that the committee created and adopt those, not	7		-,	
157	Diane Douglas's internal review copy.	no			
	Adopt NGSS standards	no			
	Funding	no			
	A more clearer perimeters to teach within.	no			
	Simplification.	no			
252	C	no			
	Page 14Remove Key Concepts ColumnUnder 1.L2U2.7 - remove 'design and evaluate				
	habitats for organisms using earth materials.' - it is repetitive of what the teachers				
	have in the first part of the sentence.Remove 1.L4U2.10 - since it is in green, the				
	teacher's did not indicate that this is a standard that should be taught at the 1st grade			, see comment Q23 -	
	level.Under 1.L4U4.11 - remove 'or entire species' - the term 'organisms' covers it - so			145; see comment	
	this addition is repetitive. Renumber to 4.10 (see comment on 4.10 above.)		1.l2u2.7; 1.l4u4.11,	143 above; see	
265		yes	1.l4u4.10	comment above	
	Nothing	no	1.1444.10	comment above	
	Nothing in particular.	no			
	These are not what the committee created	no			
	Wait to Test.	no			
335	no suggestions	no			
ļ	Instead of the word argument use the word discussion. Instead of using the word				
	organisms use the words animals and plants to make it consistent through out all the				To be consistent with the wording in
ļ	standards.				the Framework and Big Ideas, both
					"plants and animals" and "organisms"
352		yes		Keep as is	should be used
	Please consider removing the key concepts section. This makes the model more like			•	
ļ	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
390	inquiry based.	yes			Committee is considering this
	N/a	no			committee is considering this
433		110			
	The evolution and genetic information standards should be kept in elementary				
	grades, however they are likely too abstract for 1st and 2nd grade. I have extensive				
	experience teaching these concepts to older students and am basing this suggestion				
	on my experience, as well as my content and pedagogical knowledge. These				
ļ	concepts would be much more appropriate for 3rd or 4th grade.				
472		no			
1	Remove the key concepts as this unnecessary and is more about implementation and				
512	should NOT be the intention of the standards.	yes			Committee is considering this
550	nothing	no			
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,				
	evidenced by the replication of self copying dna in science labs and modern genetic				
	engineering efforts is wrong. Period. Evolution through natural selection over millenia				
1001	is a scientific fact.				
1301	Scientific standards should be based on scientific research and nothing else.				
	•				
	Replacing and watering down the proven science of evolution is a disservice to our				
1	kids, a disservice to our teachers, and a disservice to our educational body. STOP				
1	TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				
1008	di				
	Include evolution				

	1.L4U2.10 under key concepts should refer to Kingdoms as a fundamental concept, as		
!			
4004	invertebrates are not organisms lacking backbones, they are animals lacking		
1081	backbones. So what is an animal?		
!	Evolution is not just a theory, it is well established fact by science. Making Biological		
!	evolution to Theory of Evolution is a step backwards not an improvement.		
1085			
1091	A first grader's level of understanding of the Theory of Evolution.		
	We need to start teaching children about all aspects of life including evolution from		
1113	the very beginning.		
	I'd like the kids, at this age, to 'use evidence' not 'engage in argument.' I'm sure the		
	intention was to imply critical thinking, but it represents a standard for challenge.		
!	Using evidence involves thinking critically to research, support and defend an article.		
1147			
1148	Evolution is not a theory.		
,	1.L3U2.9, and the identical standard in grades 5 and 8 ignore that some plants,		
	notable two important desert plants, creosote and agaves, can also reproduce		
!	through cloning, producing plants that are genetically identical to the parent plant.		
1164	, , , , , , , , , , , , , , , , , , , ,		
	No comment		
1105	That while people have widely different views on matters of faith, the scientific		
	community is 99% percent in agreement that evolution is a demonstrable fact.		
1167	community is 55% percent in agreement that evolution is a demonstrable ract.		
	Only SCIENCE in Science class!		
	,		
1180	See kindergarten comments.		
4400	Environmental studies should include information regarding human impact.		
1190			
	Evolution		
	Get rid of intelligent design. Restore references to evolution.		
1221	Don't teach 1st		
	Nothing in the proposed revisions for any grade are acceptable if they include		
	intelligent design or any other form of religious creationism by any other name, and		
	if references to evolution have been deleted or treat it as only a theory.		
1223			
1226	Don't revise.		
!	Please see my earlier comments (Qu 13/17) regarding the scope of evolution		
1252	education.		
	Throw these terrible standards out and adopt instead the excellent Next Generation		
1303	Science Standards developed by STEM professionals.		
	Engage in argument from evidence to support a claim about the factors that cause		
!	organisms or entire species to go extinct and analyze how humans can positively or		
	negatively impact those factors. When an organism becomes extinct, it is the entire		
!	species that goes extinct. It is not necessary to add or entire species as scientists		
1305	realize this fact.		
	I believe it would serve the children of AZ better if we would just adopt the Next		
1309	Generation Science Standards.		
1303	The sheer willful ignorance of removing Evolution from the curriculum is mind		
<u>'</u>	bogling. It would put Az students at a vast disadvantage when moving to higher		
	education. If the superintendent's intention is to replace evolutionary theory with		
'			
4344	intelligent design she should be removed from office and barred from working in		
	education for life. Do jot do this.		
1315	Get a scientific expert to rewrite the content or undo the edits.		
l '	The Internal Review provided excellent additional development and clarification. The		
1337	Internal Review should be adopted.		

This applies to the Distribution of K-2 standards - page 20: L4: The theory of		
evolution seeks to make clear the unity and diversity of living and extinct		
organisms. 'This is imprecise. In each section this should read 'The study of evolution		
seeks to demonstrate…' First, evolution is an established scientific theory. A		
scientific theory differs from the 'street' use of theory, which indicates a 'guess'		
about causation or relationship. In contrast, a scientific theory can be tested and		
potentially disproved. These tests are rigorous observational or experimental		
attempts to demonstrate that the scientific theory cannot explain a pattern in nature.		
Failure to disprove or refute the scientific theory increases confidence in it, although		
it cannot be considered as proven. Two things distinguish evolution as a 'scientific		
theory' from the more general use of 'theory.' First, as inferred above, it can be		
tested and potentially falsified using experiment or observation. Second, it has been		
tested time and time again, in many systems and with many organisms, for well over		
150 years, and has withstood those tests. It has not been disproven. Thus it is the		
STUDY of evolution â€" mechanisms of organic change, intrinsic or environmental		
characteristics driving or influencing the nature or rate of change, etc. (studies of		
which serve to 'test' the underlying theory) â€" that have provided evidence of 'the		
unity and diversity of living and extinct organisms.'		
1338		
1339 Clearly include the teaching of the concept of evolution.		
1366 Original language should remain		
1403 Teach evolution. Evolution is science.		
Evolution should be presented as proven theory backed by vast amounts of physical		
data. Crationism has no place in science curriculum even as an alternative theory.		
1413		
If the state allows teaching creationism, they will also have to teach other religion's		
creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the		
1426 Maya creation myth, humans are created out of corn.		
1443 evolution should be included in all grades		
They need to start learning about where they and everything came from, via		
1500 evolution		
1517 Ditto		
1518 EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.		
1526 Evolution should be included in any life science or biological class		
1538 1.L4U4.11 - Organisms die but do not go extinct. Species go extinct.		
1546 E		
1547 Removal/replacement/minimizing evolution is completely unacceptable.		
1553 This is redundant.		
1556 Remove all religious references.		
NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL		
ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.		
1575		
1583 Adding and maintaining teaching Evolution needs to be continued.		
Engage in argument from evidence to support a claim about the factors that		
causeorganisms or entire species to go extinct and analyze how humans can		
positively ornegatively impact those factors. How about including something where		
students are working to create something that may help to solve these problems?		
1595		
1603 See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.		
1628 Teach Science and facts in Schools not faith and religion.		
1641 N/A		
1645 No comment.		
1660 Fix evolution standards.		
2000 I. M. C. Orlation Statistation.		

1664	See comment #9			
	See first comment			
10,2	An attack on the hard work and mountains of evidence-based study to support a			
1678	delusion			
1681				
	See earlier general comments about the importance of including Evolution as the			
1689	underlying explanation of all aspects of Biology.			
	Only facts based on repeatable scientific tests.			
	I would like to see the phrase the theory of evolution taken out of the standards and			
1739	replaced with the word evolution			
	Please do not muddy the language regarding evolution			
1,35	Evolution has been amply confirmed by science, just like photosynthesis or relativity.			
	It's absurd to use ambiguous or tentative language. These are very bad revisions that			
	were made, they clearly weren't endorsed by the writing committee, and it's			
	somewhat disrespectful to them to make these changes.Please don't avoid eduction			
1795	on evolution.			
1,33	Restore all original language referencing evolution proposed by the committee of			
1796	educators with expertise in science education.			
	Teach Evolution			
1,33	The original document, before internal review, provided the necessary background			
	about what core concepts were expected in science education.			
1800	about what core concepts were expected in science education.			
	Revert all of Diane Douglas's changes.			
	Continue to teach evolution. Do not remove it to teach creationism.			
1033	Life Science standards should be strictly and wholly secular in nature and follow the			
	most up to date science community's recommendations. Our children need the			
	opportunity to receive competitive and challenging educations at a playing field level			
1800	to the rest of the nation.			
	Refer to my response to question 17.			
1918	Metamorphosis may be a hard concept for someone who is 5 or 6 years old.			
1923	interaction prioris may be a fraid concept for someone who is 3 or 6 years old.			
	Darwin please.			
	Teach Charles Darwin theory of Evolution.			
1941	Strengthen the teaching of evolution and global change to reflect the science of these			
19//	subjects.			
1344	Evolution is presented as a theory, which is technically incorrect, and the curriculum			
	fails to mention other proposed explanations of origins and development.			
1945	Tails to mention other proposed explanations of origins and development.			
1945	we should not eliminate detailed studies of evolution as it pertains to plants, animals			
10/10	and humans. These are scientific facts that must be taught.			
	Teach proper evolution			
1953	Critical thinking; must know that there something it is called Science. scientific			
1055	method			
1933	Evolution, not intelligent design, is based in science. Science, not religion, should be			
1005	taught in science classes.			
1995	Nothing should be taught within or alongside science that does not have the same			
	factual basis that all the core concepts included in the draft have. Non-science or			
	pseudoscience, has no place in factual science learning for our youth.			
2000	pseudoscience, nas no piace in factual science learning for our youth.			
	STOR calling Evolution a theory			
	STOP calling Evolution a theory.			
	More on evolution.			
2030				
	Evolution All standards pood to be included			
	All standards need to be included.			
2062	Evolution needs to be added back in as fact.		l	

20	79 Science from real scientists.			
	93 See item 24.			
21:				
	We should only be covering evolution in school. Creationism should be kept separate			
21	52 from schools.			
	Delete 2nd part of 1.L2U2.7 the combination of those two big ideas need to be			
	separated. Or rewrite the standardDelete 1.L4U2.10 this concept of classifying goes			
	with Kindergarten where they are observing characteristics of living and non-			
	living.Standard 1.L4U4.11 is almost exactly written as the 4th grade standard. My			
	want to change delete species and keep only organisms. Including the learning			
	progressions from A Framework (pg. 165) would help determine how far to go with			
	this concept (assessment boundary)			
21!				
	Understanding the theory of evolution is critical to the fields of medicine, biology,			
21	99 and applied science like agriculture.			
	Don't eliminate references to evolution, as it's necessary to understand life sciences.			
220	· · · · · · · · · · · · · · · · · · ·			
	Understanding evolution is critical to the fields of medicine, biology, and applied			
22	08 science like agriculture.			
	10 Evolution must be taught.			
	59 Send the standards back for review.			
	62 Explain evolution.			
	Include Evolution, omit ANY MENTION OF Creationism and Intelligent Design .			
220				
	Teaching creationism, or the misnamed intelligent design, is a violation of the			
	separation of church and state. If you want your kid to learn fantasy send him to			
	Sunday school. Public schools are for fact based subjects that our kids will need to			
	navigate the future, not the failed, undefined, and contradictory philosophies			
22	73 responsible for most of the earths problems.			
	Not commenting here because my complaint is about Diane Douglas trying to sneak			
	in creationism and Intelligent Design into the state science standards.			
230				
	45 Refer reply in 20 above.			
23!				
	Refer to the Next Generation Science Standards. They NGSS are good standards.			
23	64 These are not.			
	78 Needs to go back to review.			
	80 Keep religious beliefs out of science standards.			
	84 Please revise.			
	Science classes must include the scientific research published in high ranking, peer-			
	reviewed journals of climate change, evolution, and mechanisms of natural selection			
	if student are to have a better understanding of the scientific process, theories, and			
	major mechanisms at work in our world. It is also essential preparation for higher			
	education as these are subjects that will be taught heavily in entry level biology class,			
	sometimes spanning an entire semester, and make up more advanced science course			
	such as organic evolution. It is imperative to a student's education in science that			
	large scientific fields such as evolution and climate change research not be censored			
	like banned books.			
239				
25.	If evolution is a possible discussion, please word it appropriately. It is not a theory			
			1	1

	I Call for the restoration of the ASE's description of evolution, which is scientifically		
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend		
	revisions to the treatment of evolution in passages that seem to have been similarly		
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may		
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)		
	2419		
	2428 Stick to actual science and stop dumbing down our children!		
	2487 Restore 1.L4U4.11 to original terminology.		
	Discussion of offspring not being identical to their parents, classification of		
	organisms, and species extinction are age-inappropriate. Discussion of topics related		
	to inheritance and evolution should be delayed until later grades.		
	2490		
	2515 Keep religion out of it!!		
	2518 I couldn't care less about First Grade.		
	Omitting information on change over time, evolution and the big bang theory,		
	2520 completely negates the validity of this document.		
	1.L2U2.7 The green portion is not a life science concept. This standard is repeated in		
	2559 2nd grade		
	The changes proposed to L4.U4.11 seem totally misguided. Use evidence to support		
	is science. Engaging in arguments is not what science is about, seeking explanations		
	for the evidence is the key. Please change this wording back to what it was.		
	2605		
	2607 Do not attempt to deny or water down the concepts of evolution.		
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!		
	2615 Evolution is real!		
	I disagree with the minimizing of the role Evolution plays in human history and		
	science education. It is not debated in the Science community. The science standards		
	of Arizona need to be compatible with modern scientific fact, not biases or religion. If		
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona		
	Department of Education will omit from Education. That is limiting future generations		
	of American thinkers, who face scientific truths of the world and use the scientific		
	method for progression of humanity. Please revise the k-12 science standards to fit		
	current scientific fact, so that future generations will posses the knowledge they have		
	the right to recieve from their Education department. Thank you.		
	2618		
	2642 this section is good		
	I would like there to be an emphasis on this age group going outside, gardening,		
	observing, going to enriching places in Science like the Botanical Garden, the zoo,		
1	National Parks, Science Museums, Outdoor classrooms.		
	2653		

Public Comment Non- Survey	Public comment received outside of the survey				
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes

vey estion	26. What would you like the working group to consider as they revise the Second Gra	de Science Standards?			
mment #	Public Comment	Actionable Yes/No	Actionable Yes/No	Suggested Changes	Committee Notes
45	Please follow the National science education standards.	no			
89	No comment	no			
114	Evolution section is weak and watered down. It needs to be strengthened.	no			
124	n/a	no			
	Most are good.	no			
143	AGAIN PLEASE return to the original: By the end of second grade, students	110			
	understand the basic concept that energy can change phase and is necessary for life.				
	In thisgrade level, students will understand how energy flow and matter cycling is				
	seen in the interactions with the surface features of Earth, water cycles, and the				Depending upon the key concept column, this concern maybe addressed in
145	environment.	Yes	intro to standards		another venue
143	We should go back to the standards that the committee created and adopt those, not	163	intro to standards		unother venue
157	Diane Douglas's internal review copy.	no			
	Adopt NGSS standards	no			
102	I trust the work of Science Specialists who devoted their time and energy to improve				
	Arizona's science standards and request their direct incorporation as new standards.				
168	and to the standards and request their direct interpolation as new standards.	no			
	Funding	no			
1,0	take out the interpretation (standard 7) of how changes in land and water impact				
	humans. rather focus on the facts of how the land and water on earth moves				
	naturally: the natural processes that have been going on here even before man was				
172	around.	Yes			This statement is reflected in standard 2.e1u4.4
172	Standards should be listed in level of importance. Some standards are	163			This statement is reflected in standard 2.0144.4
	interdependent, but the depth of knowledge is still too great to cover them all.				
181	interdependent, but the depth of knowledge is still too great to cover them all.	no			
	i fell its very vague and broad need more specific	no			
	A more clearer perimeters to teach within.	no			
	More specific information for the elementary level; examples, etc.	no			
	Please provide a starting point. The Big Ideas are great, however there is a concern				
	that information and concepts will be overlooked. It is too broad and vague.				
193	and morniadon and concepts this se overlooked it is too stood and tagae.	ves			This could be addressed with assessment boundaries/learning progression
	The Key concepts should be dropped from every grade level.	yes			Committee is considering
	Simplification.	no			,
	I'd like us to implement the Next Generation Science Standards, already in use in				
211	many states and districts. https://www.nextgenscience.org/	no			
	Allow students to think critically throughout each standard of the lesson.	no			
	N/c	no			
	Page 9, 21, 33Remove last sentence: 'Suggestions for key conceptsor maximum			1	
	content limits. Pages 12, 15, 19, 24, 28, 31, 37, 41, 45Remove these connections - as				
	soon as standards change the Science standards need to be changed. Each group of				
	standards needs to be stand alone. If ADE wants to have another document that				
	does a crosswalk of all of the standards in another document, that would be more				
	appropriate than the Science Standards.				
265	SER SE SESSE	ves			
	I was confused because in the third grade standards it references that second grade	,			
	would cover body systems. I know these were in the old standards but did not see				
	where they were int eh new standards. Are they missing? Should the basics be there?				
269	the state of the s	ves			
	I think it is great to start them out early with supporting their reasoning. Our purpose	· · ·			
	is for students to think. The internet has made everyone lazy so the crosscutting				
	concept of problem solving should be in every grade level.				
279	The same sources and an area of grade level.	no			
	Nothing	no	1	+	
	Nothing in particular.	no		+	
	These are not what the committee created	no	+		

	T	I	1	
	I noted all of the items I felt were missing from the standards on a previous question.			
334		no		
335	no suggestions	no		
	The earth and space sciences seem unequally covered compared to life and physical			
	science. Reduce Earth & Space standards (too many with a vast amount of concepts)			
	and increase Life Sciences (more applicable to primary grades.)			
347		yes		
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
390	inquiry based.	yes		committee is considering
	Same as first. The problem for middle school and high school teachers is not enough			-
	consistency at elementary level. Standards need to be more precise.			
433	l · · · · · · · · · · · · · · · · · · ·	no		
435	N/a	no		
	Key concepts: I would like to see a little more detail in each category so I know that I			
455	am addressing all the points this standard entails.	yes		committee is considering
	Keep the environment-related standards. Also, preserve the argumentation from			Ğ
472	1 .	yes	keep as is	
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	yes		committee is considering
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,	,		<u> </u>
	evidenced by the replication of self copying dna in science labs and modern genetic			
	engineering efforts is wrong. Period. Evolution through natural selection over millenia			
1001	is a scientific fact.			
	Scientific standards should be based on scientific research and nothing else. Replacing			
	and watering down the proven science of evolution is a disservice to our kids, a			
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO			
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.			
1008				
	8. ■age 20, Table Heading labeled U1 – see comment 19 - #5.9. ■age 20, Table			
1020	Heading labeled U4 â€" see comment 19 - #6.			
	There is not enough life science being taught in the second grade.			
	Evolution is not just a theory, it is well established fact by science. Making Biological			
	evolution to Theory of Evolution is a step backwards not an improvement.			
1085	, , , , , , , , , , , , , , , , , , , ,			
	A second grader's level of understanding of the Theory of Evolution.			
1001	processing Brader Stever of anderstanding of the friedry of Evolution.	l .	l	

			·
	Without ADE additions, this would be a strongly agree. Connections to other academic		
	disciplines. •Bemove entirely from the document. This belongs in a support		
	document or curriculum adopted locally.•⊞hese do not belong in a standards		
	document. They become obsolete as soon as any of the standards from referenced		
	disciplines are updated and approved by the state board.•Additionally, many of the		
	connections cited don't actually align to the standards within the grade level. Key		
	concepts Column•® hat ADE added are not actually concepts, they are random		
	vocabulary terms which may or may not be aligned to the standards and in many		
	cases are not appropriate for the grade level. •Bemove they key concepts column		
	from the document.•ĭ ADE requires that the key concepts column remains, select		
	the actual concepts from the Framework or Big Ideas documents, since those		
	documents are research-based and used in the development of the standards.•¶Key		
	concepts, if included must represent concepts from all three dimensions, and not just		
	the content of science. Below is an example for 2.E1U3.5 Follow this process for each		
	of the second grade standards, not just the example below.Remove list of vocabulary		
	terms from the Key Concepts column and replace with the actual concepts related to		
	this standard that represent all three dimensions:•Develop a model to represent		
	patterns in the natural world. •\scientists search for cause and effect relationships		
	to explain natural events. •™aps show where things are located. One can map the		
	shapes and kinds of land and water in any area. •®ifferent kinds of matter exist and		
	many of them can be either solid or liquid, depending on temperature. Matter can be		
	described and classified by its observable properties. •Beating or cooling a		
	substance may cause changes that can be observed. Sometimes these changes are		
	reversible, and sometimes they are not. â€CEvents have causes that generate		
	observable patterns•Batterns in the natural world can be observed.•Bhings may		
	change slowly or rapidly.		
	change slowly of rapidity.		
1092			
	Evolution is a scientific fact! To remove or try to water the process down from our		
	education standards is unacceptable! If we want current or new high dollar business		
	to come to Arizona we must have high standards for our school curriculum. Good and		
	factual science is a must for our standard		
1131	In the introduction sky needs to be changed back to environment .		
1148	Evolution is not a theory.		
1165	No comment		
	That while people have widely different views on matters of faith, the scientific		
	community is 99% percent in agreement that evolution is a demonstrable fact.		
1167			
1171	Only SCIENCE in Science class!		
1196	See above		
1219	Get rid of intelligent design. Restore references to evolution.		
	Don't teach 2nd		
1222	Not utilize language in re Darwinism, natural selection or evolution.		
	Nothing in the proposed revisions for any grade are acceptable if they include		
	intelligent design or any other form of religious creationism by any other name, and if		
	references to evolution have been deleted or treat it as only a theory.		
1223	, , , , , , , , , , , , , , , , , , , ,		
1226	Don't revise.		
	Eliminate intelligent design, creationism - belongs in church.		
	Throw these terrible standards out and adopt instead the excellent Next Generation		
1303	Science Standards developed by STEM professionals.		
	The addition of the Key Concepts column add vocabulary words that would normally		
	be the decision of local districts. This column is unnecessary and superfluous.		
1305	22 2.22 2.22 3.1 or local districts. This column is difficultivity and superfiduous.		
1303	I believe it would serve the children of AZ better if we would just adopt the Next		
1309	Generation Science Standards.		
1303	Series action Science Standards.		

	I	1	
ĺ	The sheer willful ignorance of removing Evolution from the curriculum is mind		
1	bogling. It would put Az students at a vast disadvantage when moving to higher		
ł	education. If the superintendent's intention is to replace evolutionary theory with		
1	intelligent design she should be removed from office and barred from working in		
	education for life. Do jot do this.		
1315	Get a scientific expert to rewrite the content or undo the edits.		
1	The Internal Review provided excellent additional development and clarification. The		
	Internal Review should be adopted.		
	Clearly include the teaching of the concept of evolution.		
	Original language should remain		
1403	Teach evolution. Evolution is science.		
	If the state allows teaching creationism, they will also have to teach other religion's		
	creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the Maya		
	creation myth, humans are created out of corn.		
	evolution should be included in all grades		
	Bring back the word evolution.		
	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.		
	Evolution should be included in any life science or biological class		
	L4, see comments from previous		
	See above		
1556	Remove all religious references.		
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL		
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.		
1575			
1583	Adding and maintaining teaching Evolution needs to be continued.		
	I would like to see more of the engineering design process and computational		
	thinking to be included in these standards and all the science standards. The earlier		
	we get students to start thinking this way the better off they will be. We need to be		
	preparing our students for a future of technology!		
1595			
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.		
	Teach Science and facts in Schools not faith and religion.		
1641	,		
	No comment.		
	Fix evolution standards.		
	See comment #9		
1681	No issues. Seems appropriate.		
	See earlier general comments about the importance of including Evolution as the		
1689	underlying explanation of all aspects of Biology.		
	Science doesn't require belief. It requires facts. It can be proven and that proof can be		
	repeated.		
1793	Please do not muddy the language regarding evolution		
	Restore all original language referencing evolution proposed by the committee of		
	educators with expertise in science education.		
1799	Teach Evolution		
	The original document, before internal review, provided the necessary background		
	about what core concepts were expected in science education.		
1800			
	Revert all of Diane Douglas's changes.		
1859	Continue to teach evolution. Do not remove it to teach creationism.		
	Life Science standards should be strictly and wholly secular in nature and follow the		
	most up to date science community's recommendations, including the scientifically		
	proven models of evolution and Darwinism.		
	Continue teaching evolution.		
1918	Refer to my response to question 17.		

	Evolution is an accepted theory of science. The striking of this word and replacing it		
	with more generic terminology is misleading and weakens the standards. The		
	redefining of evolution as seeks to make clear the unity and diversity of living and		
	extinct organisms is meaningless and not in alignment with accepted scientific		
	thinking. The term and definition of evolution should remain as is.The reason for		
	renaming of the scientific method to science and engineering is dubious and is not in		
	alignment with accepted scientific thinking. The scientific method is a process by		
	which facts demonstrate proof to validate or disqualify any scientific theory. The term		
	scientific method should remain as is. The elimination of the scientific theory of the		
	origin of the universe, known as the Big Bang is also dubious and not in alignment		
	with accepted scientific thinking. References to the Big Bang should remain as is. The		
	changes outlined above weaken the Arizona K-12 science standards and moves us		
	away from creating a system that provided world-class education. I oppose these		
	changes.		
	changes.		
1022			
1922			
	Evolution is presented as a theory, which is technically incorrect, and the curriculum		
1	fails to mention other proposed explanations of origins and development.		
1945			
	Teach proper evolution		
	I like that evolution was mentioned.		
1990	Evolution must continue to be taught		
	Evolution, not intelligent design, is based in science. Science, not religion, should be	 	
1995	taught in science classes.		
	Nothing should be taught within or alongside science that does not have the same		
	factual basis that all the core concepts included in the draft have. Non-science or		
	pseudoscience, has no place in factual science learning for our youth.		
2000	pocuados de localita de place in laceaux soletice learning for our youth		
	The use of the word transformation (pg 16, 1st paragraph)has religious connotations		
	and should be changed back to phase change which is a scientific concept.		
2013	and should be changed back to phase change which is a scientific concept.		
2013			
224	Introduce more scientific concepts. Encourage the development of simple hypotheses		
	and experimentation.		
2030			
	Evolution		
	All standards need to be included.		
2062	No comment.		
2079	see previous comments.		
2093	See item 24.		
2096	Add social science		
	No specific recommendations for this level		
	I have not read the full draft, so have no comment on this		
	We should only be covering evolution in school. Creationism should be kept separate		
	from schools.		
2132	Include all of the crosscutting concepts (CCC) that could be aligned with the		
1	standard(s) in the actual table. The introduction gives guidance of the CCC's for		
	· · · · · · · · · · · · · · · · · · ·		
1	kindergarten, however they need to be integrated into the standards or they will not		
	be taught as deemed in the introduction (3-dimensional instruction)		
2156			
	Understanding evolution is critical to the fields of medicine, biology, and applied		
	science like agriculture.		
	Send the standards back for review.		
	Explain evolution.		
2265	Include Evolution, omit Creationism and Intelligent Design .		
	Teaching creationism, or the misnamed intelligent design, is a violation of the		
	separation of church and state. If you want your kid to learn fantasy send him to		
	Sunday school. Public schools are for fact based subjects that our kids will need to		
	navigate the future, not the failed, undefined, and contradictory philosophies		
1 '			
2273	responsible for most of the earths problems.		

		ı	1	T
	Not commenting here because my complaint is about Diane Douglas trying to sneak in			
	creationism and Intelligent Design into the state science standards.			
2306				
2345	Refer reply in 20 above.			
2354				
	Refer to the Next Generation Science Standards. They NGSS are good standards.			
	These are not.			
	Needs to go back to review.			
	Keep religious beliefs out of science standards and retain scientifically accurate core			
2290	ideas of evolution and climate change at all grade levels.			
	Please revise.			
	Please consider what is developmentally appropriate and develop their natural			
	curiosity.			
2410	Don't teach 2nd, sorry!			
	I Call for the restoration of the ASE's description of evolution, which is scientifically			
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend			
	revisions to the treatment of evolution in passages that seem to have been similarly			
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
2419	,			
	Stick to actual science and stop dumbing down our children!			
0	Get rid of the knowing and using science and key concepts. Integrate more the three			
2/65	dimensions of A Framework for K-12 Science Education.			
	evolution rather than theory of			
2471				
	,			
	see above			
	I couldn't care less about Second Grade.			
	Omitting information on change over time, evolution and the big bang theory,			
	completely negates the validity of this document.			
2529	Include health standard that includes body awareness			
	General question; where any of the national standards looked up as purchasing			
	materials that align with content and grade level will be difficult for districts unless			
2539	Arizona Dept of Ed is planning to publish these.			
2543	TEACH EVOLUTION!			
	All the standards should be aligned with each grade level and grow in rigor as the			
	student moves through the higher grade levels. The content, though, should be			
	similar in all grade levels.			
	Please do not use the word formerly with the scientific method . There is a distinct			
1	different between engineering practices and the scientific method. The one is NOT a			
	0 01			
2605	substitution for the other and formerly is wholly inappropriate here.			
	Book at a transfer of the state			
2607	Do not attempt to deny or water down the concepts of evolution.			
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!			
2615	Evolution is real!			
	I disagree with the minimizing of the role Evolution plays in human history and			
	science education. It is not debated in the Science community. The science standards			
	of Arizona need to be compatible with modern scientific fact, not biases or religion. If			
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona			
	Department of Education will omit from Education. That is limiting future generations			
	of American thinkers, who face scientific truths of the world and use the scientific			
	method for progression of humanity. Please revise the k-12 science standards to fit			
	current scientific fact, so that future generations will posses the knowledge they have			
	the right to recieve from their Education department. Thank you.			
2515				
2618				
2642	This section is good			

rvey estion	n 27. What would you like the working group to consider as they revise the Physical Science Standards in the Second Grade Science Standards?						
	<u> </u>				Committee Nation		
	Public Comment Please follow the National science education standards.	Actionable Yes/No no	Actionable Yes/No	Suggested Changes	Committee Notes		
	No comment	no					
114		no					
124	· ·	no					
124	,	110					
	I am concerned with the word transform, is there a reason for changing it from phase						
	change to transformation? I think we need to make sure we choice our words						
4.42	carefully so that we do not encourage misconceptions to me taught.						
143	Character to the control of the formation of the formatio	yes					
	Change all transformation to phase change- make the language universal not one						
	program specific. I work with many students across the nation and Core Knowledge						
	may use this terminology but it is not common.	yes					
	We should go back to the standards that the committee created and adopt those, not						
	Diane Douglas's internal review copy.	no					
	Adopt NGSS standards	no					
170	Funding	no					
	Order of importance and where they will be getting all the prior knowledge to these						
	concepts from. They are written as if expected to already know about the vocabulary						
	and concepts that they need to know to introduce these. Also, if we are just now						
	implementing these, how do we help the students that didn't learn all of these topics						
	this year? Where is the reteach?						
181		yes					
185	more specific areas that they want talked about	no					
189	A more clearer perimeters to teach within.	no					
	Same! More specifics. We are not exclusively science teachers and need more						
191	examples of what these standards mean.	no			PD & curricula		
208	Simplification.	no					
252	n/C	no					
	Page 16Remove Key Concept ColumnUnder 2.P1U2.2 - what did the 'transformation						
	(solid, liquid, gas)' replace? What did the teachers have here? Unless it was a						
	grammatical fix, it should be returned to what the teachers asked for.						
265		yes					
281	Nothing	no					
	Nothing in particular.	no					
	These are not what the committee created	no					
	Looks good	no					
	none	no					
	Please consider removing the key concepts section. This makes the model more like						
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and						
	inquiry based.	yes			committee is considering		
435		no					
	Remove the key concepts as this unnecessary and is more about implementation and						
	should NOT be the intention of the standards.	yes			committee is considering		
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,						
	evidenced by the replication of self copying dna in science labs and modern genetic						
	engineering efforts is wrong. Period. Evolution through natural selection over millenia						
1001	is a scientific fact.						
	Scientific standards should be based on scientific research and nothing else. Replacing						
	and watering down the proven science of evolution is a disservice to our kids, a						
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO						
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.						
1008	LNASE SCIENCE WITH TOUR PERSONAL RELIGIOUS DELIEFS.						
	Page 20 Table Day labeled D4 and agree 140 H2						
	Page 20, Table Row labeled P4 - see comment 19 - #3.		_	+			
	Evolution is not just a theory, it is well established fact by science. Making Biological						
400=	evolution to Theory of Evolution is a step backwards not an improvement.						
1085							
1091	A second grader's level of understanding of the Theory of Evolution.	1			1		

1002	Standard 2 Bhasa shanga is the correct term			
1092	Standard 2.Phase change is the correct term.			
	Evolution is a scientific fact! To remove or try to water the process down from our			
	education standards is unacceptable! If we want current or new high dollar business			
	to come to Arizona we must have high standards for our school curriculum. Good and			
	factual science is a must for our standard			
1165	No comment			
	That while people have widely different views on matters of faith, the scientific			
	community is 99% percent in agreement that evolution is a demonstrable fact.			
1167				
1171	Only SCIENCE in Science class!			
1186	See kindergarten comments.			
1196	See above			
1219	Get rid of intelligent design. Restore references to evolution.			
1221	Don't teach 2nd			
	Nothing in the proposed revisions for any grade are acceptable if they include			
	intelligent design or any other form of religious creationism by any other name, and if			
	references to evolution have been deleted or treat it as only a theory.			
1223	, ,			
	Don't revise. Don't revise.			
1220	Throw these terrible standards out and adopt instead the excellent Next Generation			
1303	Science Standards developed by STEM professionals.			
1303	I believe it would serve the children of AZ better if we would just adopt the Next			
1300	Generation Science Standards.			
1303	The sheer willful ignorance of removing Evolution from the curriculum is mind			
	bogling. It would put Az students at a vast disadvantage when moving to higher			
	education. If the superintendent's intention is to replace evolutionary theory with			
	intelligent design she should be removed from office and barred from working in			
	education for life. Do jot do this.			
1315	Get a scientific expert to rewrite the content or undo the edits.			
	The Internal Review provided excellent additional development and clarification. The			
	Internal Review should be adopted.			
	Clearly include the teaching of the concept of evolution.			
	Original language should remain			
1403	Teach evolution. Evolution is science.			
	If the state allows teaching creationism, they will also have to teach other religion's			
	creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the Maya			
1426	creation myth, humans are created out of corn.			
1443	evolution should be included in all grades			
1517	Ditto			
1518	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.			
	2.P1U2.2 should read Plan and carry out investigations to gather evidence to support			
	an explanation on how heating or cooling transforms matter (solid, liquid,			
	gas).2.P4U1.3 seems to address the same idea as 2.P1U2.2. I suggest eliminating			
1538	2.P4U1.3.			
	See above			
	Remove all religious references.			
1330	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL			
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.			
1575	ADVANCEIVEN OF RELIGION IN PUBLIC SCHOOLS, SCIENCE ONLY IN SCIENCE CLASS.			
15/5	France Navi Vanla Carta Carradanda Carata at a conservativa de la carta de la			
	From New York State Standards Construct an argument with evidence that some			
	changes caused by heating or cooling can be reversed and somecannot.			
1595				
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.			
	Teach Science and facts in Schools not faith and religion.			
1641	,			
1645	No comment.			
1660	Fix evolution standards.	<u> </u>	 	
1000				
	See comment #9			

1004	Out for the control of the control o	I	1	T
	Only facts based on repeatable scientific tests.			
	Please do not muddy the language regarding evolution			
	Restore all original language referencing evolution proposed by the committee of			
	educators with expertise in science education.			
1799	Teach Evolution			
	The original document, before internal review, provided the necessary background			
	about what core concepts were expected in science education.			
1800	·			
1811	Revert all of Diane Douglas's changes.			
	Life Science standards should be strictly and wholly secular in nature and follow the			
	most up to date science community's recommendations. Our children need the			
	opportunity to receive competitive and challenging educations at a playing field level			
	to the rest of the nation.			
	Refer to my response to question 17.			
	Mass is a very difficult concept to explain to 2nd graders. I'd be worried that many			
	elementary teachers will confuse mass and weight. This is NOT a misconception I'd			
	like younger kids to grow up with.			
	we should not eliminate detailed studies of evolution as it pertains to plants, animals			
	and humans. These are scientific facts that must be taught.			
	Teach proper evolution			
	Evolution, not intelligent design, is based in science. Science, not religion, should be			
	taught in science classes.			
	Nothing should be taught within or alongside science that does not have the same			
	factual basis that all the core concepts included in the draft have. Non-science or			
	pseudoscience, has no place in factual science learning for our youth.			
2000				
2015	Ambivalent			
2032	Evolution			
2043	All standards need to be included.			
	No comment.			
2079	see previous comments.			
	We should only be covering evolution in school. Creationism should be kept separate			
	from schools.			
	Send the standards back for review.			
	Explain evolution.			
	Include Evolution, omit Creationism and Intelligent Design .			
	Teaching creationism, or the misnamed intelligent design, is a violation of the			
	separation of church and state. If you want your kid to learn fantasy send him to			
	Sunday school. Public schools are for fact based subjects that our kids will need to			
	navigate the future, not the failed, undefined, and contradictory philosophies			
	responsible for most of the earths problems.			
	Not commenting here because my complaint is about Diane Douglas trying to sneak in			
	creationism and Intelligent Design into the state science standards.			
2306				
	Refer reply in 20 above.			
2354				
	Refer to the Next Generation Science Standards. They NGSS are good standards.			
2364	These are not.			
	Needs to go back to review.			
2378				
	Keep religious beliefs out of science standards and retain scientifically accurate core			
	Keep religious beliefs out of science standards and retain scientifically accurate core ideas of evolution and climate change at all grade levels.			

		1	
	Science classes must include the scientific research published in high ranking, peer-		
	reviewed journals of climate change, evolution, and mechanisms of natural selection		
	if student are to have a better understanding of the scientific process, theories, and		
	major mechanisms at work in our world. It is also essential preparation for higher		
	education as these are subjects that will be taught heavily in entry level biology class,		
	sometimes spanning an entire semester, and make up more advanced science course		
	such as organic evolution. It is imperative to a student's education in science that		
	large scientific fields such as evolution and climate change research not be censored		
	like banned books.		
2390			
	I Call for the restoration of the ASE's description of evolution, which is scientifically		
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend		
	revisions to the treatment of evolution in passages that seem to have been similarly		
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may		
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)		
2419			
2428	Stick to actual science and stop dumbing down our children!		
2487	N/A		
2515	see above		
2518	I couldn't care less about Second Grade.		
	Omitting information on change over time, evolution and the big bang theory,		
2520	completely negates the validity of this document.		
2543	TEACH EVOLUTION!		
	2.P1U2.2 Phase change is the appropriate scientific terminology and should be		
	used.2.P4U1.3 Thermal energy not heat energy. How are these standards teaching		
	different concepts? A phase change IS a change in the object. Since the standard		
	says heat, then any change other than a phase change is a chemical change. Is that		
2559	what is being discussed here?		
2607	Do not attempt to deny or water down the concepts of evolution.		
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!		
2615	Evolution is real!		
	I disagree with the minimizing of the role Evolution plays in human history and		
	science education. It is not debated in the Science community. The science standards		
	of Arizona need to be compatible with modern scientific fact, not biases or religion. If		
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona		
	Department of Education will omit from Education. That is limiting future generations		
	of American thinkers, who face scientific truths of the world and use the scientific		
	method for progression of humanity. Please revise the k-12 science standards to fit		
	current scientific fact, so that future generations will posses the knowledge they have		
	the right to recieve from their Education department. Thank you.		
2618			 
26/12	This section is good		

Survey Question	28. What would you like the working group to consider as they revise the Earth and Space Science Standards in the Second Grade Science Standards?							
Comment #	Public Comment	Actionable Yes/No	Actionable Yes/No	Suggested Changes	Committee Notes			
45	Please follow the National science education standards.	no						
89	No comment	no						
114	n/a	no						
124	n/a	no						
	2.E2U1.8The words Earth's position in relation to need to be removed, this changes the meaning of this standard and makes it about the Earth's revolution around the sun and less about what is meant which is the Earth's rotation on it's axis. The Earth's position in relation to the Sun is very hard to observe in a 24 hour time frame.							
143		yes						

	2.E2U1.8 Wrong- change of wording changed meaning. The earth's position relative				
	to the sun does not change in a 24 hour period. The sun may appear to travel across				
	the sky in a 24 hour period but this standard does not state that.				
145		yes			
	We should go back to the standards that the committee created and adopt those, not				
157	Diane Douglas's internal review copy.	no			
162	Adopt NGSS standards	no			
170	Funding	no			
	weather patterns are going to be hard for a second grader to understand and grasp.				
172	(standard 6)	no			
	Where is the previous introduction to this information. In second grade are these				
	topics expected to be continued from the point of introduction of the concept all the				
	way to the depth of knowledge to conducting experiments and explaining why they				
	are happening or important for our planet.				Learning progression, specifically for the SEPS could be a resource or an
181	are nappening of important for our planet.	ves			appendix
	A more clearer perimeters to teach within.	no			аррения
		no			
	See above.				
	Simplification.	no			
252		no	1		
	Page 17 Remove Key Concept ColumnUnder 2.E1U2.5 why were 'glaciers' added and				
	'(water cycle) added? What did the teachers have here? Unless it was a grammatical				
	fix, it should be returned to what the teachers asked for.				
265		yes			
281	Nothing	no			
292	Nothing in particular.	no			
311	These are not what the committee created	no			
	Add weather (as noted in previous questions) since it ties in with the water cycle and				
334	states of matter.	yes			
335	no suggestions	no			
	Within the earth and space standards, there are many concepts to be covered.				
	Consider redistributing the quantity of standards to a different grade level. Move				
	2E2U1.8 to 3rd grade (as it fits with that concept and they only have 1 Earth standard.				
347	,,	yes			
347	Please consider removing the key concepts section. This makes the model more like	yes			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
200	inquiry based.	yes			committee is considering
435		no			Committee is considering
433		110			
513	Remove the key concepts as this unnecessary and is more about implementation and				
512	should NOT be the intention of the standards.	yes			committee is considering
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,				
	evidenced by the replication of self copying dna in science labs and modern genetic				
	engineering efforts is wrong. Period. Evolution through natural selection over millenia				
1001	is a scientific fact.				
	Scientific standards should be based on scientific research and nothing else. Replacing				
	and watering down the proven science of evolution is a disservice to our kids, a				
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO				
1	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				
1008					
1031	Climate change needs to be included				
	Page 17, 2.E2U1.8: The changes here are out and out bad and wrong! It is critical that			_	
1	students make their own observations (Sun motion and shadows, for example) and				
1	try to understand what they have seen, not just analyzing and interpreting data they				
1	are given. What has been added is wrong! The Earth's position has not changed much				
1	(revolution/orbit), it has rotated on its axis, two very different things. In the Key				
1	Concepts, while as an astronomer, I am happy for the students to eventually				
1	understand that the Sun is a star, I do not see where that comes from in the Standard				
	as written.				
1050					
1030		I	1		

Resolution in risp just a memory, it is well establishment after any screen. Making Balogical (1995)  (2005)  (2007)		I	 П	I	T
1.055   Second graphers fevent of understanding of that Theory of Colutions   Seminary 5. Adding was valve cryste districts in time towards understanding of where water   seminary control (unique valve) and trades are seminary of the semi		Evolution is not just a theory, it is well established fact by science. Making Biological			
300. A second godes in even of unimers emiting of the Theory of Cycledion.  Sendandor S. Addreg water cycle distance from the Sendandor S. Wand deans it being analysing of where water in house and rate page for the present. Sendandor S. Wand deans it being analysing of the theory of the sendandor sendandor of the sendandor of the sendandor sendandor of the sendandor sendandor of the sendandor sendandor of the sendandor sen		evolution to Theory of Evolution is a step backwards not an improvement.			
Sundands 5. Addings water cycle distrates from booder understandings of where water is form and not plast the phases fauntific Notice of the policy analysed? The distrative form of the phase of the ph	1085				
Sundands 5. Addings water cycle distrates from booder understandings of where water is form and not plast the phases fauntific Notice of the policy analysed? The distrative form of the phase of the ph	1091	A second grader's level of understanding of the Theory of Evolution.			
Is found and note; but the phones. Samitard & Whits date is being analyses? The destructions (registed worting that subdists are noting)?  1002  1002  1003  1003  1004  1005					
observations (original working) that students are making?  Coulding is a scientific Set.1 To remove or try or water the pricess down from our control or the pricess of the prices of the pricess of the		- ·			
1002		_ · · · ·			
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Earth and Space Sciences without big bang cosmology and climate change is woefully					
	1318				
1520 Inadequate.	1530				
	1526	inadequate.			

	2.E1.U2.5 - Include that water is found underground and also in life forms (e.g. plants		
	and animals). Note: the addition of water cycle is appropriate because as worded,		
	this standard does not address that water cycles or the processes for how it moves		
	from one place or state to another. 2.E1U4.7 - Changes in water or land systems		
	happen all of the time and by themselves are not positive or negative; they are only		
	perceived as positive or negative with respect to what they impact. Therefore, change		
	the wording to Construct an argument from evidence about how changes in water		
	and land systems can have positive and negative impacts on humans and the		
	environment. 2.E2U1.8 - For 2nd grade, changes in the sky should be limited to day		
	and night and not on the phases of the moon. Also, it is not the relative position of		
	the Earth and sun that cause day and night, but the rotation of the Earth. Suggested		
	revision: Analyze and interpret data to explain patterns in day and night.		
1538			
	The I kid ok of erosion in 2nd grade seems delevipmebtally inappropriate and does		
	not seem to have any continuity with the previous or forthcoming grades. This is		
	traditionally taught in 4th grade through NGSS standards.		
1550			
	See above		
1556	Remove all religious references.		
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL		
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.		
1575			
1583	Adding and maintaining teaching Evolution needs to be continued.		
	Develop and use models to represent that water can exist in different states and		
	isfound in oceans, glaciers, lakes, rivers, ponds, and the atmosphere (water cycle)		
	What are the effects when these stages change? This just seems to be thrown in:		
	Analyze and interpret data to explain the Earth's position in relation to the Sun		
	atdifferent times during a twenty-four-hour period and changes in the apparentshape		
	of the Moon from one night to another		
1595	of the Wood Holl one highe to unotife.		
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.		
	Teach Science and facts in Schools not faith and religion.		
1641			
	No comment.		
	Fix evolution standards.		
	See comment #9		
1681			
	Only facts based on repeatable scientific tests.		
	,		
	Climate change should be included - keep environment		
1/93	Please do not muddy the language regarding evolution		
	Restore all original language referencing evolution proposed by the committee of		
	educators with expertise in science education.		
1799	Teach Evolution		
	The original document, before internal review, provided the necessary background		
	about what core concepts were expected in science education.		
1800			
	Revert all of Diane Douglas's changes.		
1859	Continue to teach evolution. Do not remove it to teach creationism.		
1877	Evolution	 	 
	Life Science standards should be strictly and wholly secular in nature and follow the		
	most up to date science community's recommendations. Our children need the		
	opportunity to receive competitive and challenging educations at a playing field level		
1890	to the rest of the nation.		
	Refer to my response to question 17.		
	2.E1U3.6 and 2.E1U3.8 seem too advances for 2nd grade.		
1525	we should not eliminate detailed studies of evolution as it pertains to plants, animals		
19/19	· · · · · · · · · · · · · · · · · · ·		
1540	land humans. These are scientific tacts that must be taught.		
1953	and humans. These are scientific facts that must be taught.  Teach proper evolution		

Evolution, not intelligent design, is based in science. Science, not religion, should be 1995 taught in science classes.  Nothing should be taught within or alongside science that does not have the same factual basis that all the core concepts included in the draft have. Non-science or	
Nothing should be taught within or alongside science that does not have the same	
factual basis that all the core concepts included in the draft have. Non-science or	
pseudoscience, has no place in factual science learning for our youth.	
2000	
2015 Ambivalent	
2032 Evolution	
2043 All standards need to be included.	
2062 No comment.	
2079 see previous comments.	
2093   See item 24.	
We should only be covering evolution in school. Creationism should be kept separate	
2152 from schools.	
Caution: The insert of water cycle in 2.E1.u2.3 leads one to having students	
memorize the water cycle chart. The intent of the standard is that students should be	
able to identify where water is found on Earth and that it can be solid or liquid not	
that it cycles. Delete water cycle 2.E1U2.5 Key Concepts if terms are kept delete	
2156 insert climate change	
2259 Send the standards back for review.	
2262 Explain evolution.	
Include Evolution (where relevant), omit Creationism and Intelligent Design .	
2265	
Teaching creationism, or the misnamed intelligent design, is a violation of the	
separation of church and state. If you want your kid to learn fantasy send him to	
Sunday school. Public schools are for fact based subjects that our kids will need to	
navigate the future, not the failed, undefined, and contradictory philosophies	
2273 responsible for most of the earths problems.	
Not commenting here because my complaint is about Diane Douglas trying to sneak in	
creationism and Intelligent Design into the state science standards.	
2306	
2345 Refer reply in 20 above.	
2354	
Refer to the Next Generation Science Standards. They NGSS are good standards.	
2364 These are not.	
2378 Needs to go back to review.	
Keep religious beliefs out of science standards and retain scientifically accurate core	
2380 Ideas of evolution and climate change at all grade levels.	
2384 Please revise.	
Science classes must include the scientific research published in high ranking, peer-	
reviewed journals of climate change, evolution, and mechanisms of natural selection	
if student are to have a better understanding of the scientific process, theories, and	
major mechanisms at work in our world. It is also essential preparation for higher	
education as these are subjects that will be taught heavily in entry level biology class,	
sometimes spanning an entire semester, and make up more advanced science course	
such as organic evolution. It is imperative to a student's education in science that	
large scientific fields such as evolution and climate change research not be censored	
like banned books.	
2390	
I Call for the restoration of the ASE's description of evolution, which is scientifically	
accurate and pedagogically appropriate, unlike the proposed revision.I Recommend	
revisions to the treatment of evolution in passages that seem to have been similarly	
weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may	
in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)	
2419	
2428 Stick to actual science and stop dumbing down our children!	
2428 Stack to actual science and stop dumbing down our children:	
2515 see above	
2518   couldn't care less about Second Grade.	

	Omitting information on change over time, evolution and the big bang theory,			
2520	completely negates the validity of this document.			
2543	TEACH EVOLUTION! TEACH EVOLUTION!			
	2.E1U3.6 How will students in 2nd grade test solutions to protect themselves from			
	severe weather conditions? Will they be subjected to hurricane strength winds,			
2559	severe drought, blizzard conditions, etc?			
	Science is about observation and explanation. Please do not change the wording to			
	analyze and interpret, this seems to change the focus to making things up rather than			
	observing which is the core of science. The words observe and experiment should			
2605	feature prominently.			
2607	Do not attempt to deny or water down the concepts of evolution.			
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!			
2615	Evolution is real!			
	I disagree with the minimizing of the role Evolution plays in human history and			
	science education. It is not debated in the Science community. The science standards			
	of Arizona need to be compatible with modern scientific fact, not biases or religion. If			
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona			
	Department of Education will omit from Education. That is limiting future generations			
	of American thinkers, who face scientific truths of the world and use the scientific			
	method for progression of humanity. Please revise the k-12 science standards to fit			
	current scientific fact, so that future generations will posses the knowledge they have			
	the right to recieve from their Education department. Thank you.			
2618				
2642	This section is good	_		

Survey Question	29. What would you like the working group to consider as they revise the Life Science	e Standards in the Second Grad	de Science Standards?		
	Public Comment	Actionable Yes/No	Actionable Yes/No	Suggested Changes	Committee Notes
	Please follow the National science education standards.	no	,	50 0	
	The life cycle units are needed. The human body is great for second grade and very				
	grade appropriate. If you want students to observe what heat does to matter, are you				
54	going to provide materials for experiments etc?	yes			
89	No comment	no			
	Evolution section is weak and watered down. It needs to be strengthened.				
114		no			
124	n/a	no			
143	no concerns	no			
	We should go back to the standards that the committee created and adopt those, not				
157	Diane Douglas's internal review copy.	no			
162	Adopt NGSS standards	no			
170	Funding	no			
	They're mostly gone and this is what our kids love learning about at this age level. We				
	would rather incorporate the standards around these skills to teach the students why				
	it is important to take care of the planet and what will happen to the animals if we				
	continue to cut down trees and ruin habitats. It helps the students put it into				
	perspective and with their informational writing. Other concepts are still too abstract				
181	for this.				
189	A more clearer perimeters to teach within.				
	See above.				
	Simplification.				
252					
	Page 18 Remove Key Concept ColumnPage 20In cell L1, U1, Remove the standard				
	removed in comments above: K.L1U1.5.In cell L4, U2, Remove the standard removed				
	in comments above: 1.L4U2.10.In cell L4, U4 - renumber 1.L4U4.11 to 10.				
265					

	Adding in some human body systems. These kids may never get another chance to		
	learn about their bodies. I would like to see digestive, cardiovascular, and		
	reproductive systems added as these are things that can effect their health and well		
	being.		
	Nothing		
	Put back insects (which appears to be in 1st now)		
	Nothing in particular.		
	These are not what the committee created		
	Add the body systems back in		
	no suggestions		
	Second grade could absolve some of the first grade standards such as 1.L2U1.8		
	because it lends itself to the already existing second grade standards.		
347			
	Please consider removing the key concepts section. This makes the model more like		
ľ	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and		
	inquiry based.		
435	N/a		
	Move the genetics and evolution standards to 3-4th grade. It is too abstract for earlier	 	 
	grades.		
	Remove the key concepts as this unnecessary and is more about implementation and		
	should NOT be the intention of the standards.		
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,		
	evidenced by the replication of self copying dna in science labs and modern genetic		
	engineering efforts is wrong. Period. Evolution through natural selection over millenia		
	is a scientific fact.		
	Scientific standards should be based on scientific research and nothing else. Replacing		
	- · · · ·		
	and watering down the proven science of evolution is a disservice to our kids, a		
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO		
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.		
1008			
	The inclusion of evolution must be reinstated.		
	Page 20, Table Row labeled L4 - see comment 19 - #4.		
	Evolution needs to be taught		
	There is insufficient life science listed to be taught in second grade. Balance of nature		
	is a discredited concept that should not be taught. There is not a single balance point		
2	for each ecosystem, rather there are successional trajectories that vary with each		
1081	system.		
	Evolution is not just a theory, it is well established fact by science. Making Biological	 	 
	evolution to Theory of Evolution is a step backwards not an improvement.		
1085			
1091	A second grader's level of understanding of the Theory of Evolution.		
	We need to start teaching children about all aspects of life including evolution from		
	the very beginning.		
	Just 'Evolution,' it is NOT a theory.		
	Evolution is not a theory.		
	No comment		
	That while people have widely different views on matters of faith, the scientific		
	community is 99% percent in agreement that evolution is a demonstrable fact.		
1167	community is 35% percent in agreement that evolution is a demonstrable fact.		
	Only SCIENCE in Science class!		
	Only SCIENCE in Science class!		
	See kindergarten comments.		
	Environmental studies should include information regarding human impact.		
1190			
			1
	See above		
1219	See above Get rid of intelligent design. Restore references to evolution. Don't teach 2nd		

	Nothing in the proposed revisions for any grade are acceptable if they include		
	intelligent design or any other form of religious creationism by any other name, and if		
	references to evolution have been deleted or treat it as only a theory.		
1223	, ,		
	Don't revise.		
1220	Please see my earlier comments (Qu 13/17) regarding the scope of evolution		
1252	education.		
1296	Evolution should not be omitted from this curricula.		
	Eliminate creationism, intelligent design. We get enough of this in church. Prepare		
1298	the kids for college/trades schools with science.		
	Throw these terrible standards out and adopt instead the excellent Next Generation		
1303	Science Standards developed by STEM professionals.		
	I believe it would serve the children of AZ better if we would just adopt the Next		
1309	Generation Science Standards.		
1315	Get a scientific expert to rewrite the content or undo the edits.		
	The Internal Review provided excellent additional development and clarification. The		
1337	·		
	This applies to the Distribution of K-2 standards - page 20:' L4: The theory of		
	evolution seeks to make clear the unity and diversity of living and extinct		
1	· · · · · · · · · · · · · · · · · · ·		
	organisms. 'This is imprecise. In each section this should read 'The study of evolution		
	seeks to demonstrate…' First, evolution is an established scientific theory. A		
	scientific theory differs from the 'street' use of theory, which indicates a 'guess' about		
	causation or relationship. In contrast, a scientific theory can be tested and potentially		
	disproved. These tests are rigorous observational or experimental attempts to		
	demonstrate that the scientific theory cannot explain a pattern in nature. Failure to		
	disprove or refute the scientific theory increases confidence in it, although it cannot		
	be considered as proven. Two things distinguish evolution as a 'scientific theory' from		
	the more general use of 'theory.' First, as inferred above, it can be tested and		
	potentially falsified using experiment or observation. Second, it has been tested time		
	and time again, in many systems and with many organisms, for well over 150 years,		
	and has withstood those tests. It has not been disproven. Thus it is the STUDY of		
	evolution – mechanisms of organic change, intrinsic or environmental		
	characteristics driving or influencing the nature or rate of change, etc. (studies of		
	which serve to 'test' the underlying theory) â€" that have provided evidence of 'the		
	unity and diversity of living and extinct organisms.'		
1338			
1339	Clearly include the teaching of the concept of evolution.		
	Comprehensive sex education is desperately needed in AZ schools.		
	Original language should remain		
	Teach evolution. Evolution is science.		
1403	If the state allows teaching creationism, they will also have to teach other religion's		
I			
	creation myths, such as Hopi, Navajo, Tohono OOdham, etc. For example,in the Maya		
	creation myth, humans are created out of corn.		
1443	evolution should be included in all grades		
1	They need to start learning about where they and everything came from, via		
	evolution	 	
1517	Ditto	 	
1518	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.		
	Evolution should be included in any life science or biological class.		
	2.L2U1.10 - All energy ultimately comes from the sun. Therefore, it is unnecessary to		
1	state that life on Earth depends on energy from the sun and energy from other		
	organisms. In fact, plants do not need energy from other organisms because they		
	convert light energy from the sun into food energy. Simplify this standard to read		
	Construct a model representing how life on Earth depends on energy from the Sun.		
1538			
	See above		
1556	Remove all religious references.		

				T
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL			
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.			
1575				
1583	Adding and maintaining teaching Evolution needs to be continued.			
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.			
	Teach Science and facts in Schools not faith and religion.			
1641				
	No comment.			
	Fix evolution standards.			
1664	See comment #9			
1672	See first comment			
	Religion has no place undermining scientifically supported theory in SCIENCE CLASS			
1678				
1681	N/a			
1001	See earlier general comments about the importance of including Evolution as the			
1600				
	underlying explanation of all aspects of Biology.			
	Only facts based on repeatable scientific tests.			
1699	Evolution should not be omitted or referred to as theory.			
1	Same as my earlier comments relating to removing the phrase the theory of			
1739	evolution and keeping the single word evolution			
1757	Human factors on the environment should also be in this section.	-	 	
	The unity and diversity of organisms, living and extinct, is the result of evolution.			
1787	,			
	Please do not muddy the language regarding evolution			
1733				
	Evolution has been amply confirmed by science, just like photosynthesis or relativity.			
	It's absurd to use ambiguous or tentative language. These are very bad revisions that			
	were made, they clearly weren't endorsed by the writing committee, and it's			
	somewhat disrespectful to them to make these changes.Please don't avoid eduction			
1795	on evolution.			
	Restore all original language referencing evolution proposed by the committee of			
1796	educators with expertise in science education.			
	Teach Evolution			
	The original document, before internal review, provided the necessary background			
	about what core concepts were expected in science education.			
1000	about what core concepts were expected in science education.			
1800				
	Revert all of Diane Douglas's changes.			
1859	Continue to teach evolution. Do not remove it to teach creationism.			
	Life Science standards should be strictly and wholly secular in nature and follow the			
	most up to date science community's recommendations. Our children need the			
	opportunity to receive competitive and challenging educations at a playing field level			
1890	to the rest of the nation.			
	Refer to my response to question 17.			
	DARWIN please.			
1926				
	It is way too broad. The students that we are getting cannot possibly cover this much			
	detail in a year long Biology class! I am National Board Certified and have taught for			
	16 years. Based on my experience, these standards will not lead to students grasping			
	the all important Big Picture. It will get lost in the details. In addition, it is a serious			
	mistake to not place evolution at the center of any discussion of modern biology.			
1939				
	Strengthen the teaching of evolution and global change to reflect the science of these			
1944	subjects.			
1344	Evolution is presented as a theory, which is technically incorrect, and the curriculum			
	fails to mention other proposed explanations of origins and development.			
1945				
	we should not eliminate detailed studies of evolution as it pertains to plants, animals			
1948	and humans. These are scientific facts that must be taught.			
1953	Teach proper evolution			
	More dinosaur dioramas!			
	Evolution must continue to be taught			
1550				1

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	Evolution, not intelligent design, is based in science. Science, not religion, should be		
1995	taught in science classes.		
	Nothing should be taught within or alongside science that does not have the same		
	factual basis that all the core concepts included in the draft have. Non-science or		
	pseudoscience, has no place in factual science learning for our youth.		
2000			
2013	STOP calling Evolution a theory.		
2015	More on evolution.		
2030	L4		
2032	Evolution		
	All standards need to be included.		
	Evolution needs to be added back in as fact.		
	see previous comments.		
	See item 24.		
	See previous comments on the treatment of evolutionary biology.		
	We should only be covering evolution in school. Creationism should be kept separate		
2152	from schools.		
2132	Understanding the theory of evolution is critical to the fields of medicine, biology, and		
2100			
2199	applied science like agriculture.		
2222	Don't eliminate references to evolution, as it's necessary to understand life sciences.		
2203			
	Understanding evolution is critical to the fields of medicine, biology, and applied		
	science like agriculture.		
2210	Evolution must be taught.		
	An explanation of how live has evolved since living cells first populated the Earth must		
	be included.		
2259	Send the standards back for review.		
2262	Explain evolution.		
	Include Evolution, omit ANY MENTION OF Creationism and Intelligent Design .		
2265			
	Teaching creationism, or the misnamed intelligent design, is a violation of the		
	separation of church and state. If you want your kid to learn fantasy send him to		
	Sunday school. Public schools are for fact based subjects that our kids will need to		
	navigate the future, not the failed, undefined, and contradictory philosophies		
2273	responsible for most of the earths problems.		
	Not commenting here because my complaint is about Diane Douglas trying to sneak in		
	creationism and Intelligent Design into the state science standards.		
2306			
	Refer reply in 20 above.		
2354	nere reply in 25 doore.		
2554	Refer to the Next Generation Science Standards. They NGSS are good standards.		
2364	These are not.		
	Needs to go back to review.		
23/6	Keep religious beliefs out of science standards and retain scientifically accurate core		
2200	' = '		
	ideas of evolution and climate change at all grade levels. Please revise.		
2384			
	Science classes must include the scientific research published in high ranking, peer-		
	reviewed journals of climate change, evolution, and mechanisms of natural selection		
1	if student are to have a better understanding of the scientific process, theories, and		
1	major mechanisms at work in our world. It is also essential preparation for higher		
	education as these are subjects that will be taught heavily in entry level biology class,		
1	sometimes spanning an entire semester, and make up more advanced science course		
	such as organic evolution. It is imperative to a student's education in science that		
	large scientific fields such as evolution and climate change research not be censored		
1	like banned books.		
2390			
	If evolution is a possible discussion, please word it appropriately. It is not a theory any		
2416	longer.		
		l l	

	I Call for the restoration of the ASE's description of evolution, which is scientifically		
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend		
	revisions to the treatment of evolution in passages that seem to have been similarly		
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may		
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)		
2419			
2428	Stick to actual science and stop dumbing down our children!		
2487			
	see above		
	I couldn't care less about Second Grade.		
	Omitting information on change over time, evolution and the big bang theory,		
2520	completely negates the validity of this document.		
	TEACH EVOLUTION!		
2545	Also changes to L4 seem inappropriate. L4 should read. The unity and diversity of		
	organisms, living and extinct, is theresult of evolution , that is the current scientific		
	consensus. Among scientists like myself there is no question that this is the		
	- '		
	overwhelming position, working in the word theory here is inappropriate and seeks		
	to make clear has nothing to do with science and has no place in the wording here. I		
	propose the following improved wording.L4. All observable evidence shows us how		
	the unity and diversity of organisms, living and extinct, is theresult of evolution		
2605			
2607	Do not attempt to deny or water down the concepts of evolution.		
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!		
2615	Evolution is real!		
	I disagree with the minimizing of the role Evolution plays in human history and		
	science education. It is not debated in the Science community. The science standards		
	of Arizona need to be compatible with modern scientific fact, not biases or religion. If		
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona		
	Department of Education will omit from Education. That is limiting future generations		
	of American thinkers, who face scientific truths of the world and use the scientific		
	method for progression of humanity. Please revise the k-12 science standards to fit		
	current scientific fact, so that future generations will posses the knowledge they have		
	the right to recieve from their Education department. Thank you.		
2618			
2642	This section is good		
	I would like there to be an emphasis on this age group going outside, gardening,		
	observing, going to enriching places in Science like the Botanical Garden, the zoo,		
	National Parks, Science Museums, Outdoor classrooms.		
2653	,		

Public Comment Non-Survey	Public comment received outside of the survey						
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes		

irvey	21. What would you like the worldon areas to conside	uas da a Ale - This I	Condo Calacas Charles	d = 1	
iestion	31. What would you like the working group to consider as they			1	
		Actionable Yes/No	Items Addressed	Suggested Changes	Committee Notes
mment #	Public Comment				
	Please follow the National science education standards.	No			
89	No comment	no			
	In 3.P2U1.1 in the key concepts it refers to characteristics of light such as speed. Are they really supposed to understand the speed of light at this grade level?	Yes	K-12 progression Key Concepts	Mirror the language on 135 of the K-12 Framework for Science Ed.	Agree with comment, speed is not developmentally appropriate.
108					
114	,	no			
	I would like the group to consider what type of curriculum we will be receiving to follow so that we are able to sufficiently teach the new standards.	no			The task of the developers is to ma sure that the standards are broad effort to give local control more flexibility in decision making
119					,
121	lots of science standards have changed and moved around - will there be curriculum and funding to accommodate these changes?	no			see comment 119
124	n/a	no			
143	Consider the words being added to the Physical Science Standards, do these words change the standard from physical to life?	yes	standard	remove body parts 3.P2U1.1 3.P2U2.2	This is physical science standard; I standards are addressed later in t standards
145	The changes to page 21 are incorrect and lead to misconceptions - Return to original wording. We are not focusing on the sun but rather light and sound waves. PAGE 22 In this grade level, students apply their understanding of light waves; how they travel, are detected, and transfer energy to understand how light is a source of energyon Earth; how light and other waves travel, can be detected, and transfer energy; and how organisms can respond to light and other stimuli toincrease their survival.	yes	grade level introduction	In third grade students develop understanding of cause and effect relationships involving energy and matter as they investigate properties of light and sound waves and the impact on organisms.	
	We should go back to the standards that the committee created and adopt those, not	No			Committee should reconvene to
157	Diane Douglas's internal review copy.				make the adjustments to the publ comment
162	Adopt NGSS standards	No			
168	I trust the work of Science Specialists who devoted their time and energy to improve Arizona's science standards and request their direct incorporation as new standards.	no			see comment 157
	Funding	no			
170	Really? how is a third grader supposed to construct an explanationregarding the sun and the energy it supplies the earth. Once again, students this age are need	no	instructional		

	The concepts do not seem to flow, it is random content thrown under one huge heading Physical Science.	Yes	organization		no change needed as all grade three standards focus on light and sound
183	1				standards rocus on light and sound
184	I do not think that a third grader would find physical science engaging or interesting.	no			
185	need more specifics	no			
189	A more clearer perimeters to teach within.	Yes			Committee should consider assessment boundaries
190	The resources are the major concern and the physical science component is boring and not engaging.	no			
192	this is to broad we need more specifics	no			
	Please provide a starting point. The Big Ideas are great, however there is a concern that information and concepts will be overlooked.	no			
	The Key concepts should be dropped from every grade level.	yes			Committee is considering this within the bounds directed by ADE
203					
208	Simplification.	no			
211	I'd like us to implement the Next Generation Science Standards, already in use in many states and districts. https://www.nextgenscience.org/	no			
	Key Concepts should be expanded to provide more consistency in instruction across the state; with standards being broad, what is being taught may differ by site and location. How will testing be implemented without a better understanding of what is	yes	standard	see comment 189	
218	expected?				
224	Integrate computer science and EIE instruction.	no	instructional		Computer Science standards are being worked on
225	I would like the working group to look at the National Science and Technology Standards and base the standards on that.	no	standard		see 224
	What is developmentally appropriate for 8 and 9 year olds to understandHands-on learning is very important for this age groupThird graders are highly verbal and enjoy working with partners and small groups	no			
227					
252	n/c	no			
	Page 9, 21, 33Remove last sentence: 'Suggestions for key conceptsor maximum content limits.'Pages 12, 15, 19, 24, 28, 31, 37, 41, 45Remove these connections - as soon as standards change the Science standards need to be changed. Each group of standards needs to be stand alone. If ADE wants to have another document that does a crosswalk of all of the standards in another document, that would be more appropriate than the Science Standards. Page 21Remove additions by ADE: 'and between content areas' and descriptions under third grade and fourth grade. What did the teachers have here? Unless it was a grammatical fix, it should be returned to what the teachers asked for.	yes	Key concepts and Connections to other content areas		see comment 203
265					
269	I think it is great to start them out early with supporting their reasoning. Our purpose is for students to think. The internet has made everyone lazy so the crosscutting concept of problem solving should be in every grade level.	no			not specific enough
	Nothing	no			
201	Incoming	110	l .	I.	1

292	Nothing in particular.	no			
	There needs to be resources given out if the students are to be taught this new	no			
320	information.				
326	Wait to Test.	no			
335	no suggestions	no			
	Better explanation the Using the Science core ideas. The other 10 knowing are understable. Is it not clear in the verbiage of the standard to how to use the science.	yes		Return the language to the Big Ideas document and clarify that 1- 10 is knowing and 11-14 is using science.	
369	Please consider removing the key concepts section. This makes the model more like	yes			See comment 203
390	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and inquiry based.				
	Remove the wording and parts of the human ear isn't necessary and takes away from the idea of physical science. The body parts don't need to be explicitly connected for students and should be discovered through inquiry by students. This causes teachers to tell students more than necessary. Remove the key concepts as this unnecessary and is more about implementation and should NOT be the intention	yes			See comments 143 and 203
512	of the standards.				
1001	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia is a scientific fact.	no	standard		evolution was not removed from 3rd grade standards
1008	Scientific standards should be based on scientific research and nothing else. Replacing and watering down the proven science of evolution is a disservice to our kids, a disservice to our teachers, and a disservice to our educational body. STOP TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.	see comment 1001			
1020	10. Page 21, 2nd paragraph – see comment 19 - #2	no			
1085	Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.	see comment 1001			
1091	A third grader's level of understanding of the Theory of Evolution.	see comment 1001			

	This would be an agree without the ADE changes. Look at number of standards and	1. connections 2. key	1. other 2. key concepts	1. remove from	1. create supplemental document
	grain size in this grade band compared to other grade bands.Connections to other	concepts	1. other 2. key concepts	standards	that can be updated as needed 2.
	academic disciplines. •Bemove entirely from the document. This belongs in a	00.100 p to		otaniaa as	comment agrees with proposel
	support document or curriculum adopted locally.•⊞hese do not belong in a				changes to key concpets.
	standards document. They become obsolete as soon as any of the standards from				changes to key concepts.
	referenced disciplines are updated and approved by the state board.•⊠dditionally,				
	many of the connections cited don't actually align to the standards within the grade				
	level. Key concepts Columnâ€C®/hat ADE added are not actually concepts, they are				
	random vocabulary terms which may or may not be aligned to the standards and in				
	many cases are not appropriate for the grade level. •Remove they key concepts				
	column from the document.⢢t ADE requires that the key concepts column remains,				
	select the actual concepts from the Framework or Big Ideas documents, since those				
	documents are research-based and used in the development of the standards.•™ey				
	concepts, if included must represent concepts from all three dimensions, and not just				
	the content of science. Below is an example for 3.L1U2.6 Follow this process for each				
	of the third grade standards, not just the example below.Remove list of vocabulary				
	terms from the Key Concepts column and replace with the actual concepts related to				
	this standard that represent all three dimensions:â€cDevelop models to describe				
	phenomena. •Science findings are based on recognizing patterns. •Reproduction				
	is essential to the continued existence of every kind of organism. Plants and animals				
	have unique and diverse life cycles. •Batterns of change can be used to make				
	predictions.				
	predictions.				
1092					
	Evolution is a scientific fact! To remove or try to water the process down from our	see comment 1001			
	education standards is unacceptable! If we want current or new high dollar business				
	to come to Arizona we must have high standards for our school curriculum. Good				
	and factual science is a must for our standards!				
1113					
1165	No comment				
	That school is for teaching facts, not for promoting the views of any particular	no			
1167	religious group.				
	The teachers are not science teachers and will be concentrating getting the students	no			
1186	to READ!				
1196	See above	no			
1219	Get rid of intelligent design. Restore references to evolution.	see comment 1001			
1221	They are to broad. We need more specific goals.	no			
1222	Not utilize language in re Darwinism, natural selection or evolution.	see comment 1001			
	Nothing in the proposed revisions for any grade are acceptable if they include	see comment 1001			
	intelligent design or any other form of religious creationism by any other name, and				
	if references to evolution have been deleted or treat it as only a theory.				
1223					
1226	Don't revise.	no			
	Consider the claim that advances in science and technology produce products. There	no			science and engineering practices
	=::				1
	should be more emphasis on science and tech being used to understand complex				address this
1264	should be more emphasis on science and tech being used to understand complex processes and the natural world.				address this

1303	Throw these terrible standards out and adopt instead the excellent Next Generation Science Standards developed by STEM professionals.	no	standards	none	ADE Directive
	The addition of the Key Concepts column add vocabulary words that would normally be the decision of local districts. This column is unnecessary and superfluous.	see comment 203			
1305	I believe it would serve the children of AZ better if we would just adopt the Next	see comment 1303			
1309	Generation Science Standards.				
	The sheer willful ignorance of removing Evolution from the curriculum is mind	see comment 1001			
	bogling. It would put Az students at a vast disadvantage when moving to higher				
	education. If the superintendent's intention is to replace evolutionary theory with				
1211	intelligent design she should be removed from office and barred from working in				
	education for life. Do jot do this.				
1315	Get a scientific expert to rewrite the content or undo the edits.	see comment 157			
1227	The Internal Review provided excellent additional development and clarification. The Internal Review should be adopted.	see comment 157			
	Clearly include the teaching of the concept of evolution.	see comment 1001			
	Original language should remain	see comment 157			
	Teach evolution. Evolution is science.	see comment 1001			
	evolution should be included in all grades	see comment 1001			
	Bring back the word evolution.	see comment 1001			
	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.	see comment 1001			
	See above	no			
	Remove all religious references.	see comment 1001			
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL	see comment 1001			
1575	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.				
	Adding and maintaining teaching Evolution needs to be continued.	see comment 1001			
	I would like to see more of the engineering design process and computational	see comment 1264			
	thinking to be included in these standards and all the science standards. The earlier				
	we get students to start thinking this way the better off they will be. We need to be				
	preparing our students for a future of technology!				
1595					
1603	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.	see comment 1001			
1628	Teach Science and facts in Schools not faith and religion.	see comment 1001			
	Students need MORE SCIENCE in every level!	no			
1641		no			
	No comment.	no			
	Fix evolution standards.	see comment 1001			
	See comment #9	no			
1672	See first comment	no			
1678	Light and sound should be taught as early as possible. I teach my 2 preschoolers aboit these concepts there's no reason to put it off.	no			
	No issues. Seems appropriate.	no			
	See earlier general comments about the importance of including Evolution as the	no			
1689	underlying explanation of all aspects of Biology.				
	Additional material on rocks and minerals.	no			
1777	More critical thinking.	see comment 1264			

			1	I	I
1789		see comment 1001			
1793	Please do not muddy the language regarding evolution	see comment 1001			
	Restore all original language referencing evolution proposed by the committee of	see comment 1001			
1796	educators with expertise in science education.				
1799	Teach Evolution	see comment 1001			
	The original document, before internal review, provided the necessary background	see comment 157			
	about what core concepts were expected in science education.				
1800	·				
	Revert all of Diane Douglas's changes.	see comment 157			
	More Big Ideas in science should definitely begin to be incorporated at this point.	no	standards	no changes	3rd grade standards do incorpera
1842	, , , , , , , , , , , , , , , , , , , ,		5641144145	ino onunges	big ideas
	Continue to teach evolution. Do not remove it to teach creationism	see comment 1001			big ideas
1033	Life Science standards should be strictly and wholly secular in nature and follow the	see comment 1001			
	most up to date science community's recommendations, including the proven	see comment 1001			
	theories on evolution and Darwinism. Our children need the opportunity to receive				
	competitive and challenging educations at a playing field level to the rest of the				
1000	nation and international STEM markets.				
1890					
1918	Refer to my response to question 17.	no			
	Evolution is an accepted theory of science. The striking of this word and replacing it	see comment 1001			
	with more generic terminology is misleading and weakens the standards. The				
	redefining of evolution as seeks to make clear the unity and diversity of living and				
	extinct organisms is meaningless and not in alignment with accepted scientific				
	thinking. The term and definition of evolution should remain as is. The reason for				
	renaming of the scientific method to science and engineering is dubious and is not in				
	alignment with accepted scientific thinking. The scientific method is a process by				
	which facts demonstrate proof to validate or disqualify any scientific theory. The term				
	scientific method should remain as is. The elimination of the scientific theory of the				
	origin of the universe, known as the Big Bang is also dubious and not in alignment				
	with accepted scientific thinking. References to the Big Bang should remain as is.The				
	changes outlined above weaken the Arizona K-12 science standards and moves us				
	away from creating a system that provided world-class education. I oppose these				
	changes.				
1922					
1926	Darwin, please.	see comment 1001			
	(My rating refers to Life Science standards)Page 21, the topic described for third	1.2nd standards no 2.	1. standards 2.	1. no change 2. no	1. 3rd builds on 2nd no the same
	grade matches exactly with what is actually listed in standards for second grade	connections no	connections 3. standards	change 3. no change	connections to other content are
	(2.L2U1.9 and 2.L2U1.10). Page 25: The connection of the content taught with	3.energy no			no science standards 3. NA to 3r
	student's everyday life seems essential. Why is that deleted from the Introduction? It				grade standards
	should be given extra prominence. The bold sentence seems deliberately modified to				
	remove the idea that Earth resources are fuels and can be used up, replacing it with a				
	bland statement that everything can be transformed into different forms of energy.				
	Fossil fuels, for example, cannot be effectively be 'recreated' by transforming some				
	other type of material/energy. The Earth, and life, have cycles, but not everything can				
			1		
	be forever recycled.				

	Evolution is presented as a theory, which is technically incorrect, and the curriculum	see comment 1001		
	fails to mention other proposed explanations of origins and development.			
1945				
1953	Teach proper evolution	see comment 1001		
1990	Evolution must continue to be taught	see comment 1001		
	Evolution, not intelligent design, is based in science. Science, not religion, should be	see comment 1001		
1995	taught in science classes.			
	Nothing should be taught within or alongside science that does not have the same	no		
	factual basis that all the core concepts included in the draft have. Non-science or			
	pseudoscience, has no place in factual science learning for our youth.			
2000				
	Very obvious that the Dept of Education is afraid of teaching young students how	no		
	humans impact the Earth.			
	Encourage further development of experimental skills.	see comment 1264		
2030		no		
	Evolution	no		
	All standards need to be included.	no		
	No comment.	no		
2079	see previous comments.	no	other	working groups consisted of over 100
	The working group should consider both the opinion of experts in the field of science and the opinions of classroom teachers.	yes	other	working groups consisted of over 100 individuals including classroom
	and the opinions of classicom teachers.			teachers, instructional specialists,
				enginneers, university professors, and
				industry professionals.
2093				madstry professionals.
	Add sustainability, social science	no		sustainability does not fit with these
2096				standards
	Where is earth science? Plant science had been scaled bath to one item	no		plants are included within the life
				science standards the earth science
				standards support the life science
2107				standards
	Evolution is not described nor incorporated accurately. This must be changed.	see comment 1001		
2112				
2115	No specific recommendations for this level	no		
	We should only be covering evolution in school. Creationism should be kept separate	see comment 1001		
2152	from schools.			
	Include all of the crosscutting concepts (CCC) that could be aligned with the	see comment 1092		
	standard(s) in the actual table. The introduction gives guidance of the CCC's for			
	kindergarten, however they need to be integrated into the standards or they will not			
	be taught as deemed in the introduction (3-dimensional instruction)			
2156				
	Understanding the theory of evolution is critical to the fields of medicine, biology, and	see comment 1001		
2199	applied science like agriculture.			
2222	Understanding evolution is critical to the fields of medicine, biology, and applied	see comment 1001		
	science like agriculture.			Maria de la companya de la companya de la companya de la companya de la companya de la companya de la companya
	Send the standards back for review.	yes	standards	they are being reviewed
	Explain evolution.	see comment 1001		
2265	Include Evolution, omit Creationism and Intelligent Design .	see comment 1001		

	Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to	see comment 1001			
	Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies				
2273	responsible for most of the earths problems.				
	Change language in 3 L2u1.8 from use food chains to use food webs- webs are more	1. yes 2. no	1. standard 1. standard	1. suggested change:	2. would no longer be life science
	aligned with systems thinking, chains are more linear. Also, consider L2u3.9, change			change the word	standard
	damaging effects of sunlight to damaging effects of drought (more relevant for AZ).			chain to web	
2292					
2306	in creationism and Intelligent Design into the state science standards.	no			
	Refer reply in 20 above.	no			
	You are only teaching parts of science.	no			
2354	,	no			
	Refer to the Next Generation Science Standards. They NGSS are good standards. These are not.	see comment 1303			
2378	Needs to go back to review.	yes see comment 2259			
2380	Keep religious beliefs out of science standards and retain scientifically accurate core ideas of evolution and climate change at all grade levels.	see comment 1001			
2384	Please revise.	yes see comment 2259			
	I Call for the restoration of the ASE's description of evolution, which is scientifically	see comment 1001			
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend				
	revisions to the treatment of evolution in passages that seem to have been similarly				
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may				
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)				
2419					
2428	Stick to actual science and stop dumbing down our children!	no			
2422	I would change back some of the original vocabulary terms used in 2004 explaining	no			
2433	the Science Standards than the current  Get rid of the knowing and using science and key concepts. Integrate more the three	saa sammant 1002			
2465	dimensions of A Framework for K-12 Science Education.	see comment 1092			
	evolution rather than theory of	see comment 1001			
2487	·	no			
	More hands on standards - student will observe.	see comment 1264			
	You can talk about evolution. It's not voodoo! Keep christian beliefs out of science education.	see comment 1001			
	I couldn't care less about Third Grade.	no			
	Omitting information on change over time, evolution and the big bang theory,	see comment 1001			
2520	completely negates the validity of this document.				
2529	Include health standard that includes body awareness pre puberty physical changes	no	standards	no change	science standards don't include health standards
2539	Senses have not been in standards since K-1	no	standards	no change	students now use senses when applying other standards
2543	TEACH EVOLUTION!	see comment 1001			

	removed? This statement addresses 3.P2U1.1, 3.P2U2.2, 3.P4U1.3 that are not addressed in the replacement sentence. 3.L1U1.5 does not fit with the summary statement at all.	1.yes 2. yes	standards	2. remove	1. Add sound into the introduction., bring back in that light is a source of energy., create a sentence that aligns better with the life science standard in the introduction paragraph. "students learn thatsurvival" 2. humans are animals consider human systems part of 3.L1U2.6
2559	All the standards should be aligned with each grade level and grow in rigor as the student moves through the higher grade levels. The content, though, should be similar in all grade levels.	no	standards	no change	across grade bands the standards do increase in rigor. Content is similar across the grade band becuase we don't have time to teach everything in every grade level.
2607	Do not attempt to deny or water down the concepts of evolution.	yes	see comment 1001		
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!! Evolution is real!	yes	see comment 1001		
	I disagree with the minimizing of the role Evolution plays in human history and science education. It is not debated in the Science community. The science standards of Arizona need to be compatible with modern scientific fact, not biases or religion. If Evolution is being wrongfully omitted I grieve to know what other facts the Arizona Department of Education will omit from Education. That is limiting future generations of American thinkers, who face scientific truths of the world and use the scientific method for progression of humanity. Please revise the k-12 science standards to fit current scientific fact, so that future generations will posses the knowledge they have the right to recieve from their Education department. Thank you.	yes	see comment 1001		
2618	3.L2U2.7 requires students to do an experiment involving plants and animals. This means that teachers would have to incorporate live animals into the science lessons. For some of us this is not so easy to do. I personally am uncomfortable with keeping	no	instruction	no change	this is based on how to instruct the standard. Possible option to use pill bugs.
2619	live animals in my classroom because I do not feel they can receive the proper amount of care required. So teaching this standard would be very difficult for me to				
	This section is good	no			
2012	· · · · · · · · · · · · · · · · · · ·		l		

Survey Question	32. What would you like the working group to consider as they revise the Physical Science Standards in the Third Grade  Science Standards?						
		Actionable Yes/No	Actionable Yes/No	Suggested Changes	Committee Notes		
Comment #	Public Comment						
89	No comment	no					
114	n/a	no					
	I would like the group to consider what type of curriculum we will be receiving to follow so that we are able to sufficiently teach the new standards.	no					
119							

124	n/a	no			
	3.P2U1.1 parts of does not need to be added, we need students to understand how	yes			Comment 31.143
	light is observed by our eyes but they do not need to be able to identify the different				
	parts of the eyel also fear that adding this could change the standard from physical to				
	life3.P2Us.2and parts of the human earagain this may change the meaning of the				
	original standard which is based				
143					
	Leave out the life science from this standard. Take out and parts of human eye,	Yes			Comment 31.143
145	human ear etc.				
	We should go back to the standards that the committee created and adopt those, not	no			
157	Diane Douglas's internal review copy.				
		no			
	Funding	no			
		no			
	Concepts seems dull and boring	no			
					C 21 100
189	A more clearer perimeters to teach within.	yes			See comment 31.189
400	They are not interesting to the average 8 year old nor are they engaging. the concepts	no			
	are dull.				
	1	no			
218	I feel these standards are well written and easily understood by teachers.	no			
	I would like the working group to look at the National Science and Technology	yes			see comment 31.224
	Standards and base the standards on that.				
227	Same as above	no			
252	n/c	no			
	Page 22In the first paragraph, remove the additions by ADE and restore it to what the	yes			see comment 31.203
	teachers had there. Unless it was a grammatical fix, it should be returned to what the				
	teachers asked for.Remove Key Concept ColumnsUnder 3.P2U1.1 - remove 'parts of',				
	and Under 3.P2U2.2 - remove 'and parts of the human ear'. What did the teachers				
	have here? Unless it was a grammatical fix, it should be returned to what the				
	teachers asked for.				
265					
		no			
	What about animals adapting to the environment	yes	K-12 progression	no change need	see fourth grade
	Nothing in particular.	no	P 0		
	Wait to Test.	no			
	no suggestions	no			
333		ves	K-12 progression	no change need	Currently taught in 3rd grade
360	in 4th or 5th.	yes	K-12 progression	no change need	Currently taught in 3rd grade
303	Please consider removing the key concepts section. This makes the model more like	1/05	Standards		See comment 31. 203
	, .	yes	Standards		See comment 51, 205
200	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
390	inquiry based.				
	Remove the wording and parts of the human ear isn't necessary and takes away	yes	standards		See comments 143 and 203
	from the idea of physical science. The body parts don't need to be explicitly				
	connected for students and should be discovered through inquiry by students. This				
	causes teachers to tell students more than necessary. Remove the key concepts as				
	this unnecessary and is more about implementation and should NOT be the intention				
512	of the standards.				

	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,	no	standards	no change	evolution was not removed from
	evidenced by the replication of self copying dna in science labs and modern genetic		Starrage as	c.i.a.i.ge	third grade standards
	engineering efforts is wrong. Period. Evolution through natural selection over millenia				am a grade starradi as
1001	is a scientific fact.				
1001	Scientific standards should be based on scientific research and nothing else. Replacing	no	see comment 1001		
	and watering down the proven science of evolution is a disservice to our kids, a		500 001111101110 1001		
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO				
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				
1008					
	Page 32, Table, Row labeled P4 – see comment 19 - #3.	no			
1020	Evolution is not just a theory, it is well established fact by science. Making Biological	no	see comment 1001		
	evolution to Theory of Evolution is a step backwards not an improvement.		Sec comment 1001		
1085	i i i i i i i i i i i i i i i i i i i				
	A third grader's level of understanding of the Theory of Evolution.	no	see comment 1001		
	Standards 1 and 2: Adding parts of the human to the standard changes the focus	ves	standard	changes to remove	the eye and ear are examples of the
	from a physical science emphasis understanding properties of light and sound to a life	/		the human eye and	relationship between light and lens
	science focus understanding functionality of organs.			ear examples and	and sound waves.
				move to key	
				concepts column	
1092				concepts column	
1032	Evolution is a scientific fact! To remove or try to water the process down from our	no	see comment 1001		
	education standards is unacceptable! If we want current or new high dollar business				
	to come to Arizona we must have high standards for our school curriculum. Good				
	and factual science is a must for our standards!				
1113					
1165	No comment	no			
	That school is for teaching facts, not for promoting the views of any particular	no	see comment 1001		
1167	religious group.				
	See above.	no			
1196	See above	no			
1219	Get rid of intelligent design. Restore references to evolution.	no	see comment 1001		
	Make the standards not so broad.	no			
	Nothing in the proposed revisions for any grade are acceptable if they include	no	see comment 1001		
	intelligent design or any other form of religious creationism by any other name, and				
	if references to evolution have been deleted or treat it as only a theory.				
1223					
1226	Don't revise.	no			
	Throw these terrible standards out and adopt instead the excellent Next Generation	no	standards	none	ADE directive
1303	Science Standards developed by STEM professionals.				
	Collect data and construct arguments based on evidence to explain how sound waves	ves	comment 1092		
	affect objects at varying distances and parts of the human ear. It is not	ľ			
	developmentally appropriate that third graders be examining parts of the human eye				
1305	lor ear.				
1305	or ear.  I believe it would serve the children of AZ better if we would just adopt the Next	no	see comment 1303		

	The sheer willful ignorance of removing Evolution from the curriculum is mind	no	see comment 1001		
	bogling. It would put Az students at a vast disadvantage when moving to higher		See comment 1001		
	education. If the superintendent's intention is to replace evolutionary theory with				
	intelligent design she should be removed from office and barred from working in				
1211	education for life. Do jot do this.				
	,	no	see comment 157		
1315	Get a scientific expert to rewrite the content or undo the edits.		see comment 157		
1227	The Internal Review provided excellent additional development and clarification. The	no			
	Internal Review should be adopted.		1.4004		
	Clearly include the teaching of the concept of evolution.	no	see comment 1001		
	Original language should remain	no	comment 157		
	Teach evolution. Evolution is science.	no	see comment 1001		
	evolution should be included in all grades	no	see comment 1001		
	Ditto	no			
1518	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.	no	see comment 1001		
1526	Discussion of climate change should be included in the standards.	yes	standards	no change	this is within the grade band but is not in third grade
1553	See above	no			
1556	Remove all religious references.	no	see comment 1001		
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL	no	see comment 1001		
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.				
1575					
	Adding and maintaining teaching Evolution needs to be continued.	no	see comment 1001		
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.	no	see comment 1001		
	Teach Science and facts in Schools not faith and religion.	no	see comment 1001		
1641	ÿ	no			
	No comment.	no			
	Fix evolution standards.	no	see comment 1001		
	See comment #9	no	500 00111110110 2002		
200.	The addition of closed system is a good edit and increases the accuracy of the	no			
1678	statement.				
1681		no			
	Only facts based on repeatable scientific tests.	no			
1054			sss sammant 1001		
1700		no	see comment 1001		
1789					
1/93	Please do not muddy the language regarding evolution	no	see comment 1001		
4700	Restore all original language referencing evolution proposed by the committee of	no	see comment 1001		
	educators with expertise in science education.				
1799	Teach Evolution	no	see comment 1001		
	The original document, before internal review, provided the necessary background	no	see 157		
	about what core concepts were expected in science education.				
1800					
	Revert all of Diane Douglas's changes.	no	see 157		
1859	Continue to teach evolution. Do not remove it to teach creationism.	no	see comment 1001		
	Life Science standards should be strictly and wholly secular in nature and follow the	no	see comment 1001		
	most up to date science community's recommendations. Our children need the				
	opportunity to receive competitive and challenging educations at a playing field level				
1890	to the rest of the nation.				
1918	Refer to my response to question 17.	no			

	3.P4U1.3 seems to advanced	yes	standards	no change	this standard is the base for futu standards in the grade band.
1923					
1953	Teach proper evolution	no	see comment 1001		
	Evolution, not intelligent design, is based in science. Science, not religion, should be	no	see comment 1001		
1995	taught in science classes.				
	Nothing should be taught within or alongside science that does not have the same	no			
	factual basis that all the core concepts included in the draft have. Non-science or				
	pseudoscience, has no place in factual science learning for our youth.				
2000					
2015	Ambivalent.	no			
	Evolution	no			
2043	All standards need to be included.	no			
2062	No comment.	no			
2079	see previous comments.	no			
	We should only be covering evolution in school. Creationism should be kept separate	no	see comment 1001		
2152	from schools.				
	parts of human eye / parts of human ear - delete. The students knowing of the parts	yes	see comment 1092		
	would be a life science standard and better fit in health standards.				
2156					
2210	Evolution must be taught	no	see comment 1001		
2259	Send the standards back for review.	yes	standards		they are being reviewed
2262	Explain evolution.	no	see comment 1001		
2265	Include Evolution, omit Creationism and Intelligent Design .	no	see comment 1001		
	Teaching creationism, or the misnamed intelligent design, is a violation of the	no	see comment 1001		
	separation of church and state. If you want your kid to learn fantasy send him to				
	Sunday school. Public schools are for fact based subjects that our kids will need to				
	navigate the future, not the failed, undefined, and contradictory philosophies				
2273	responsible for most of the earths problems.				
	Not commenting here because my complaint is about Diane Douglas trying to sneak	no	see comment 1001		
	in creationism and Intelligent Design into the state science standards.				
2306					
2345	Refer reply in 20 above.	no			
2354		no			
	Refer to the Next Generation Science Standards. They NGSS are good standards.	no	see 1303		
2364	These are not.				
2378	Needs to go back to review.	yes	see 2259		
	Keep religious beliefs out of science standards and retain scientifically accurate core	no	see comment 1001		
2380	ideas of evolution and climate change at all grade levels.				
2384	Please revise.	ves	see 2259		

	Science classes must include the scientific research published in high ranking, peer-	no	see comment 1001	
	reviewed journals of climate change, evolution, and mechanisms of natural selection			
	if student are to have a better understanding of the scientific process, theories, and			
	major mechanisms at work in our world. It is also essential preparation for higher			
	education as these are subjects that will be taught heavily in entry level biology class,			
	sometimes spanning an entire semester, and make up more advanced science course			
	such as organic evolution. It is imperative to a student's education in science that			
	large scientific fields such as evolution and climate change research not be censored			
	like banned books.			
2390				
	I Call for the restoration of the ASE's description of evolution, which is scientifically	no	see comment 1001	
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend			
	revisions to the treatment of evolution in passages that seem to have been similarly			
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
2419				
2428	Stick to actual science and stop dumbing down our children!	no		
	In 3.P2U1.1 - why add and parts of the human eye ? how light behaves is an	yes	1092	
	important concept in and of itself. to add the lenses and the human eye complicates			
	the standard - and it does not have to. Same with 3.P2U2.2 with sound and human			
2465	ear.			
2487	N/A	no		
2515	see above	no		
2518	I couldn't care less about Third Grade.	no		
	Omitting information on change over time, evolution and the big bang theory,	no	see comment 1001	
2520	completely negates the validity of this document.			
	3.P2U1.1 This changes the standard from physical science to life science as the	yes	see comment 1092	
	structure and function of the eye is introduced.3.P2U2.2 This changes the standard			
	from physical science to life science as the structure and function of the ear is			
2559	introduced.			
2607	Do not attempt to deny or water down the concepts of evolution.	no	see comment 1001	
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!	no	see comment 1001	
2615	Evolution is real!			
26/12	This section is good	no		

Survey Question	33. What would you like the working group to consider as they revise the Earth and Space Science Standards in the Third Grade  Science Standards?				
		Actionable Yes/No	Actionable Yes/No	Suggested Changes	Committee Notes
Comment #	Public Comment				
89	No comment	no			
114	n/a	no			
	I would like the group to consider what type of curriculum we will be receiving to	no			
	follow so that we are able to sufficiently teach the new standards.				
119					
124	n/a	no			
143	nothing	no			
	We should go back to the standards that the committee created and adopt those, not	no			
157	Diane Douglas's internal review copy.				

162	Adopt NGSS standards	no			
170	Funding	no			
	Please revisit rocks and minerals and the energy it takes to create and destroy them!	yes	organization	no change needed	see fourth grade earth science
	Or how about the energy humans receive by consuming minerals in their daily diets.				standards.
172	2				
184	Earth and Space Science are both fun and intriguing for 8 and 9 year olds	no			
189	A more clearer perimeters to teach within.	yes	assessments		see comment 31.189
190	I think this one was well done.	no			
208	Simplification.	no			
	The Earth/Space Science standard seems out of place as it does not tie in with other science learning.	no			lack on conceptual understanding because light waves, energy are b tie to the sun the needs of organis
218					
	I would like the working group to look at the National Science and Technology	no			
225	Standards and base the standards on that.				
227	7 Same as above	no			
252	2 n/c	no			
265	Page 22Remove Key Concept Columns	yes			See comment 31. 203
281	Nothing	no			
	why just sun energy? CKLA also has the planets	yes	K-12 progression	no change needed	concept of energy is expanded through the grade levels, focusing the sun is appropriate at this grac level. The big ideas document bris planets into middle school, 3-5 focuses on sun, earth, and moon.
284	Nothing in particular.	no			
	Wait to Test.	no			
	no suggestions	no			
333			V 12 progression	no chango noodod	soo commont 22 294
369	Solar system-planets in 3rd grade?	yes	K-12 progression	no change needed	see comment 33.284
303	Please consider removing the key concepts section. This makes the model more like		Vou concents		200 commont 21 202
200	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and	yes	Key concepts		see comment 31.203
390	inquiry based.		V		21 201
F43	Remove the key concepts as this unnecessary and is more about implementation and	yes	Key concepts		see comment 31.204
512	should NOT be the intention of the standards.				
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,	no	standards	no change	evolution was not removed from
	evidenced by the replication of self copying dna in science labs and modern genetic				third grade standards
	engineering efforts is wrong. Period. Evolution through natural selection over millenia				
1001	is a scientific fact.				
	Scientific standards should be based on scientific research and nothing else. Replacing	no	see comment 1001		
	and watering down the proven science of evolution is a disservice to our kids, a				
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO				
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				
1008	3				
1021	Please include climate change				

	Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.	no	see comment 1001		
1085					
1091	A third grader's level of understanding of the Theory of Evolution.	no	see comment 1001		
	Evolution is a scientific fact! To remove or try to water the process down from our education standards is unacceptable! If we want current or new high dollar business to come to Arizona we must have high standards for our school curriculum. Good and factual science is a must for our standards!	no	see comment 1001		
1113					
1165	No comment	no			
1167	That school is for teaching facts, not for promoting the views of any particular religious group.	no	see comment 1001		
	See above.	no			
1196	See above	no			
1219	Get rid of intelligent design. Restore references to evolution.	no	see comment 1001		
1221	Be more specific with each standard	no			
1223	Nothing in the proposed revisions for any grade are acceptable if they include intelligent design or any other form of religious creationism by any other name, and if references to evolution have been deleted or treat it as only a theory.	no	see comment 1001		
1226	Don't revise.	no			
	Throw these terrible standards out and adopt instead the excellent Next Generation	no	standards	no change	ADE directive
1303	Science Standards developed by STEM professionals.				
	I believe it would serve the children of AZ better if we would just adopt the Next	no	see comment 1303		
1309	Generation Science Standards.				
	The sheer willful ignorance of removing Evolution from the curriculum is mind bogling. It would put Az students at a vast disadvantage when moving to higher education. If the superintendent's intention is to replace evolutionary theory with intelligent design she should be removed from office and barred from working in	no	see comment 1001		
1311	education for life. Do jot do this.				
1315	Get a scientific expert to rewrite the content or undo the edits.	yes	standards		they are being reviewed
	The Internal Review provided excellent additional development and clarification. The	no			
	Internal Review should be adopted.				
	Clearly include the teaching of the concept of evolution.	no	see comment 1001		
	Original language should remain	no			
	Teach evolution. Evolution is science.	no	see comment 1001		
1443		no	see comment 1001		
	Not Enough! Is this really all you're going to teach. How long will that take? I can teach a kid this in 5 min tops. This is where you should keep re-emphasizing wind, water and then sun as well. Just cover renewable energy and extend it to plants to get that point across too. Plants and solar panels really aren't that different are they? they gather photons (depending on the panel) for energy. They just have different parts to do it.	yes	standards	no change	the emphasis is on depth not breadth
1464					
1517	Ditto	no			
	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.	no	see comment 1001		
	Big Bang Cosmology and Climate Change should be part of any earth and space sciences curriculum and standards.	yes	standards	no change	no in third grade standards

	3.E1U1.4 seems like a rewording of 2.L2U1.10. Is this standard supposed to suggest	ves	standards	provide clarification	
	that students explore how the sun drives movements in the atmosphere and	yes	Staridards	in both second and	
	hydrosphere? Note that internal heat the Earth's core is also a significant source of			third grade in the	
	energy and drives plate movements, so I think some clarification is needed about			learning	
	<u> </u>			_	
1538	what is meant by primary.			progressions	
	See above	no			
	Remove all religious references.	no	see comment 1001		
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL	no	see comment 1001		
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.				
1575					
	Adding and maintaining teaching Evolution needs to be continued.	no	see comment 1001		
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.	no	see comment 1001		
	Teach Science and facts in Schools not faith and religion.	no	see comment 1001		
	N/A	no			
1645	No comment.	no			
1660	Fix evolution standards.	no	see comment 1001		
1664	See comment #9	no			
1681	N/a	no			
1694	Only facts based on repeatable scientific tests.	no			
	Arizona is blessed with rich geologic formations that are exposed for easy study and	yes	standards	no change	is within grade level band in fourth
	exploration. The third grade earth and space standards need to focus more heavily on	,			grade
	rocks and minerals as they relate to Arizona geology.				
1709	, , , , , , , , , , , , , , , , , , , ,				
	No need. Go with the scientific evidence not creationism or religious indoctrination!!	no	see comment 1001		
1789					
1793	Please do not muddy the language regarding evolution	no	see comment 1001		
	Restore all original language referencing evolution proposed by the committee of	no	see comment 1001		
1796	educators with expertise in science education.				
1799	Teach Evolution	no	see comment 1001		
	The original document, before internal review, provided the necessary background	no	see comment 157		
	about what core concepts were expected in science education.				
1800	·				
1811	Revert all of Diane Douglas's changes.	no	see comment 157		
1859	Continue to teach evolution. Do not remove it to teach creationism.	no	see comment 1001		
1877	Evolution!	no	see comment 1001		
	Life Science standards should be strictly and wholly secular in nature and follow the	no	yes	see comment 1001	
	most up to date science community's recommendations. Our children need the				
	opportunity to receive competitive and challenging educations at a playing field level				
1890	to the rest of the nation.				
1918	Refer to my response to question 17.	no			
1953	Teach proper evolution	no	see comment 1001		
	Evolution, not intelligent design, is based in science. Science, not religion, should be	no	see comment 1001		
1995	taught in science classes.				
	Nothing should be taught within or alongside science that does not have the same	no	see comment 1001		
	factual basis that all the core concepts included in the draft have. Non-science or				
	pseudoscience, has no place in factual science learning for our youth.				

2015	Ambivalent.	no		
	Evolution	no		
	All standards need to be included.	no		
	No comment.	no		
2079	see previous comments.	no		
	Evolution is not described nor incorporated accurately. This must be changed.	no	see comment 1001	
2112				
	We should only be covering evolution in school. Creationism should be kept separate	no	see comment 1001	
2152	from schools.			
2259	Send the standards back for review.	yes	see comment 1315	
2262	Explain evolution.	no	see comment 1001	
	Include Evolution (where relevant), omit Creationism and Intelligent Design .	no	see comment 1001	
2265				
	Teaching creationism, or the misnamed intelligent design, is a violation of the	no	see comment 1001	
	separation of church and state. If you want your kid to learn fantasy send him to			
	Sunday school. Public schools are for fact based subjects that our kids will need to			
	navigate the future, not the failed, undefined, and contradictory philosophies			
2272	responsible for most of the earths problems.			
2213	Not commenting here because my complaint is about Diane Douglas trying to sneak	no		
	, , ,	110		
2200	in creationism and Intelligent Design into the state science standards.			
2306				
	Refer reply in 20 above.	no		
2354		no		
	Refer to the Next Generation Science Standards. They NGSS are good standards.	no	see comment 1303	
	These are not.			
2378	Needs to go back to review.	yes	see comment 1315	
	Keep religious beliefs out of science standards and retain scientifically accurate core	no	see comment 1001	
2380	ideas of evolution and climate change at all grade levels.			
2384	Please revise.	yes	see comment 1315	
	Science classes must include the scientific research published in high ranking, peer-	no	see comment 1001	
	reviewed journals of climate change, evolution, and mechanisms of natural selection			
	if student are to have a better understanding of the scientific process, theories, and			
	major mechanisms at work in our world. It is also essential preparation for higher			
	education as these are subjects that will be taught heavily in entry level biology class,			
	sometimes spanning an entire semester, and make up more advanced science course			
	such as organic evolution. It is imperative to a student's education in science that			
	large scientific fields such as evolution and climate change research not be censored			
	like banned books.			
2390	Time burned books.			
2330	I Call for the restoration of the ASE's description of evolution, which is scientifically	no	see comment 1001	
	,	110	see comment 1001	
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend			
	revisions to the treatment of evolution in passages that seem to have been similarly			
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
2419				
2428		no	see comment 1001	
2487		no		
2515	see above	no		

2518	I couldn't care less about Third Grade.	no		
2510		no	see comment 1001	
2520		110	see comment 1001	1
	completely negates the validity of this document.			
2543	TEACH EVOLUTION!	no	see comment 1001	
2605	Same comments as 2nd grade	no		
2607	Do not attempt to deny or water down the concepts of evolution.	no	see comment 1001	
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!	no	see comment 1001	1
2615	Evolution is real!			1
	I disagree with the minimizing of the role Evolution plays in human history and	no	see comment 1001	
	science education. It is not debated in the Science community. The science standards			1
	of Arizona need to be compatible with modern scientific fact, not biases or religion. If			1
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona			1
	Department of Education will omit from Education. That is limiting future generations			1
				1
	of American thinkers, who face scientific truths of the world and use the scientific			1
	method for progression of humanity. Please revise the k-12 science standards to fit			1
	current scientific fact, so that future generations will posses the knowledge they have			1
	the right to recieve from their Education department. Thank you.			1
				1
2618				1
	Add more here. Kids that age generally like dinosaurs and fossils. Use this to begin a	yes	see comment 1709	
	discussion of geologic time and how fossils form. You use fossils for the fourth grade.			1
2621				1
	This section is good	no		

Survey					
Question	34. What would you like the working group to consider as they revise the Life Scien	nce Standards in the Th	ird Grade  Science Sta	indards?	
		Actionable Yes/No	Item addressesd	Suggested Changes	Committee Notes
Comment #	Public Comment				
89	No comment	no			
	Evolution section is weak and watered down. It needs to be strengthened.	no			no evolution section in grade three
114					
	I would like the group to consider what type of curriculum we will be receiving to	no			
	follow so that we are able to sufficiently teach the new standards.				
119					
124	n/a	no			
143	nothing	no			
145	3.L1u1.5 in reading the header the life science focus is on energy and specialized features for survival not random know the body parts/systems and how they carry out life processes	yes	standard	remove 3.L1U1.5	This standard is alread addressed in 3.L1U2.6 and the Big Idea 7 (L1) addresses the structure and function of "organisms" and humans fall under that category. The key concepts of this standard distract from the true meaning of the big idea/standard.
	We should go back to the standards that the committee created and adopt those, not	no			
157	Diane Douglas's internal review copy.				
162	Adopt NGSS standards	no			

170	Funding	no			
183	What human body systems? Also, this concept could be taught the entire year. Then it goes into plans and the food chain. How do these concepts flow. they are not cohesive.	yes	standard	remove "human body system" specifically go back to language of "organisms"	see comment 145
	Life Science is has clear concepts and standards. Kids will enjoy this unit.	no			
	A more clearer perimeters to teach within.	yes	assessment		see comment 143
190	This one is done fine.	no			
208	Simplification.	no			
218	The introduction of 3.L1U1.5 feels out of alignment with the other 4 standards that focus on plants/animals. 3.L2U3.9 also feels like it has been tacked on even though it doesn't fit well.	yes	standard	remove 3.L1U1.5 keep 3.L2U3.9	see comment 145 kept 3.L2U3. 9 because of the core idea U3 (Big Ide 13)
	I would like the working group to look at the National Science and Technology Standards and base the standards on that.	no			
227	Same as above	no			
252	n/c	no			
265	Page 23Remove Key Concept ColumnRemove 3.L1U1.5 - since it is in green, the teacher's did not indicate that this is a standard that should be taught at the 3rd grade level. Renumber 6 through 9 to be 6 through 8.	yes	standard		see comment 145
	Nothing	no			
	Just have the eye and ear for the human body since it goes with light and sound energy	yes	standard	remove all reference to specific body parts	see comment 31.143 and 34.145
284				pu. 13	
	Nothing in particular.	no			
	Wait to Test.	no			
335	no suggestions	no			
	Seems heavier than the other two. Should they be equally weighted?	false statement			
390	Please consider removing the key concepts section. This makes the model more like our PO model giving teachers a checklist, rather than leaving it 3 dimensional and inquiry based.	yes	Key concepts		see comment 31.203
	Remove the key concepts as this unnecessary and is more about implementation and should NOT be the intention of the standards.	yes	Key concepts		see comment 31.203
1001	Na	no			
1008	Scientific standards should be based on scientific research and nothing else. Replacing and watering down the proven science of evolution is a disservice to our kids, a disservice to our teachers, and a disservice to our educational body. STOP TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.	no	standards	no change	evolution was not removed from third grade
	The inclusion of evolution must be reinstated.	no	see comment 1008		
	Page 32, Table, Row labeled L4 â€" see comment 19 - #4.	no	see comment 1008		
	Please include evolution	no	see comment 1008		
	Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.	no	see comment 1008		
1085					
1091	A third grader's level of understanding of the Theory of Evolution.	no	see comment 1008	1	

1092	Standard 5 does not add anything that isn't already in standard 6. Not sure what students would be evaluating.	yes	standards	delete standard 5	move information into key conceptor standard 6
1113	We need to start teaching children about all aspects of life including evolution from the very beginning.	no	see comment 1008		
	No comment	no			
	That school is for teaching facts, not for promoting the views of any particular	no	see comment 1008		
1167	religious group.				
	See above.	no			
	Environmental studies should include information regarding human impact.	ves	standards	no change	it is in the grade band just not in the
1190	1	, 65	Starrage as	no onange	grade
	See above	no			8.446
	Those writing these standards should be experts in science and/or education.At a	ves	other		the working groups consisted of o
	minimum they should understand what the word THEORY means in scientific	, 63	other		100 individuals from the state
	terms.Eg: Evolution is a confirmed scienfic theory and understanding modern				including classroom teachers,
	biology, agriculture, genetics and human development is impossible without				instructional specialists, engineers
	reference to that established theory Those writing these standards should be experts				university professionals, and indu
					professionals.
	in science and/or education.At a minimum they should understand what the word				professionals.
	THEORY means in scientific terms.Eg: Evolution is a confirmed scienfic theory and				
	understanding modern biology, agriculture, genetics and human development is				
4000	impossible without reference to that established theory				
1203					_
1219	Get rid of intelligent design. Restore references to evolution.	no	see comment 1008		<u> </u>
	Make the standards alot more specific. We need longer than just this next two	no	instruction		teachers will have a year
	months to have the standards ready to work on with the students in our classes. We				
	need another year to work on them before we present them to the students.				
1221					
	Nothing in the proposed revisions for any grade are acceptable if they include	no	see comment 1008		
	intelligent design or any other form of religious creationism by any other name, and				
	if references to evolution have been deleted or treat it as only a theory.				
1223					
1226	Don't revise.	no	see comment 157		
	Please see my earlier comments (Qu 13/17) regarding the scope of evolution	no	see comment 1008		
	education.				
1296	Evolution should not be omitted from this curricula.	no	see comment 1008		
	Throw these terrible standards out and adopt instead the excellent Next Generation	no	standards		ADE Directive
1303	Science Standards developed by STEM professionals.				
	I believe it would serve the children of AZ better if we would just adopt the Next	no	see comment 1303		
1309	Generation Science Standards.				
	The sheer willful ignorance of removing Evolution from the curriculum is mind	no	see comment 1008		
	bogling. It would put Az students at a vast disadvantage when moving to higher				
	education. If the superintendent's intention is to replace evolutionary theory with				
	intelligent design she should be removed from office and barred from working in				
1311	education for life. Do jot do this.				
1315	Get a scientific expert to rewrite the content or undo the edits.	yes	see comment 1203		
	The Internal Review provided excellent additional development and clarification. The	no			
1337	Internal Review should be adopted.				

	WILLIAM TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TOTAL TOTAL TOTAL TO THE TOTAL TOTA	T			Iii
	What follows is repeated for grades 3-5 and is based on the Distribition Table: L4:	yes	introduction		make changes reccomended by
	The theory of evolution seeks to make clear the unity and diversity of living and				introduction group
	extinct organisms. This is imprecise. In each section this should read 'The study of				
	evolution seeks to demonstrate…¹ First, evolution is an established scientific				
	theory. A scientific theory differs from the 'street' use of theory, which indicates a				
	'guess' about causation or relationship. In contrast, a scientific theory can be tested				
	and potentially disproved. These tests are rigorous observational or experimental				
	attempts to demonstrate that the scientific theory cannot explain a pattern in nature.				
	Failure to disprove or refute the scientific theory increases confidence in it, although				
	it cannot be considered as proven. Two things distinguish evolution as a 'scientific				
	theory' from the more general use of 'theory.' First, as inferred above, it can be				
	tested and potentially falsified using experiment or observation. Second, it has been				
	tested time and time again, in many systems and with many organisms, for well over				
	150 years, and has withstood those tests. It has not been disproven. Thus it is the				
	STUDY of evolution â€" mechanisms of organic change, intrinsic or environmental				
	characteristics driving or influencing the nature or rate of change, etc. (studies of				
	which serve to 'test' the underlying theory) â€" that have provided evidence of 'the				
	unity and diversity of living and extinct organisms.'				
1338	8				
	Clearly include the teaching of the concept of evolution.	no	see comment 1008		
1366	Original language should remain	no	see comment 157		
	Teach evolution. Evolution is science.	no	see comment 1008		
1443	evolution should be included in all grades	no	see comment 1008		
	The body systems are taught in third grade science per this draft. I looked through	yes	standard		consider adding standards directly
	the rest of the life science standards and DID NOT SEE THEM IN ANY OTHER GRADE				related to the human body
	LEVEL. They used to be in 5th and 6th grade and at a secondary level in high school				,
	biology/anatomy classes. Why third grade? And are they supposed to remember				
	them without being readdressed until collegiate level classes? Body systems could be				
	taught in third grade, but should definitely appear somewhere else later on in more				
	specific detail and terms.				
1449	·				
	They need to start learning about where they and everything came from, via	no	see comment 1008		
1500	Devolution	-			
	7 Ditto	no			
	B EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.	no	see comment 1008		
	Evolution should be included in any life science or biological class	no	see comment 1008		
	3.L1U1.5 is the same as and has the same problem as K.L1U1.5. Why is this standard	1. yes 2. yes	1. standards 2.	1. provide	
	in both places? If you want to have a progression, then 3.L1U1.5 needs to include	, ,	standards	clarification in the	
	some additional sophistication that builds on K.L1U1.5. 3.L2U1.8 - I think the word			learning progression	
	exchange is inaccurate in this standard. The standard should read Use food chains as			2. substitute the	
	system models to describe the flow of energy from the sun to plants to animals.			word web for chain	
	of the same of the			WED TO CHAIL	
1538	R				
1330	<u>-</u> I	l	I		1

	Standard 3.L2U1.8 seems to not be in the same developmental level as the others.	ves	standard	substitute the word
	The key concepts for the first standard make more sense for this than those	yes	Stariuaru	web for chair. Also
	presented for this standard. I am unsure how classification of animals as omnivores,			reccomend the
	1.			
	herbivores, etc. correlated to explaining and creating for models for different			learning progression
	processes carried out by animals.			for standard 6 be
				updated.
4==0				
1550				
	See above	no		
1556	Remove all religious references.	no	see comment 1008	
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL	no	see comment 1008	
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.			
1575				
	Adding and maintaining teaching Evolution needs to be continued.	no	see comment 1008	
	nothing - it is well written and includes evolution as a science topic.	no		
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.	no	see comment 1008	
	Teach Science and facts in Schools not faith and religion.	no	see comment 1008	
1641	'	no		
	No comment.	no		
1660	Fix evolution standards.	no	see comment 1008	
1664	See comment #9	no		
1678	Knock it off with these silly changes that are less accurate	no		
1681	N/a	no		
	See earlier general comments about the importance of including Evolution as the	no	see comment 1008	
1689	underlying explanation of all aspects of Biology.			
1694	Only facts based on repeatable scientific tests.	no		
1739	See my comments in Question 15	no		
	The unity and diversity of organisms, living and extinct, is the result of evolution.	no	see comment 1008	
1787				
	No need. Go with the scientific evidence not creationism or religious indoctrination!!	no	see comment 1008	
1789				
1793	Please do not muddy the language regarding evolution	no	see comment 1008	
	Evolution has been amply confirmed by science, just like photosynthesis or relativity.	no	see comment 1008	
	It's absurd to use ambiguous or tentative language. These are very bad revisions that			
	were made, they clearly weren't endorsed by the writing committee, and it's			
	somewhat disrespectful to them to make these changes.Please don't avoid eduction			
1795	on evolution.			
	Restore all original language referencing evolution proposed by the committee of	no	see comment 1008	
1796	educators with expertise in science education.			
	Teach Evolution	no	see comment 1008	
1.00	The original document, before internal review, provided the necessary background	no	see comment 157	
	about what core concepts were expected in science education.		355 30111111111 137	
	about what core concepts were expected in science education.			
1800				
1800		no	see comment 157	
1811	Revert all of Diane Douglas's changes.  Continue to teach evolution. Do not remove it to teach creationism.	no no	see comment 157 see comment 1008	

1890	Life Science standards should be strictly and wholly secular in nature and follow the most up to date science community's recommendations. Our children need the opportunity to receive competitive and challenging educations at a playing field level to the rest of the nation.	no	see comment 1008	
	Refer to my response to question 17.	no		
1310	3.L2U2.7 could go very badly. I'd specify specific stimuli, like light/dark, which would	yes	standards	add to learning
1023	tie nicely into 3.L2U3.9	yes	Standards	progression
	Darwin, please.	no	see comment 1008	progression
	Introduce the theory of evolution at this level.	no	see comment 1008	
1341	Strengthen the teaching of evolution and global change to reflect the science of these		see comment 1008	
1944	subjects.	110	see comment 1008	
1945	Evolution is presented as a theory, which is technically incorrect, and the curriculum fails to mention other proposed explanations of origins and development.	no	see comment 1008	
1953	Teach proper evolution	no	see comment 1008	
1995	Evolution, not intelligent design, is based in science. Science, not religion, should be taught in science classes.	no	see comment 1008	
2000	Nothing should be taught within or alongside science that does not have the same factual basis that all the core concepts included in the draft have. Non-science or pseudoscience, has no place in factual science learning for our youth.	no		
2013	STOP calling Evolution a theory.	no	see comment 1008	
2015	As before, more on evolutionary theory.	no	see comment 1008	
2030	L4	no		
2032	Evolution	no		
2043	All standards need to be included.	no		
2054	decomposers	no		
2062	Evolution needs to be added back in as fact.	no	see comment 1008	
2079	see previous comments.	no		
	Be wary of wording about theories and beliefs. If a theory has been widely	no		
	observed to be true over an extensive period of time, it is for all effects and purposes			
	scientific fact . (See the National Academy of Sciences comments about Is Evolution			
	a Theory or a Fact?) Beliefs can be held without evidencescience is by nature			
2093	evidentiary.			
2111	See previous comments on the treatment of evolutionary biology.	no	see comment 1008	
	Evolution is not described nor incorporated accurately. This must be changed.	no	see comment 1008	
2112				
	We should only be covering evolution in school. Creationism should be kept separate	no	see comment 1008	
2152	from schools.			
	3.L1U1.5 - not appropriate for this age level - delete. In Working with Big Ideas, this	yes	standards	consider moving to
	concept can be found on pg 26 for 11-14 years olds - not 3rd graders.			the next grade band
2156	, , , , , , , , , , , , , , , , , , , ,			
2199	Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.	no	see comment 1008	
2203	Don't eliminate references to evolution, as it's necessary to understand life sciences.	no	see comment 1008	
	Understanding evolution is critical to the fields of medicine, biology, and applied	no	see comment 1008	
2208	science like agriculture.			

2259	Send the standards back for review.	yes	see comment 1315
2262	Explain evolution.	no	see comment 1008
	Include Evolution, omit ANY MENTION OF Creationism and Intelligent Design .	no	see comment 1008
2265			
	Teaching creationism, or the misnamed intelligent design, is a violation of the	no	see comment 1008
	separation of church and state. If you want your kid to learn fantasy send him to		
	Sunday school. Public schools are for fact based subjects that our kids will need to		
	navigate the future, not the failed, undefined, and contradictory philosophies		
2273	responsible for most of the earths problems.		
	Not commenting here because my complaint is about Diane Douglas trying to sneak	no	
	in creationism and Intelligent Design into the state science standards.		
2306			
2345	Refer reply in 20 above.	no	
2354		no	
	Refer to the Next Generation Science Standards. They NGSS are good standards.	no	see comment 1303
2364	These are not.		
2378	Needs to go back to review.	yes	see coemment 1315
	Keep religious beliefs out of science standards and retain scientifically accurate core	no	see comment 1008
2380	ideas of evolution and climate change at all grade levels.		
2384	Please revise.	yes	see comment 1315
	Science classes must include the scientific research published in high ranking, peer-	no	see comment 1008
	reviewed journals of climate change, evolution, and mechanisms of natural selection		
	if student are to have a better understanding of the scientific process, theories, and		
	major mechanisms at work in our world. It is also essential preparation for higher		
	education as these are subjects that will be taught heavily in entry level biology class,		
	sometimes spanning an entire semester, and make up more advanced science course		
	such as organic evolution. It is imperative to a student's education in science that		
	large scientific fields such as evolution and climate change research not be censored		
	like banned books.		
2390			
	If evolution is a possible discussion, please word it appropriately. It is not a theory any	no	see comment 1008
2416	longer.		
	I Call for the restoration of the ASE's description of evolution, which is scientifically	no	see comment 1008
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend		
	revisions to the treatment of evolution in passages that seem to have been similarly		
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may		
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)		
2419			
2428	Stick to actual science and stop dumbing down our children!	no	
2487	N/A	no	
2515	see above	no	
2518	I couldn't care less about Third Grade.	no	
	Omitting information on change over time, evolution and the big bang theory,	no	see comment 1008
2520	completely negates the validity of this document.		

	3.L1U1.5 This standard is not related to the other standards in the draft, does not fit the summary of the grade level, does not address the phenomenon of cause and effect OR energy and matter AND it appears to have been pulled from the Core Knowledge curriculum document.3.L2U3.9 Are we advocating testing on animals? In order to show that a solution REDUCES damage, there must be a control. In other words, some organisms would have to be purposefully exposed to damaging conditions to be a point of comparison. This is unethical and has no place in an	yes		1. comment 2156 2. reccomend to change plants and animals to organisms and then include a disclaimer not to harm animals
	elementary classroom.			not to narm arminals
2559	, ·			
2607	Do not attempt to deny or water down the concepts of evolution.	no	see comment 1008	
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!	no	see comment 1008	
2615	Evolution is real!			
	, , , , , , , , , , , , , , , , , , , ,	yes		include a disclaimer
	about the type of stimuli. As it reads now, it seems like we're encouraging students			in the learning
	to harm animals in the name of science.			progression to not
				harm animals
2619				
2642	This section is good	no		
	I would like there to be an emphasis on this age group going outside, gardening,	no	instruction	
	observing, going to enriching places in Science like the Botanical Garden, the zoo,			
	National Parks, Science Museums, Outdoor classrooms.			
2653				

Public Comment Non-Survey	Public comment received outside of the survey					
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes	

rvey estion	36. What would you like the working group to consider as they revise the Fourth Grade Science Standards?							
	Jos. What would you like the working group to consider as they revise the Fourth Gra	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes			
mment #	Public Comment	Actionable resylvo	item Addressed	Suggested changes	Committee Notes			
	page 26 - 4.E1U2.6 - support an argument on whetherprovide evidence - this	ves	Standard	Change: Pick one				
	statement is counterintuitive. These things listed DO provide evidence for this	,		practice: Engage in				
	concept. This statement should read something more along the lines obtain and			an argument using				
	analyze evidence that support past plate movement			geologic evidence to				
	analyze evidence that support past plate movement			explain past plate				
				tectonic movement.				
				tectoriic movement.				
56								
	The rock cycle should remain in third grade and 4th should continue to teach the	yes	organization	no change needed	based on the Framework these concepts are at the correct grade level			
62	weather unit and water cycle.			_				
	The scientific method needs to be included.	yes	Introduction	do not add	There is not one scientific method, there are many ways to know and understand the			
89					natural world			
	The statement for the 4th grade standard is INCORRECT in Physical Science.	no						
108 114		no						
124		no						
	Please read from MIT 'Magnetism is a force, but it has no energy of its own,' says	ves	Standard	Take out the words	to make the statement scientifically accurate			
	David Cohen-Tanugi, vice president of the MIT Energy Club and a John S. Hennessy	,		"and magnetic"				
	Fellow in MIT's Materials Science and Engineering department. Still, he adds,			and magnetic				
	'magnetism is extremely useful for converting energy from one form to another.							
	About 99% of the power generated from fossil fuels, nuclear and hydroelectric energy,							
	l							
	and wind comes from systems that use magnetism in the conversion process.'							
145	Magnetism is NOT energy it is a force.							
	We should go back to the standards that the committee created and adopt those, not	no						
	Diane Douglas's internal review copy.							
	Adopt NGSS standards	no						
	I trust the work of Science Specialists who devoted their time and energy to improve	no						
	Arizona's science standards and request their direct incorporation as new standards.							
168								
170	Funding	no						
	The draft needs additional examples and explanation. It is left to interpretation.	no						
	Please add resources where we can locate some of the new standards.							
180								
	A more clearer perimeters to teach within.	yes	Standard		Committee should consider assessment boundaries			
	At this time, we do not have considerations, since expectations are pinpointed and	no						
	standards build upon grade levels before. Common language is helpful for student							
	learning and high school preparation.							
Ī	at this time there is nothing that I feel they need to consider, since they had pin	no						
	pointed their expectations.							
	The Key concepts should be dropped from every grade level.							
208	Simplification.	no						
2	I'd like us to implement the Next Generation Science Standards, already in use in	no						
	many states and districts. https://www.nextgenscience.org/		-					
218	I like the overall tie-in to energy, gives a consistent feel to the standards.	no						
		no	1	1	1			
	Our team thought that some of the standards in the content area would be a little challenging for our population.							

_	T		1	1	
	Page 9, 21, 33Remove last sentence: 'Suggestions for key conceptsor maximum	yes	Key concepts and		see comment 203
	content limits. Pages 12, 15, 19, 24, 28, 31, 37, 41, 45Remove these connections - as		Connections to other		
	soon as standards change the Science standards need to be changed. Each group of		content areas		
	standards needs to be stand alone. If ADE wants to have another document that does				
	a crosswalk of all of the standards in another document, that would be more				
	appropriate than the Science Standards. Page 21Remove additions by ADE: 'and				
	between content areas' and descriptions under third grade and fourth grade. What				
	did the teachers have here? Unless it was a grammatical fix, it should be returned to				
	what the teachers asked for.				
265					
	I think it is great to start them out early with supporting their reasoning. Our purpose	no			
	is for students to think. The internet has made everyone lazy so the crosscutting				
	concept of problem solving should be in every grade level.				
279					
	Nothing	no			
	Basically, the 6th grade articulated standards are moving into the 4th grade	no			
201	crosscutting standards.	110			
	Nothing in particular.	no			
	Wait to Test.	no			
335	no suggestions	no			
	Keep U standards in each standard. Offer more questioning to cause deeper learning.	no			
355					
	Take out any reference to scientific methodConcepts taught in 1.P3U1.3 and magnet	yes	Standard and	Make the	
	composition, magnetic: forces, poles, fields, attraction, static electricity, electric		introduction	recommended	
	current, circuits, conductors, insulators, electromagnets, electrical charge (protons,			change to scientific	
	electrons), safetyMagnetic composition for fourth grade is not age appropriate.			method; remaining	
	Magnetism is the result of the atoms of the matter behaving a particular way which is			comment also take	
	not appropriate at this grade.			their	
				recommendation to	
				remove magnetism	
				remove magnetism	
270					
378			14		1202 111 1 1
	Please consider removing the key concepts section. This makes the model more like	yes	Key concepts		see comment 203 in third grade
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
390	inquiry based.				
	Please be aware of the testing expectations for this grade when planning the	no			
429	curriculum map.				
	The 4th grade Earth and Space science standards are fantastic. They support rigor and	no			
472	critical thinking.				
	Remove the key concepts as this unnecessary and is more about implementation and	yes	Key concepts		see comment 203 in third grade
512		-	l .	I	
	should NOT be the intention of the standards.				
		no	standards	no change	evolution was not removed from 4th grade the building blocks are still there
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,	no	standards	no change	evolution was not removed from 4th grade the building blocks are still there
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic	no	standards	no change	evolution was not removed from 4th grade the building blocks are still there
1001	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia	no	standards	no change	evolution was not removed from 4th grade the building blocks are still there
1001	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia is a scientific fact.			no change	evolution was not removed from 4th grade the building blocks are still there
1001	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia is a scientific fact.  Scientific standards should be based on scientific research and nothing else. Replacing		standards see comment 1001	no change	evolution was not removed from 4th grade the building blocks are still there
1001	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia is a scientific fact.  Scientific standards should be based on scientific research and nothing else. Replacing and watering down the proven science of evolution is a disservice to our kids, a			no change	evolution was not removed from 4th grade the building blocks are still there
1001	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia is a scientific fact.  Scientific standards should be based on scientific research and nothing else. Replacing and watering down the proven science of evolution is a disservice to our kids, a disservice to our teachers, and a disservice to our educational body. STOP TRYING TO			no change	evolution was not removed from 4th grade the building blocks are still there
1001	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia is a scientific fact.  Scientific standards should be based on scientific research and nothing else. Replacing and watering down the proven science of evolution is a disservice to our kids, a			no change	evolution was not removed from 4th grade the building blocks are still there
1001	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia is a scientific fact.  Scientific standards should be based on scientific research and nothing else. Replacing and watering down the proven science of evolution is a disservice to our kids, a disservice to our teachers, and a disservice to our educational body. STOP TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.			no change	evolution was not removed from 4th grade the building blocks are still there
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia is a scientific fact.  Scientific standards should be based on scientific research and nothing else. Replacing and watering down the proven science of evolution is a disservice to our kids, a disservice to our teachers, and a disservice to our educational body. STOP TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.			no change	evolution was not removed from 4th grade the building blocks are still there
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia is a scientific fact.  Scientific standards should be based on scientific research and nothing else. Replacing and watering down the proven science of evolution is a disservice to our kids, a disservice to our teachers, and a disservice to our educational body. STOP TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.	no	see comment 1001	no change	evolution was not removed from 4th grade the building blocks are still there
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia is a scientific fact.  Scientific fact.  Scientific standards should be based on scientific research and nothing else. Replacing and watering down the proven science of evolution is a disservice to our kids, a disservice to our teachers, and a disservice to our educational body. STOP TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.	no	see comment 1001	no change	evolution was not removed from 4th grade the building blocks are still there
1008	Any change in curriculum de emphasizing the truth that evolution is a scientific fact, evidenced by the replication of self copying dna in science labs and modern genetic engineering efforts is wrong. Period. Evolution through natural selection over millenia is a scientific fact.  Scientific fact.  Scientific standards should be based on scientific research and nothing else. Replacing and watering down the proven science of evolution is a disservice to our kids, a disservice to our teachers, and a disservice to our educational body. STOP TRYING TO ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.  Evolution is not just a theory, it is well established fact by science. Making Biological evolution to Theory of Evolution is a step backwards not an improvement.	no	see comment 1001	no change	evolution was not removed from 4th grade the building blocks are still there

	L	ı	1	1	
	This would be an agree without the ADE changes. Look at number of standards and	yes	1. standards 2. other 3.	1. no change 2.	1. number of standards increased with the daily minute increase 2. create supplemental
	grain size in this grade band compared to other grade bands.Connections to other		key concepts	remove from	document that can be updated as needed. 3. comment agrees with proposed changes to
	academic disciplines. • Remove entirely from the document. This belongs in a			standards	key concepts.
	support document or curriculum adopted locally.•These do not belong in a				
	standards document. They become obsolete as soon as any of the standards from				
	referenced disciplines are updated and approved by the state board.•∆ditionally,				
	many of the connections cited don't actually align to the standards within the grade				
	level. Key concepts Column•What ADE added are not actually concepts, they are				
	random vocabulary terms which may or may not be aligned to the standards and in				
	many cases are not appropriate for the grade level. •Remove they key concepts				
	column from the document.•ff ADE requires that the key concepts column remains,				
	select the actual concepts from the Framework or Big Ideas documents, since those				
	documents are research-based and used in the development of the standards.•™key				
	concepts, if included must represent concepts from all three dimensions, and not just				
	the content of science. Below is an example for 4.E1U2.7 Follow this process for each				
	of the fourth grade standards, not just the example below.Remove list of vocabulary				
	terms from the Key Concepts column and replace with the actual concepts related to				
	this standard that represent all three dimensions:•⊞entify the evidence that				
	supports particular points in an explanation. •£ocal, regional, and global patterns of				
	rock formations reveal changes over time due to earth forces, such as earthquakes.			1	
	The presence and location of certain fossil types indicate the order in which rock				
	layers were formed. •Batterns can be used as evidence to support an explanation.			1	
	â€CScience assumes consistent patterns in natural systems.				
	aecacience assumes consistent patterns in natural systems.				
1092					
1092	Evolution is a scientific fact! To remove or try to water the process down from our	no	see comment 1001		
	· · · ·	110	see comment 1001		
	education standards is unacceptable! If we want current or new high dollar business				
	to come to Arizona we must have high standards for our school curriculum. Good and				
	factual science is a must for our standards!				
1113	NI				
1103	No comment That school is for teaching facts, not for promoting the views of any particular	no no	saa sammant 1001		
1167		no	see comment 1001		
	religious group.				
	See above.	no			
1196	See above	no			
	Those writing these standards should be experts in science and/or education.At a	yes	other		working groups consisted of over 100 individuals from state including classroom teachers,
	minimum they should understand what the word THEORY means in scientific				instructional specialists, engineers, university professors, and industry professionals.
	terms.Eg: Evolution is a confirmed scienfic theory and understanding modern biology,				
	agriculture, genetics and human development is impossible without reference to that			1	
	established theory			ļ	
	Get rid of intelligent design. Restore references to evolution.	no	see comment 1001		
	I don't teach 4th	no			
1222	Not utilize language in re Darwinism, natural selection or evolution.	no	see comment 1001		
	Nothing in the proposed revisions for any grade are acceptable if they include	no	see comment 1001	<u> </u>	
	intelligent design or any other form of religious creationism by any other name, and if				
1	references to evolution have been deleted or treat it as only a theory.				
1223					
	Don't revise.	no	standards		committee should reconvene to make the adjustments to the public comment
1226					
	Consider the claim that advances in science and technology produce products. There	no			science and engineering concepts address this
1	should be more emphasis on science and tech being used to understand complex			1	0 ·· 0·· ·· ·· ·· · · · · · ·
1264	processes and the natural world.				
1204	4.E1U2.6 seems very similar to the added 7th grade standard: 7.E1U2.5 the 7th	yes	standards	learning progression	
1	grade standard is printed in green. Should one of these be revised or deleted?	,	Staridards	should clarify level of	
	Brade Standard is printed in green. Should one of these be revised of deleted:			rigor for fourth to	
				7th grade	
				/ ur graue	
1274					
1274			1	I	<b> </b>

	0	1		  i	
	Omits the need to look at energy critically and how the Earth's systems interact with	yes	standards	learning progression	
	each other. The key concepts go off on tangents not related to the standard or put an			should provide more	
4270	unnecessary focus on irrelevant aspects of the standard.			clarification	
1278					
1298	Same as before.	no			
	Throw these terrible standards out and adopt instead the excellent Next Generation	no	standards		ADE Directive
1303	Science Standards developed by STEM professionals.				
	The addition of the Key Concepts column add vocabulary words that would normally	yes	key concepts		committee is considering this within the bounds directed by ADE
	be the decision of local districts. This column is unnecessary and superfluous.				
1305					
	I believe it would serve the children of AZ better if we would just adopt the Next	no	see standard 1303		
1309	Generation Science Standards.				
	The sheer willful ignorance of removing Evolution from the curriculum is mind bogling.	no	see comment 1001		
	It would put Az students at a vast disadvantage when moving to higher education. If				
	the superintendent's intention is to replace evolutionary theory with intelligent				
	design she should be removed from office and barred from working in education for				
	life. Do jot do this.				
1315	Get a scientific expert to rewrite the content or undo the edits.	yes	see comment 157		
	The Internal Review provided excellent additional development and clarification. The	no	see comment 1001		
	Internal Review should be adopted.				
	Clearly include the teaching of the concept of evolution.	no	see comment 1001		
	Original language should remain	no	see comment 1001		
	Teach evolution. Evolution is science.	no	see comment 1001		
1443	evolution should be included in all grades	no	see comment 1001		
	Okso suddenly we switch to natural disasters after the whole energy thing. I'm fine	no			
	with that. Whatever, butdo you even know what geosphere is? Why did you list parts				
	of it afterwardsI think it's cause you didn't know what else to do. It's like me				
	sayingI'm going to teach about a water bottle and also I'm going to teach a whole				
	separate topic of the water bottle capand how they're connectyathat was hard				
	to figure out. These topics are too verbose and they look like a lot but they really				
	aren't.				
1464					
	They need to start learning about where they and everything came from, via evolution	no	see comment 1001		
1500					
	Bring back the word evolution.	no	see comment 1001		
1518	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.	no	see comment 1001		
	Climate change, evolution, and big bang cosmology should be in these standards.	no	see comment 1001		
1526					
	It seems that as with the current science standards, there is more content in 4th grade	yes	standards	no change	number of standards increased with the daily minute increase
	(12 standards) than 3rd or 5th grade. Is it possible to reduce some of the standards in				
	4th grade or distribute them to 3rd grade (only 9 standards)?				
1538					
1548	See comments from previous re: 4.L4U4.12	no			
1553	See above	no			
1556	Remove all religious references.	no	see comment 1001		
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL	no	see comment 1001		
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.				
1575					
1583	Adding and maintaining teaching Evolution needs to be continued.	no	see comment 1001		
	I would like to see more of the engineering design process and computational thinking	no	other		the science and engineering practices address this
	to be included in these standards and all the science standards. The earlier we get				
1	students to start thinking this way the better off they will be. We need to be				
1	preparing our students for a future of technology!				
1595					
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.	no	see comment 1001		
	Teach Science and facts in Schools not faith and religion.	no	see comment 1001		
	Students need MORE SCIENCE in every level!	no			
1641		no			
	No comment.	no			
	Fix evolution standards.	no	see comment 1001		
1000	I	1	1000 10001	1	

1664	C	1		I	
1664	See comment #9	no		annead bullet a sint	
	The bullet point about 4th grade specifically on page 21. I feel the crossed out	yes	introduction	reword bullet point	
	verbiage is preferable because it clearly indicated that there are cause and effect			to address concent	
	relationships between changes of resources and survival. Same thing goes for the				
1681	crossed out verbiage on the top of page 25.				
	See earlier general comments about the importance of including Evolution as the	no	see comment 1001		
1689	7 0 1				
1///	More critical thinking.	no			
.=	No need. Go with the scientific evidence not creationism or religious indoctrination!!	no	see comment 1001		
1789					
1/93	Please do not muddy the language regarding evolution	no	see comment 1001		
.=	Restore all original language referencing evolution proposed by the committee of	no	see comment 1001		
	educators with expertise in science education.				
1/99	Teach Evolution	no	see comment 1001		
	The original document, before internal review, provided the necessary background	yes	see comment 157		
	about what core concepts were expected in science education.				
1800					
	Revert all of Diane Douglas's changes.	yes	see comment 157		
1859	Continue to teach evolution. Do not remove it to teach creationism.	no	see comment 1001		
	Life Science standards should be strictly and wholly secular in nature and follow the	no	see comment 1001		
	most up to date science community's recommendations, including the proven				
	theories on evolution and Darwinism. Our children need the opportunity to receive				
	competitive and challenging educations at a playing field level to the rest of the nation				
	and international STEM markets.				
1890					
1918	Refer to my response to question 17.	no			
	Evolution is an accepted theory of science. The striking of this word and replacing it	no	see comment 1001		
	with more generic terminology is misleading and weakens the standards. The				
	redefining of evolution as seeks to make clear the unity and diversity of living and				
	extinct organisms is meaningless and not in alignment with accepted scientific				
	thinking. The term and definition of evolution should remain as is. The reason for				
	renaming of the scientific method to science and engineering is dubious and is not in				
	alignment with accepted scientific thinking. The scientific method is a process by				
	which facts demonstrate proof to validate or disqualify any scientific theory. The term				
	scientific method should remain as is. The elimination of the scientific theory of the				
	origin of the universe, known as the Big Bang is also dubious and not in alignment with				
	accepted scientific thinking. References to the Big Bang should remain as is.The				
	changes outlined above weaken the Arizona K-12 science standards and moves us				
	away from creating a system that provided world-class education. I oppose these				
	changes.				
1922					
1926	Darwin, please.	no	see comment 1001	<u> </u>	
	My rating reflects Life Science StandardsL4Generally the life science standards seem	yes	standards	no change	this is within the grade band so will be taught
	less ties to the overall topics of the year and less ambitious, for third and fourth				
	grade.In particular, with the focus in fourth grade on systems, it would be natural to				
	talk more about ecological systems, food webs, connecting life cycles or food webs				
	with cycles of water and energy on ecosystem scales, or talking about how food webs				
	create interdependent communities, or how resources cycling also implies that one				
	change in a resource or organism can impact many others. None of this seems to be				
	mentioned anywhere in standards up to fourth grade despite such a focus on food				
	chains and cycles for water and energy in standards				
1929					
	Although I am not an elementary school teacher, I suggest that the Theory of	no	see comment 1001		
1930	Evolution be introduced by the fourth grade at the latest.				
	Evolution is presented as a theory, which is technically incorrect, and the curriculum	no	see comment 1001		
	fails to mention other proposed explanations of origins and development.				
1945					
1953	Teach proper evolution	no	see comment 1001		

1057	This is where evolution should be introduced		see comment 1001		
		no			
1990	Evolution must continue to be taught	no	see comment 1001		
	Evolution, not intelligent design, is based in science. Science, not religion, should be	no	see comment 1001		
1995	taught in science classes.				
	Nothing should be taught within or alongside science that does not have the same	no			
	factual basis that all the core concepts included in the draft have. Non-science or				
	pseudoscience, has no place in factual science learning for our youth.				
2000					
	Put back what Dept of Education crossed out in paragraph 1 on page 25.0n pg 27,	yes	introduction	review struck out	
	L4U4, put back the original language and stop insinuating that there is evidence to			language	
	refute Evolution. Remove argument from the text.				
	Student-led experiments and sharing of said experiments.	no	instruction		
2030		no			
	Evolution	no			
	All standards need to be included.	no			
	No comment.	no			
	see previous comments.	no			
2093	See item 38 and 41 above.	no			
	Add social sciences and sustainability	yes	standard	consider adding to	
2096				4.P4U4.3	
	Evolution is not described nor incorporated accurately. This must be changed.	no	see comment 1001		
2112					
	Stronger emphasis on the scientific method. This is the stage when students can be	yes	see comment 1264		
	made explicitly aware of the scientific method. It can be exciting for children to be				
	exposed to the idea that there is a standard set of steps they can use to test their				
	impressions about the natural world, to tell if a statement is true or false. This is a				
	good time to learn that personal impression can be misleading, and that science				
	provides a way to tell if they are being tricked by their own senses.				
2115					
	We should only be covering evolution in school. Creationism should be kept separate	no	see comment 1001		
2152	from schools.				
	Include all of the crosscutting concepts (CCC) that could be aligned with the	yes	key concepts	comment agree with	
	standard(s) in the actual table. The introduction gives guidance of the CCC's for			proposed changes to	
	kindergarten, however they need to be integrated into the standards or they will not			key concepts	
	kindergarten, however they need to be integrated into the standards or they will not be taught as deemed in the introduction (3-dimensional instruction)			key concepts	
2156	be taught as deemed in the introduction (3-dimensional instruction)			key concepts	
	be taught as deemed in the introduction (3-dimensional instruction)	no	see comment 1001	key concepts	
2156	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and	no	see comment 1001	key concepts	
2156	be taught as deemed in the introduction (3-dimensional instruction)	no	see comment 1001	key concepts	
2156 2199	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.			key concepts	
2156 2199 2208	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied			key concepts	
2156 2199 2208 2259	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.	no	see comment 1001	key concepts	
2156 2199 2208 2259 2262	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.	no	see comment 1001 see comment 1315	key concepts	
2156 2199 2208 2259 2262	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.	no yes no	see comment 1001 see comment 1315 see comment 1001	key concepts	
2156 2199 2208 2259 2262	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the	no yes no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to	no yes no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to	no yes no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design .  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies	no yes no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.	yes no no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.  Reinstate evolution.	yes no no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265 2273 2286	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.  Reinstate evolution.  Not commenting here because my complaint is about Diane Douglas trying to sneak in	yes no no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265 2273 2286	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.  Reinstate evolution.  Not commenting here because my complaint is about Diane Douglas trying to sneak in creationism and Intelligent Design into the state science standards.	yes no no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265 2273 2286	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design .  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.  Reinstate evolution.  Not commenting here because my complaint is about Diane Douglas trying to sneak in creationism and Intelligent Design into the state science standards.	yes no no no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265 2273 2286 2306 2345	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design .  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.  Reinstate evolution.  Not commenting here because my complaint is about Diane Douglas trying to sneak in creationism and Intelligent Design into the state science standards.	no yes no no no no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265 2273 2286	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.  Reinstate evolution.  Not commenting here because my complaint is about Diane Douglas trying to sneak in creationism and Intelligent Design into the state science standards.  Refer reply in 20 above.	no yes no no no no no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265 2273 2286 2306 2345 2354	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.  Reinstate evolution.  Not commenting here because my complaint is about Diane Douglas trying to sneak in creationism and Intelligent Design into the state science standards.  Refer reply in 20 above.	no yes no no no no no	see comment 1001 see comment 1315 see comment 1001 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265 2273 2286 2306 2345 2354	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.  Reinstate evolution.  Not commenting here because my complaint is about Diane Douglas trying to sneak in creationism and Intelligent Design into the state science standards.  Refer reply in 20 above.	no yes no no no no no no no no no no no no no	see comment 1001  see comment 1315 see comment 1001 see comment 1001 see comment 1001 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265 2273 2286 2306 2345 2354	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.  Reinstate evolution.  Not commenting here because my complaint is about Diane Douglas trying to sneak in creationism and Intelligent Design into the state science standards.  Refer reply in 20 above.  Refer to the Next Generation Science Standards. They NGSS are good standards.  These are not.  Needs to go back to review.	no yes no no no no no no oo no yes	see comment 1001 see comment 1315 see comment 1001 see comment 1001 see comment 1001 see comment 1001 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265 2273 2286 2306 2345 2354 2364 2378	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design .  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.  Reinstate evolution.  Not commenting here because my complaint is about Diane Douglas trying to sneak in creationism and Intelligent Design into the state science standards.  Refer reply in 20 above.	no yes no no no no no no no no no no no no no	see comment 1001  see comment 1315 see comment 1001 see comment 1001 see comment 1001 see comment 1001 see comment 1001	key concepts	
2156 2199 2208 2259 2262 2265 2273 2286 2306 2345 2354 2354 2378	be taught as deemed in the introduction (3-dimensional instruction)  Understanding the theory of evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Understanding evolution is critical to the fields of medicine, biology, and applied science like agriculture.  Send the standards back for review.  Explain evolution.  Include Evolution, omit Creationism and Intelligent Design.  Teaching creationism, or the misnamed intelligent design, is a violation of the separation of church and state. If you want your kid to learn fantasy send him to Sunday school. Public schools are for fact based subjects that our kids will need to navigate the future, not the failed, undefined, and contradictory philosophies responsible for most of the earths problems.  Reinstate evolution.  Not commenting here because my complaint is about Diane Douglas trying to sneak in creationism and Intelligent Design into the state science standards.  Refer reply in 20 above.  Refer to the Next Generation Science Standards. They NGSS are good standards.  These are not.  Needs to go back to review.	no yes no no no no no no oo no yes	see comment 1001 see comment 1315 see comment 1001 see comment 1001 see comment 1001 see comment 1001 see comment 1001 see comment 1001	key concepts	

	I Call for the restoration of the ASE's description of evolution, which is scientifically	no	see comment 1001		
	accurate and pedagogically appropriate, unlike the proposed revision. Recommend				
	revisions to the treatment of evolution in passages that seem to have been similarly				
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may				
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)				
2419					
2428	Stick to actual science and stop dumbing down our children!	no			
	Get rid of the knowing and using science and key concepts. Integrate more the three	no	comment 2156		
2465	dimensions of A Framework for K-12 Science Education.		001111110111011101111111111111111111111		
	evolution rather than theory of	no	see comment 1001		
	Restore 4.L4U4.12 to original terminology.	yes	see comment 2013		
	too watered down	no	see comment 2015		
	see above	no			
2518	I couldn't care less about Fourth Grade.	no			
	Omitting information on change over time, evolution and the big bang theory,	no	see comment 1001		
2520	completely negates the validity of this document.				
	Include health standard that includes body awareness pre puberty physical changes	no	standards	no change	science standards do not include health standards
2529	especially for girls				
]	Again, are there resources that districts will be able to purchase that align to the	no	curriculum/resources		
	content at each grade level?				
2543	TEACH EVOLUTION!	no	see comment 1001		
	In the section introduction: This statement does not provide an overview of the 4th	yes	see comment 1681		
	grade standards.On Page 25, when this section 'students expand on the idea that				
	energy from the Sun interacts with Earth systems and explore other forms of energy				
	we use in everyday life. Students apply their understanding of the various Earth				
	systems (geosphere, hydrosphere, atmosphere, biosphere) and how they interact				
	with each other and heat from the Sun. Students understand how geological systems				
	change and shape the planet and provide the resources for fuels. Students also				
	develop an understanding how Earth processes and human interactions can change				
	environments impacting the ability for organisms to survive.' Was condensed to				
	'Students also understand how weather, climate, human interactions, and geological				
	systems change and shape the earth and the factors impacting organism diversity',				
2550	clarity was lost.				
2559					
	All the standards should be aligned with each grade level and grow in rigor as the	no	standards	no change	across grade bands standards do grow in rigor content is distributed across grade band
	student moves through the higher grade levels. The content, though, should be similar				however there is not enough to teach everything at every grade level
	in all grade levels.				
	Do not attempt to deny or water down the concepts of evolution.	no	see comment 1001		
2614	Standard 4.E1U1.5's key concepts are too difficult for this grade level.	yes	see comment 1278		
]	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!	no	see comment 1001		
2615	Evolution is real!				
	I disagree with the minimizing of the role Evolution plays in human history and science	no	see comment 1001		
	education. It is not debated in the Science community. The science standards of				
	Arizona need to be compatible with modern scientific fact, not biases or religion. If				
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona				
]	Department of Education will omit from Education. That is limiting future generations				
	of American thinkers, who face scientific truths of the world and use the scientific				
	method for progression of humanity. Please revise the k-12 science standards to fit				
	current scientific fact, so that future generations will posses the knowledge they have				
	the right to recieve from their Education department. Thank you.				
	the right to recieve from their Education department. Thank you.				
2618					
2618	Students should be taught how the energy for electricity is obtained Man.	was	standards	roward for	
	Students should be taught how the energy for electricity is obtained. Magnetic	yes	standards	reword for accuracy	
2642	currents don't exist.		1		
]	The draft of science standards is fine. I understand that rocks are normally taught in	no			
]	3rd grade, however I think that they align with 4th grade standards.				
2658					
2662	See my previous comments	no			

37. What would you like the working group to consider as they revise the Physical	Science Standards in t Actionable Yes/No	theA Fourth GradeA Science Item Addressed	Standards? Suggested Changes	Committee Notes
Public Comment	Actionable Yes/No	item Addressed	Suggested Changes	Committee Notes
89 No comment	no			
These statements are INCORRECT: Students develop an understanding of how Earth's resources can be transformed into different forms of energy. Students develop a better understanding of electricity and magnetism and how they are forms of energy.Earth's resources cannot be developed into energy; they can be transformed into fuels that provide energy.Electricity and magnetism are NOT forms of energy.	yes	standard	see comment 145	
Evolution section is weak and watered down. It needs to be strengthened.	yes	standard	Leave 4L4U2.11 alone 4L4U4.12 should say Use evidence to support a claim about the factors that cause organisms to go extinct and how human can impact those factors	
114				
124 n/a  4.P4U2.2the addition of magnetic has made this standard scientifically inaccurate, 143 there is no such thing as magnetic currents	yes	see comment 2642 from fourth grade		
No such thing as magnetic currents. Throughout the standards there is a clear misconception of what is energy, what is a fuel source, what is force, and what is power. These are all changes in green.	yes	see comment 2642 (4th grade)		
We should go back to the standards that the committee created and adopt those, not Diane Douglas's internal review copy.	no			
162 Adopt NGSS standards	no			
Please expand on the construct an explanation and engage in argument from 178 evidence in 4.P4U4.3. eg. write an essay, etc.	no			
The draft needs additional examples and explanation. It is left to interpretation.  Please add resources where we can locate some of the new standards.	no			
189 A more clearer perimeters to teach within.	yes	standard		Committee is recommending assessment boundaries
at this time there is nothing that I feel they need to consider, since they had pin 196 pointed their expectations.	no			
208 Simplification.  More information about what types of energy teachers should focus on should be	no yes	standard	no change needed	the addition of learning progressions will help address this is need.
included. Will they need to spend time on: Potential, chemical, nuclear, gravitational, mechanical, Kinetic, GRAVITATIONAL, CHEMICAL, NUCLEAR, ELASTIC, MOTION, THERMAL ENERGY AND TEMPERATURE. Without more focus, this could be the only focus for the entire year!				
Our team wanted to know how or what type of resources (books, newspapers, etc.) would be given to the grade level to meet these standards.  235	no			
252 n/c	no			
Page 25In the first and second paragraph, remove the additions by ADE and restore it to what the teachers had there. Unless it was a grammatical fix, it should be returned to what the teachers asked for.Remove Key Concept ColumnUnder 4.P4U2.2 - why did 'and magnetic' get added by ADE? What did the teachers have here? Unless it was a grammatical fix, it should be returned to what the teachers asked for.	Yes			
4.P4U2.1The transfer of energy standard is too vague. Are we supposed to teach the radiant energy spectrum, or electromagnetism, or both? Is there more to energy transfer that needs to be taught? We need the standards to be more specific, so we 266 know exactly which aspects to teach.	yes	standard	no change needed	the addition of learning progressions will help address this is need.

281	Nothing	no			
	Nothing in particular.	no			
	Wait to Test.	no			
	no suggestions	no	<del>                                     </del>		
	page 25Incorrect information:Table Develop and use a model that demonstrates	ves	standard	remove magnetic	to make it scientifically accurate
ļ	i ·	yes	Stanuaru	remove magnetic	to make it scientifically accurate
ļ	how energy is moved from place to place through electric and magnetic				
	currents. Must remove 'and magnetic' After speaking to an APS training supervisor				
	and requesting help to understand what magnetic currents are I was told there were				
	no such thing.				
ļ	Make it clear if this is more than electric circuits, as P4U2.1 could also be water, wind,	yes	standard	no change needed	
381	or solar energy being transferred as well.				
	Please consider removing the key concepts section. This makes the model more like	yes	Key concepts		see comment 203 in third grade
ļ	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and	,	, ,		
390	inquiry based.				
	Where's the engineering and technology (coding)	no			
451	Remove the key concepts as this unnecessary and is more about implementation and		Key concepts	+	see comment 203 in third grade
513		yes	key concepts		see comment 203 in third grade
512	should NOT be the intention of the standards.		<del>                                     </del>		
J	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,	no	standard		evolution is not removed from fourth grade the uilding blocks are still there.
J	evidenced by the replication of self copying dna in science labs and modern genetic				
ļ	engineering efforts is wrong. Period. Evolution through natural selection over millenia				
	is a scientific fact.				
	Scientific standards should be based on scientific research and nothing else. Replacing	no	see comment 1001		
ļ	and watering down the proven science of evolution is a disservice to our kids, a				
ļ	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO				
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				
1008					
	Page 32, Table, Row labeled P4 – see comment 19 - #3.	no		<del></del>	
			14004	<del> </del>	
	Evolution is not just a theory, it is well established fact by science. Making Biological	no	see comment 1001		
	evolution to Theory of Evolution is a step backwards not an improvement.				
1085					
1091	A fourth grader's level of understanding of the Theory of Evolution.	no	see comment 1001		
1092	Standard 2. magnetic currents is inaccurate	yes	see comment 2642		
	Evolution is a scientific fact! To remove or try to water the process down from our	no	see comment 1001		
ļ	education standards is unacceptable! If we want current or new high dollar business				
	to come to Arizona we must have high standards for our school curriculum. Good and				
	factual science is a must for our standards!				
1113		<del>                                     </del>	<del> </del>	<del> </del>	
1165	No comment	no			
ļ	That school is for teaching facts, not for promoting the views of any particular	no	see comment 1001		
	religious group.	<u> </u>	<del>                                     </del>	<u> </u>	
1186	See above.	no			
1196	See above	no			
1219	Get rid of intelligent design. Restore references to evolution.	no	see comment 1001		
	I don't teach 4th	no			
	Nothing in the proposed revisions for any grade are acceptable if they include	no	see comment 1001		
ļ	intelligent design or any other form of religious creationism by any other name, and if				
	references to evolution have been deleted or treat it as only a theory.				
4333	references to evolution have been defected of treat it as only a theory.				
1223	D. H	<del>                                     </del>	<del></del>	<del>                                     </del>	10
ļ	Don't revise.	no			the committee should reconvene to make adjustments to the public comment
1226					
	4.P4U2.2Develop and use a model that demonstrates how energy is moved from	yes	see comment 2642		
ļ	place to place through electric and magnetic currents. This is inaccurate, there are no				
1276	magnetic currents.				
	Throw these terrible standards out and adopt instead the excellent Next Generation	no	standards		ADE directive
1303	Science Standards developed by STEM professionals.				
1555	Develop and use a model that demonstrates how energy is moved from place to	yes	see comment 2642	†	
	bevelop and use a model that demonstrates now energy is moved from place to	, 03	See comment 2042		
i	place through electric and magnetic currents. Magnetic currents do not suit along				1
420-	place through electric and magnetic currents. Magnetic currents do not exist, please				
1305	remove.				
		no	see comment 1303		

	The sheer willful ignorance of removing Evolution from the curriculum is mind bogling.	no	see comment 1001		
	It would put Az students at a vast disadvantage when moving to higher education. If				
	the superintendent's intention is to replace evolutionary theory with intelligent				
	design she should be removed from office and barred from working in education for				
1311	life. Do jot do this.				
	Get a scientific expert to rewrite the content or undo the edits.	ves	see comment 1203		
	The Internal Review provided excellent additional development and clarification. The	no			
1337	Internal Review should be adopted.				
	Clearly include the teaching of the concept of evolution.	no	see comment 1001		
	Original language should remain	ves	see comment 157		
	Teach evolution. Evolution is science.	no	see comment 1001		
	evolution should be included in all grades	no	see comment 1001		
	Ditto		see comment 1001		
		no			
1518	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.	no	see comment 1001		
	Climate change, evolution, and big bang cosmology should be in these standards.	no	see comment 1001		
1526					
	There are several places in the draft standards where the term model seems to	yes	see comment 2642		
	suggest a physical demonstration of a concept rather than a representation used to				
	explain or predict. 4.P4U2.2 is one of those examples. I would rather see this standard				
	state Develop and use a model to explain and predict how energy is moved through				
	electric. Also, rather than magnetic currents this standard should refer to magnetic				
	fields.				
1553	See above	no			
1556	Remove all religious references.	no	see comment 1001		
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL	no	see comment 1001		
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.				
1575					
1583	Adding and maintaining teaching Evolution needs to be continued.	no	see comment 1001		
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.	no	see comment 1001		
	Teach Science and facts in Schools not faith and religion.	no	see comment 1001		
	N/A	no	See comment 1001		
	No comment.	no			
	Fix evolution standards.	no	see comment 1001		
	See comment #9	no	see comment 1001		
1681		no			
1694	Only facts based on repeatable scientific tests.	no			
4700	No need. Go with the scientific evidence not creationism or religious indoctrination!!	no	see comment 1001		
1789					
1/93	Please do not muddy the language regarding evolution	no	see comment 1001		
	Restore all original language referencing evolution proposed by the committee of	no	see comment 1001		
	educators with expertise in science education.				
1799	Teach Evolution	no	see comment 1001		
	The original document, before internal review, provided the necessary background	yes	see comment 157		
	about what core concepts were expected in science education.				
1800					
		yes	comment 157		
1859	Continue to teach evolution. Do not remove it to teach creationism.	no	see comment 1001		
	Life Science standards should be strictly and wholly secular in nature and follow the	no	see comment 1001		
	most up to date science community's recommendations, including the proven				
	theories on evolution and Darwinism. Our children need the opportunity to receive				
	competitive and challenging educations at a playing field level to the rest of the nation				
	and international STEM markets.				
1890					
	Refer to my response to question 17.	no			
1510	Most kids will be too young to grasp the key concepts from 4.P4U2.2You seriously	yes	standard	no change	
	expect an 8 year old to truly understand what protons and electrons are?	,	J. G. G. G. G. G. G. G. G. G. G. G. G. G.	c.runge	
1923					
	Teach proper evolution	no	see comment 1001		
		IIIV	DEE COMMENT TOOL		
	see above				

	Evolution, not intelligent design, is based in science. Science, not religion, should be			
1995	taught in science classes.			
	Nothing should be taught within or alongside science that does not have the same			
	factual basis that all the core concepts included in the draft have. Non-science or			
	pseudoscience, has no place in factual science learning for our youth.			
2000	I			
2000				
	Ambivalent.			
2032	Evolution			
2043	All standards need to be included.			
2062	No comment.			
2079	see previous comments.			
	We should only be covering evolution in school. Creationism should be kept separate			
2152	from schools.			
	Send the standards back for review.			
	Explain evolution.			
2265	Include Evolution, omit Creationism and Intelligent Design .			
	Teaching creationism, or the misnamed intelligent design, is a violation of the			
	separation of church and state. If you want your kid to learn fantasy send him to			
	Sunday school. Public schools are for fact based subjects that our kids will need to			
	navigate the future, not the failed, undefined, and contradictory philosophies			
2273	responsible for most of the earths problems.			
22/3	Not commenting here because my complaint is about Diane Douglas trying to sneak in			
	creationism and Intelligent Design into the state science standards.			
2306				
	Refer reply in 20 above.			
2354				
	Refer to the Next Generation Science Standards. They NGSS are good standards.			
2364	These are not.			
2378	Needs to go back to review.			
	Keep religious beliefs out of science standards and retain scientifically accurate core			
2380	ideas of evolution and climate change at all grade levels.			
	Please revise.			
	Science classes must include the scientific research published in high ranking, peer-			
	reviewed journals of climate change, evolution, and mechanisms of natural selection			
	if student are to have a better understanding of the scientific process, theories, and			
	major mechanisms at work in our world. It is also essential preparation for higher			
	education as these are subjects that will be taught heavily in entry level biology class,			
	sometimes spanning an entire semester, and make up more advanced science course			
	such as organic evolution. It is imperative to a student's education in science that large			
	scientific fields such as evolution and climate change research not be censored like			
	banned books.			
2390				
	I Call for the restoration of the ASE's description of evolution, which is scientifically			
	accurate and pedagogically appropriate, unlike the proposed revision. Recommend			
	revisions to the treatment of evolution in passages that seem to have been similarly			
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
2419				
2428	Stick to actual science and stop dumbing down our children!			
	The way in which the standards are written can cause misconceptions and confusions			
	about energy as it is defined in science. There are different forms of energy including			
	kinetic, potential, chemical potential, light, sound, heat, etc. In NGSS, energy standard			
	reads, Make observations to provide evidence that energy can be transferred from			
	place to place by sound, light, heat, and electric currents. This is not confusing.			
2465	li i i i i i i i i i i i i i i i i i i			
2487				
	see above			
	I couldn't care less about Fourth Grade.			
2318	Omitting information on change over time, evolution and the big bang theory,			
3530				
2520	completely negates the validity of this document.		l .	

	4.P4U2.2 There is no such thing as a magnetic current.4.P4U4.3 What are students		
2559	supposed to be explaining? This standard does not make sense.		
	Consistency in terminology - magnetic fields is the proper term, not currents.		
2574	1		
2607	7 Do not attempt to deny or water down the concepts of evolution.		
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!		
2615	Evolution is real!		
	I disagree with the minimizing of the role Evolution plays in human history and science		
	education. It is not debated in the Science community. The science standards of		
	Arizona need to be compatible with modern scientific fact, not biases or religion. If		
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona		
	Department of Education will omit from Education. That is limiting future generations		
	of American thinkers, who face scientific truths of the world and use the scientific		
	method for progression of humanity. Please revise the k-12 science standards to fit		
	current scientific fact, so that future generations will posses the knowledge they have		
	the right to recieve from their Education department. Thank you.		
2618	3		
	Students should be taught how the energy for electricity is obtained. Magnetic		
2642	currents don't exist.		
2658	B n/a		

Survey					
Question	38. What would you like the working group to consider as they revise the Earth and			e Science Standards?	
		Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
Comment #	Public Comment				
	Water cycle and weather unit have been removed. We follow Project Wet and do the	no			
	city wide Water Festival. These activities and lessons are created to use with 4th				
	graders.				
89	No comment	no			
	Evolution section is weak and watered down. It needs to be strengthened.	yes	standard	Leave 4L4U2.11	
				alone 4L4U4.12	
				should say Use	
				evidence to support	
				a claim about the	
				factors that cause	
				organisms to go	
				extinct and how	
				human can impact	
				those factors	
114					
124	n/a	no			
143	none	no			
155	More focus with engineering and computer science in these areas.				
	We should go back to the standards that the committee created and adopt those, not	no			
157	Diane Douglas's internal review copy.				
162	Adopt NGSS standards	no			
170	Funding	no			
	The draft needs additional examples and explanation. It is left to interpretation.	no			
	Please add resources where we can locate some of the new standards.				
180					
189	A more clearer perimeters to teach within.	yes			committee is recommending assessment boundaries
	at this time there is nothing that I feel they need to consider, since they had pin	no			
196	pointed their expectations.				
208	Simplification.	no			
	This feels like it could be the entire focus for the year- lots of information to cover.	no			
	Disasters feels like an afterthought; does it truly play an important role in the				
218	curriculum for 4th grade?				

	Our team likes this standard, it appears to be very familiar and has not changed much	no			
	from the previous years.				
252		no			
	Page 26Remove Key Concept ColumnUnder UE1U1.6 - remove 'volcanos' and Under 4.E1U3.10 remove 'disasters, define the problem(s) and'. What did the teachers have here? Unless it was a grammatical fix, it should be returned to what the teachers asked for.	yes	standard	see comment 203 in third grade 2. Identify the causes and effects of natural hazards, define the problems and design solution to minimize those effects on humans.	
265					
	Nothing	no			
	Nothing in particular.	no			
	Wait to Test.	no			
	no suggestions	no			
	It makes total sense to move the study of rocks from 3rd to 4th grade. There are so	no			
	many times that I have referenced the types of rocks in instruction about tectonics or				
	erosion, and I get a lot of vague stares when I do, because students have forgotten				
	that learning. Please keep that!				
	I like rocks being moved to 4th grade from 3rd. It ties nicely with tectonic plates, earth	no			
	quakes, and volcanoes.				
	Make clearer connections between these standards.  Please consider removing the key concepts section. This makes the model more like	no yes	V		
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and	yes	Key concepts		see comment 203 in third grade
	inquiry based.				
	Remove the key concepts as this unnecessary and is more about implementation and	WOS	Key concepts		see comment 203 in third grade
	should NOT be the intention of the standards.	yes	key concepts		see comment 203 in third grade
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,				
	evidenced by the replication of self copying dna in science labs and modern genetic				
	engineering efforts is wrong. Period. Evolution through natural selection over millenia				
	is a scientific fact.				
	Scientific standards should be based on scientific research and nothing else. Replacing				
	and watering down the proven science of evolution is a disservice to our kids, a				
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO				
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				
1008					
1031	Climate change needs to be included				
	Evolution is not just a theory, it is well established fact by science. Making Biological				
ŀ	evolution to Theory of Evolution is a step backwards not an improvement.				
1085					
	A fourth grader's level of understanding of the Theory of Evolution.				
	Standard 10: hazards is correct. Disasters only include extreme results of hazards and				
	limits student understanding.				
	Evolution is a scientific fact! To remove or try to water the process down from our				
	education standards is unacceptable! If we want current or new high dollar business				
	to come to Arizona we must have high standards for our school curriculum. Good and				
	factual science is a must for our standards!				
1113	N1				
	No comment				
	That school is for teaching facts, not for promoting the views of any particular				
	religious group. See above.			-	
	See above				
1196	See above			l	

These writing three allerations build and expert in Leitman and Professional Architectures in Scientific Recognition (Comparison of the Comparison of the Co		1		ı	
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122   Bost rick of Intelligent design. Restore references to evolution.  123   Bost Name and Name and Name and State of Part o	1203	- · · - · · · · · · · · · · · · · · ·			
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	1518				
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	4.E1U2.4 - Seismic waves are the result of Earth movements; they transfer energy			
	stored in rocks. What is not clear here is what you really want students to know about			
	seismic waves. Do you want them to learn about how they are produced, they types			
	of waves (S & P), how S&P waves impact human-engineered structures? The list of key			
	concepts suggests that seismic waves affect mountain formation, where as it is			
	mountain formation that produces seismic waves. A possible revision could be Use			
	models to explain seismic waves, how they are produced, and how they transfer			
	energy. I also question whether the focus on seismic waves is appropriate for 4th			
	grade; the concept seems more appropriate for high school. Instead, maybe the 4th			
	grade standard should really be about fast and slow changes in the Earth's			
	surface.4.E1U1.5 is too broad. What types of interactions are important here? This			
	could encompass weather, climate, water supply, ecology, all of geology, etc. Be more			
	specific here. 4.E1U2.6 This standard should include not just evidence of past plate			
	movements but also past environments. Furthermore, remove the word whether			
	from this standard and replace it with how. 4.E1U2.7 seems similar to 4.E1U2.6 -			
	could these two standards be combined?4.E1U4.9 This standard is too narrow. It			
	should be about more than just the impact of water on life. It is really about the			
	movement of water through connected systems. I suggest are revision that reads		1	
1	Construct an evidence-based argument about how water moves through		1	
1	environmental systems and how these movements impact life systems. 4.E1U4.9 -			
1	keep the word hazards and eliminate the word disasters. Hazards can be			
1	problematic but might not rise to the level of a disaster. For example, a rock fall might		1	
1	damage a highway but that is not a disaster on the scale of an earthquake or		1	
	hurricane.		1	
	Trained.			
1538				
	See above			
1550	Remove all religious references.  NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL			
4575	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.			
1575				
	Adding and maintaining teaching Evolution needs to be continued.			
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.			
	Teach Science and facts in Schools not faith and religion.			
	N/A			
	No comment.			
	Fix evolution standards.			
1664	See comment #9			
	The bullet point about 4th grade specifically on page 21. I feel the crossed out		1	
1	verbiage is preferable because it clearly indicated that there are cause and effect		1	
1	relationships between changes of resources and survival. Same thing goes for the		1	
1681	crossed out verbiage on the top of page 25.		<u> </u>	
1694	Only facts based on repeatable scientific tests.			
	Arizona is blessed with rich geologic formations that are exposed for easy study and	 	1	
1	exploration. The fourth grade earth and space standards need to focus more heavily		1	
1	on rocks and minerals as they relate to Arizona geology.		1	
1709				
	No need. Go with the scientific evidence not creationism or religious indoctrination!!			
1789	- I			
	Please do not muddy the language regarding evolution		İ	
1,33	Restore all original language referencing evolution proposed by the committee of		1	
1706	educators with expertise in science education.			
	Teach Evolution		<del> </del>	
1/99			1	
				1
	The original document, before internal review, provided the necessary background			
1000	The original document, before internal review, provided the necessary background about what core concepts were expected in science education.			
1800	The original document, before internal review, provided the necessary background about what core concepts were expected in science education.			
1811	The original document, before internal review, provided the necessary background about what core concepts were expected in science education.  Revert all of Diane Douglas's changes.			
1811 1859	The original document, before internal review, provided the necessary background about what core concepts were expected in science education.			

		1		
	Life Science standards should be strictly and wholly secular in nature and follow the			
	most up to date science community's recommendations, including the proven			
	theories on evolution and Darwinism. Our children need the opportunity to receive			
	competitive and challenging educations at a playing field level to the rest of the nation			
	and international STEM markets.			
1890				
	Refer to my response to question 17.			
1516	Some of these standards are a bit too similar to middle school standards. I might			
	expect a kid to know that there is an atmosphere around our planet, but to know the			
	individual layers at this age seems a bit much. Same with the concept of using			
	evidence to show that plate tectonics is real; that's definitely a MS standard. A fourth			
	grader should simply know that the Earth's surface is broken into large plates and that			
	there is actually crust under the oceans.			
1923				
1953	Teach proper evolution			
	Evolution, not intelligent design, is based in science. Science, not religion, should be			
1995	taught in science classes.			
	Nothing should be taught within or alongside science that does not have the same			
1	factual basis that all the core concepts included in the draft have. Non-science or			
	pseudoscience, has no place in factual science learning for our youth.			
2000	i			
	Ambivalent.			
	Evolution			
	All standards need to be included.			
	No comment.			
2079	see previous comments.			
	Evolution is not described nor incorporated accurately. This must be changed.			
2112				
	We should only be covering evolution in school. Creationism should be kept separate			
2152	from schools.			
	It appears that the use of the word whether in 4.E1U2.6 is intentional to undermine			
	evidence of fossil record. Possible Solutions: 4.E1U2.6 - delete the word fossils .			
	Limit this standard to tectonic evidence rather than fossil evidence since 4.E1U2.7 is			
	about fossils. OR delete the word whether and insert how and then delete the			
	entire 4.E1U2.& standard because it then becomes redundant. 4.E1.U2.8 add the			
	wordsand changes in patterns over time orover various time scales.			
2156				
2259	Send the standards back for review.			
	Explain evolution.			
	Include Evolution (where relevant), omit Creationism and Intelligent Design .			
2265	include Evolution (where velevancy) onlike or eactionism and interrigence besign.			
2203	Teaching creationism, or the misnamed intelligent design, is a violation of the			
	separation of church and state. If you want your kid to learn fantasy send him to			
	Sunday school. Public schools are for fact based subjects that our kids will need to			
22-2	navigate the future, not the failed, undefined, and contradictory philosophies			
	responsible for most of the earths problems.			
2286	Reinstate evolution.			
	This seems not realistic for fourth grade: Plan and carry out an investigation to explore			
	the interactions between Earth'smajor systems. Could this instead be: Plan and carry			
	out an investigation to explore the interactions between human and natural systems.			
2292				
	Not commenting here because my complaint is about Diane Douglas trying to sneak in		 	
	creationism and Intelligent Design into the state science standards.			
2306				
	Refer reply in 20 above.			
2354				
	Refer to the Next Generation Science Standards. They NGSS are good standards.			
2364	These are not.			
	Needs to go back to review.			
2376	preced to go back to review.	l.		

Keep religious beliefs out of science standards and retain scientifically accurate core			
2380 ideas of evolution and climate change at all grade levels.			
2384 Please revise.		+	
Science classes must include the scientific research published in high ranking, peer-			
reviewed journals of climate change, evolution, and mechanisms of natural selection			
if student are to have a better understanding of the scientific process, theories, and			
major mechanisms at work in our world. It is also essential preparation for higher			
education as these are subjects that will be taught heavily in entry level biology class,			
sometimes spanning an entire semester, and make up more advanced science course			
such as organic evolution. It is imperative to a student's education in science that large			
scientific fields such as evolution and climate change research not be censored like			
banned books.			
2390			
I Call for the restoration of the ASE's description of evolution, which is scientifically			
accurate and pedagogically appropriate, unlike the proposed revision. I Recommend			
revisions to the treatment of evolution in passages that seem to have been similarly			
weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
2419			
2428 Stick to actual science and stop dumbing down our children!	<u> </u>		
2487 N/A	<u> </u>		
2515 see above			
2518   couldn't care less about Fourth Grade.	<del>                                     </del>		
Omitting information on change over time, evolution and the big bang theory,			
2520 completely negates the validity of this document.  How are earthquakes and seismic waves being addressed without discussion of plate	<del>                                     </del>	-	
2539 tectonics as well as convection?			
4.E1U1.5 This is WAY too broad.4.E1U2.7 This is part of 4.E1U2.64.E1U4.9 This		+	
standard does not align with E1 'The composition of the Earth and its atmosphere and			
the natural and human processes occurring within them shape the Earth's surface and			
its climate' The way it is written, it actually should be aligned with L2 'Organisms			
require a supply of energy and materials for which they often depend on, or compete			
with, other organisms. '4.E1U3.10 The word 'disaster' is not appropriate. We call an			
incident a disaster solely because of its impact on people. The same event, like a			
flood, could be a hazard without being a disaster.			
2559			
re 4.L4U4.12. Did you know that there is no such thing as a Species in scientific terms			
(just as there is no scientific definition of species there is no scientific definition of			
race btw.). Bringing the word species in here is a large mistake. The word Organisms			
is a more appropriate term to use. The original wording was much better than what			
2605 you have here now.			
2607 Do not attempt to deny or water down the concepts of evolution.			
STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!	1		
2615 Evolution is real!			
I disagree with the minimizing of the role Evolution plays in human history and science	1		
education. It is not debated in the Science community. The science standards of	1		
Arizona need to be compatible with modern scientific fact, not biases or religion. If	1		
Evolution is being wrongfully omitted I grieve to know what other facts the Arizona			
Department of Education will omit from Education. That is limiting future generations			
of American thinkers, who face scientific truths of the world and use the scientific	1		
method for progression of humanity. Please revise the k-12 science standards to fit	1		
current scientific fact, so that future generations will posses the knowledge they have	1		
the right to recieve from their Education department. Thank you.	1		
2618	1		
2642 this section is good	<del>                                     </del>	+	
2658 n/a		+	
	<del> </del>		

rvey lestion							
		Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes		
	Public Comment		1				
	4.L4U4.12 is the same exact standard as 1.L4U4.11.	yes	standard	remove from first			
				grade- doesn't align			
56				well there.			
	No comment	no					
	Evolution section is weak and watered down. It needs to be strengthened.	yes	standard	Leave 4L4U2.11			
				alone 4L4U4.12			
				should say Use			
				evidence to support			
				a claim about the			
				factors that cause			
				organisms to go			
				extinct and how			
				human can impact			
				those factors			
114							
124	n/a	no					
	none	no					
		no					
	Diane Douglas's internal review copy.						
	Adopt NGSS standards	no					
	Funding	no					
	The draft needs additional examples and explanation. It is left to interpretation.	no					
	Please add resources where we can locate some of the new standards.						
180							
	A more clearer perimeters to teach within.	see comment 196					
	at this time there is nothing that I feel they need to consider, since they had pin pointed their expectations.	no					
	Simplification.	no					
218	align nicely with earth and space standards	no					
	Our team would like to know why this skill could not be taught by the special area	no					
	teacher (P.E.) which is similar to how middle school and high teachers work with the						
235	students.						
252	n/c	no					
265	Page 27Remove Key Concept Column	yes	Key concepts		see comment 203 in third grade		
281	Nothing	no					
292	Nothing in particular.	no					
	Wait to Test.	no					
	no suggestions	no					
	These two standards are very vague and broad. A little clarification and/or some	yes	standard	no change			
	specific examples would be helpful. Are we to teach about every species across the						
	entire history of the Earth?						
	Specify life all plants and animals on earth throughout history?The previous	yes	standard	no change			
355	standard focused more on desert life which is easier to tackle.						
381	Only adaptation and survival with a connection to the environment?	yes	standard	no change			
	Please consider removing the key concepts section. This makes the model more like	yes			see comment 203 in third grade		
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and						
390	inquiry based.						
	Fourth grade should be the point where, in biology, the diversity and relatedness of	yes	standard	no change	already addressed		
	life should be introduced. Evolutionary concepts should not be left to later grades.						
	Starting early helps students understand these complex processes in the future.						
413			1				
	Remove the key concepts as this unnecessary and is more about implementation and	yes	Key concepts		see comment 203 in third grade		
	should NOT be the intention of the standards.		1		_		

	A		
	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,		
	evidenced by the replication of self copying dna in science labs and modern genetic		
	engineering efforts is wrong. Period. Evolution through natural selection over millenia		
	is a scientific fact.		
	Scientific standards should be based on scientific research and nothing else. Replacing		
	and watering down the proven science of evolution is a disservice to our kids, a		
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO		
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.		
1008			
	The inclusion of evolution must be reinstated.		
1020	Page 32, Table, Row labeled L4 – see comment 19 - #4.		
	Evolution needs to be taught		
	Evolution is not just a theory, it is well established fact by science. Making Biological		
ı İ	evolution to Theory of Evolution is a step backwards not an improvement.		
1085			
1091	A fourth grader's level of understanding of the Theory of Evolution.		
ı l'	We need to start teaching children about all aspects of life including evolution from		
1113	the very beginning.		
	Continuing with Evolution and leaving in biological evolution and natural selection.		
1147		 	
1165	No comment		
	That school is for teaching facts, not for promoting the views of any particular		
1167	religious group.		
	Environmental studies should include information regarding human impact.		
1190			
1196	See above		
	Those writing these standards should be experts in science and/or education.At a		
	minimum they should understand what the word THEORY means in scientific		
ı	terms.Eg: Evolution is a confirmed scienfic theory and understanding modern biology,		
	agriculture, genetics and human development is impossible without reference to that		
	established theory		
	Get rid of intelligent design. Restore references to evolution.		
	I don't teach 4th		
	Nothing in the proposed revisions for any grade are acceptable if they include		
	intelligent design or any other form of religious creationism by any other name, and if		
	references to evolution have been deleted or treat it as only a theory.		
1223	references to evolution have been defected of treatifieds only a titlesty.		
	Don't revise.		
	Please see my earlier comments (Qu 13/17) regarding the scope of evolution		
	education.		
	Evolution should not be omitted from this curricula.		
1298			
	Throw these terrible standards out and adopt instead the excellent Next Generation		
	Science Standards developed by STEM professionals.		
	I believe it would serve the children of AZ better if we would just adopt the Next		
	Generation Science Standards.		
	The sheer willful ignorance of removing Evolution from the curriculum is mind bogling.		
	It would put Az students at a vast disadvantage when moving to higher education. If		
	the superintendent's intention is to replace evolutionary theory with intelligent		
	design she should be removed from office and barred from working in education for		
	life. Do jot do this.		
	L4: The diversity of organisms, living and extinct, is the result of evolution was		
	changed to The theory of evolution seeks to make clear the unity and diversity of		
	living and extinct organisms. The original statement is clearer and should be retained.		
1313			
	Get a scientific expert to rewrite the content or undo the edits.		

More standards for the Science such as squelled scandard for plant and entired particles and the standards and standards are the standards and standards are the standards and standards are the standards and standards are the standards and standards are the standards and standards are the standards and standards are the standards and standards are the standards and standards are the standards and standards are the standards and standards are the standards and standards are the standards and standards are the sta					Ţ
motive work on plants and animal activations of significant SEPORE TREPORT REPORT REPORT PLANTS AND ANIMAL CONTROL CON		More standards for Life Science such as a specific standard for plant and animal			
motive work on plants and animal activations of significant SEPORE TREPORT REPORT REPORT PLANTS AND ANIMAL CONTROL CON		adaptations so that students can better understand 4.14U2.11. 9-10 year olds need			
understand extensions, survival and mountains, tearning about this in inventors years will not necessarily proper extension for register in a survival not extensive from the survival of the		,			
will not necessarily imparts abuted to fire injective field protection of the company of the com		i i i i i i i i i i i i i i i i i i i			
the grade of R. Enrichmotived in proving grades.  1331  1341  1352  1352  1353  1354  1355  1354  1355		I			
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Espacially important in how the internal Review during provides appreaches that involve a using questions and diversariality to wargenin based upon vendere of all the bearing proteins. The internal Review draft should be adopted.  2010  201	1336				
Espacially important in how the internal Review during provides appreaches that involve a using questions and diversariality to wargenin based upon vendere of all the bearing proteins. The internal Review draft should be adopted.  2010  201		The Internal Review provided excellent additional development and clarification.			
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2015	Minn make		
	Micro-evolution.		
2030			
	Evolution		
	All standards need to be included.		
	Evolution needs to be added back in as fact.		
	see previous comments.		
2111	See previous comments on the treatment of evolutionary biology.		
	Evolution is not described nor incorporated accurately. This must be changed.		
2112			
	We should only be covering evolution in school. Creationism should be kept separate		
2152	from schools.		
	4.L4.U4.12 is almost worded the same as 1.L4U4.11 Possible solution: Include the		
	learning progression in the right column to add clarity about the standard and		
	expectations/boundaries. For instance: on pg. 165 of A Framework By end of grade 2		
2156	or End of grade 5 can add clarity.		
	Understanding the theory of evolution is critical to the fields of medicine, biology, and		
2199	applied science like agriculture.		
	Don't eliminate references to evolution, as it's necessary to understand life sciences.		
2203			
	Understanding evolution is critical to the fields of medicine, biology, and applied		
2208	science like agriculture.		
	Evolution must be taught		
	Send the standards back for review.		
	Explain evolution.		
2202	Include Evolution, omit ANY MENTION OF Creationism and Intelligent Design .		
2265			
2203	Teaching creationism, or the misnamed intelligent design, is a violation of the		
	separation of church and state. If you want your kid to learn fantasy send him to		
	Sunday school. Public schools are for fact based subjects that our kids will need to		
	navigate the future, not the failed, undefined, and contradictory philosophies		
2272	responsible for most of the earths problems.		
	Reinstate evolution.		
2200			
	Not commenting here because my complaint is about Diane Douglas trying to sneak in		
2306	creationism and Intelligent Design into the state science standards.		
	Refer reply in 20 above.		
2354			
	Refer to the Next Generation Science Standards. They NGSS are good standards.		
	These are not.		
2378	Needs to go back to review.		
	Keep religious beliefs out of science standards and retain scientifically accurate core		
	ideas of evolution and climate change at all grade levels.		
2384	Please revise.		
	Science classes must include the scientific research published in high ranking, peer-		
	reviewed journals of climate change, evolution, and mechanisms of natural selection		
	if student are to have a better understanding of the scientific process, theories, and		
	major mechanisms at work in our world. It is also essential preparation for higher		
	education as these are subjects that will be taught heavily in entry level biology class,		
	sometimes spanning an entire semester, and make up more advanced science course		
	such as organic evolution. It is imperative to a student's education in science that large		
	scientific fields such as evolution and climate change research not be censored like		
	banned books.		
2390		 	
	If evolution is a possible discussion, please word it appropriately. It is not a theory any		
2416	longer.		
2416	longer.		

	T		
	I Call for the restoration of the ASE's description of evolution, which is scientifically		
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend		
	revisions to the treatment of evolution in passages that seem to have been similarly		
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may		
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)		
2419			
	Stick to actual science and stop dumbing down our children!		
2487	Restore 4.L4U4.12 to original terminology.		
	Topics of adaptation, survival, and extinction are age-inappropriate and should be		
	delayed until later grades.		
	see above		
	I couldn't care less about Fourth Grade.		
	Omitting information on change over time, evolution and the big bang theory,		
2520	completely negates the validity of this document.		
	Without plate tectonics and historical evidence based on the scientifically		
	documented eras how will determining causation for survival, extinction and		
2539	adaptation be grounded in evidence and accurate?		
2543	TEACH EVOLUTION!		
	4.L4U2.11 Environmental data will not provide this evidence. To look at evidence of		
	change in species, students would need to look at geological and climate data.		
2559			
2605	Same comments as 2nd grade		
2607	Do not attempt to deny or water down the concepts of evolution.		
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!		
2615	Evolution is real!		
	I disagree with the minimizing of the role Evolution plays in human history and science		
	education. It is not debated in the Science community. The science standards of		
	Arizona need to be compatible with modern scientific fact, not biases or religion. If		
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona		
	Department of Education will omit from Education. That is limiting future generations		
	of American thinkers, who face scientific truths of the world and use the scientific		
	method for progression of humanity. Please revise the k-12 science standards to fit		
	current scientific fact, so that future generations will posses the knowledge they have		
	the right to recieve from their Education department. Thank you.		
2618			
2642	this section is good		
	I would like there to be an emphasis on this age group going outside, gardening,		
	observing, going to enriching places in Science like the Botanical Garden, the zoo,		
	National Parks, Science Museums, Outdoor classrooms.		
2653			
2658	n/a		

Public Comment Non-Survey	Public comment received outside of the survey						
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes		

urvey	41. What would you like the working group to consider as they revise the Fifth Grade Science Standards?						
omment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes		
56	the word forces is used a lot in these 5th grade standards. the correct term should be force - gravitational force, magnetic force, etc.	yes	standards	no change	terminology is correct		
89	No comment	no					
	Evolution section is weak and watered down. It needs to be strengthened.	yes	standards	no change	evolution is not specifically addressed in 5th grade, focus is on heredity		
124	n/a	no					
145	Return to original wording	no					
157	We should go back to the standards that the committee created and adopt those, not Diane Douglas's internal review copy.	no					
162	Adopt NGSS standards	no					
168	I trust the work of Science Specialists who devoted their time and energy to improve Arizona's science standards and request their direct incorporation as new standards.	no					
170	Funding	no					
185	i fell like human development should not be allowed for this grade level	no					
186	Look at the content and make sure it is age and grade appropriate.	no					
188	They need to have age appropriate content and topics.	no					
189	A more clearer perimeters to teach within.	yes	standards	no change	The committee is considering assessment boundaries		
192	I think that they are not ready to learn about reproduction	no					
193	I do not think that Human Reproduction and Life cycle is age appropriate for fifth grade. I also believe that this content should be reserved for each family to teach.	yes	standards	no change			
203	The Key concepts should be dropped from every grade level.	ves			see comment third grade 203		
	Simplification.	no					
211	I'd like us to implement the Next Generation Science Standards, already in use in many states and districts. https://www.nextgenscience.org/	no					
218	with the number of physical science standards, it seems like this is the main focus for 5th grade.	no					
252	n/c	no					
265	Page 9, 21, 33Remove last sentence: 'Suggestions for key conceptsor maximum content limits.'Pages 12, 15, 19, 24, 28, 31, 37, 41, 45Remove these connections - as soon as standards change the Science standards need to be changed. Each group of standards needs to be stand alone. If ADE wants to have another document that does a crosswalk of all of the standards in another document, that would be more appropriate than the Science Standards. Page 21Remove additions by ADE: 'and between content areas' and descriptions under third grade and fourth grade. What did the teachers have here? Unless it was a grammatical fix, it should be returned to what the teachers asked for.	yes	introduction	12,15, etc make it a separate document			
	is for students to think. The internet has made everyone lazy so the crosscutting concept of problem solving should be in every grade level.	no					
	Nothing	no					
	Nothing in particular.	no					
	Wait to Test.	no					
335	no suggestions	no	I				

354	There are an alarmingly high amount of discrepencies between the learning	ves	standards	committee looks at	
	progressions. For example, 4.P4U4.3 discusses flow of energy from place to place. It	,		the learning	
	also goes on to connect to standard 1.P3U1.3 which refers to pushing and pulling			progression	
	forces. While there are clear similarities, the depth of those similarities are FAR				
	beyond what 4th graders would be capable of comprehending without more specific				
	content knowledge. Additionally, in 5th grade, standard 5.P2U1.3 refers to				
	constructing an explanation explaining forces (which connects to the first grade				
	standard, but not electrical currents etc. in the 4th grade) and lists chemical bonds as				
	a concept Unless 5th graders are learning college level chemistry and intermolecular				
	forces. There is a HUGE disconnect between the wording of the standards and their				
	connections due to some being macro concepts and some being micro concepts.				
360	The life science standard which addresses reproduction and includes humans is not	yes	standards	no change	
300	· ·	yes	Staridards	no change	
	developmentally appropriate for 5th graders. They are not mature enough to have				
	lessons and conversations about this topic. It should be moved to a different grade				
	level, such as junior high.				
363	1. The lack of detail could lead to districts teaching material differently or in different				
	levels of depth. This could inadvertently lead to districts focusing on one topic of a				
	standard and another district quickly skimming by it. This could lead to holes in the				
	knowledge of students if students move from one district to another.				
	2. Studying scientific endevors or current science investigations/discoveries would be				
	beneficial to contribute to global minded thinkers. Students should know what's				
	happening in the world around them.				
	3. Keep the Key Concepts! This will help with consistency across the state.				
365	The standard 5.L3U1.9 is unclear about to what extent the concepts will be covered.				
505	Reproduction is not an age appropriate concept for fifth graders, yet the standard				
	includes humans.				
390	Please consider removing the key concepts section. This makes the model more like				
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
	inquiry based.				
466	The curriculum and resources available	no			
476	Third grade often omits science from its curriculum. It is concerning as to how	no			
	students will be prepared for fifth grade standards when they might not have gotten it				
	in the lower grades.				
401					
491	INputting standards for engineering and technology - not just relationships. There are				
	national standards for engineering and yet we ignore them. Our students get further				
	behind because we have to do robotics in grade 3-5 afterschool.				
492	Write out the examples of topics instead of referring you to the previous grade(s).				
497	I like how the old standards were separated by content (ie chemistry, physics, etc)				
	instead of just by science type. It's hard to distinguish at first glance how to separate				
	them and they are hard to read.				
F43					
512	Remove the key concepts as this unnecessary and is more about implementation and				
	should NOT be the intention of the standards.				
1001	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,				
	evidenced by the replication of self copying dna in science labs and modern genetic				
	engineering efforts is wrong. Period. Evolution through natural selection over millenia				
	is a scientific fact.				
1008	Scientific standards should be based on scientific research and nothing else. Replacing				
	and watering down the proven science of evolution is a disservice to our kids, a				
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO				
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.				

1020	11. Page 29, 1st paragraph, 2nd sentence â€" Suggest not deleting 'that genetic			
	information can be passed down from parent to offspring.' This fundamental life			
	science concept should be introduced to grade school level students.			
	salence concept should be ma oddeed to grade sanoon level stadents.			
1005	Evolution is not just a theory, it is well established fact by science. Making Biological			
1065				
	evolution to Theory of Evolution is a step backwards not an improvement.			
1091	A fifth grader's level of understanding of the Theory of Evolution.			
1092	This would be an agree without the ADE changes. Look at number of standards and			
	grain size in this grade band compared to other grade bands. Connections to other			
	academic disciplines. •Bemove entirely from the document. This belongs in a			
	support document or curriculum adopted locally.•⊞hese do not belong in a			
	standards document. They become obsolete as soon as any of the standards from			
	referenced disciplines are updated and approved by the state board.•∆dditionally,			
	many of the connections cited don't actually align to the standards within the grade			
	level. Key concepts Column•™hat ADE added are not actually concepts, they are			
	random vocabulary terms which may or may not be aligned to the standards and in			
	many cases are not appropriate for the grade level. •∎emove they key concepts			
	column from the document.• <b>f</b> ADE requires that the key concepts column remains,			
	select the actual concepts from the Framework or Big Ideas documents, since those			
	documents are research-based and used in the development of the standards.•™ey			
	concepts, if included must represent concepts from all three dimensions, and not just			
	the content of science. Below is an example for 5.P1U1.2 Follow this process for each			
	of the fifth grade standards, not just the example below.Remove list of vocabulary			
	terms from the Key Concepts column and replace with the actual concepts related to			
	this standard that represent all three dimensions:•Measure and graph quantities			
	_ · · · _ ·			
	such as weight to address scientific and engineering questions and problems. •™he			
	amount of matter is conserved when it changes form, even in transitions in which it			
	seems to vanish. •No matter what reaction or change in properties occurs, the total			
	mass/weight of the substances does not change.•§tandard units are used to			
	measure and describe physical quantities such as weight, time, temperature, and			
	volume. •Science assumes consistent patterns in natural systems.			
1112	C	+	+	
1113	Evolution is a scientific fact! To remove or try to water the process down from our			
	education standards is unacceptable! If we want current or new high dollar business			
	to come to Arizona we must have high standards for our school curriculum. Good and			
	factual science is a must for our standards!			
1136	3			
1165	No comment			
1167	That school is for teaching facts, not for promoting the views of any particular			
	religious group.			
1196	See above			
	Get rid of intelligent design. Restore references to evolution.			
	I don't teach 5th, never have. We don't have time to meet with these other grades			
1221	and figure out what needs to be done.			
1222	Not utilize language in re Darwinism, natural selection or evolution.			
	Nothing in the proposed revisions for any grade are acceptable if they include			
1223				
	intelligent design or any other form of religious creationism by any other name, and if			
	references to evolution have been deleted or treat it as only a theory.			
	Don't revise.			
1264	Consider the claim that advances in science and technology produce products. There			
	should be more emphasis on science and tech being used to understand complex			
	processes and the natural world. Sustainability in development and growth should be			
	taught.			
1278	The key concepts go off on tangents not related to the standard or put an unnecessary			
	focus on irrelevant aspects of the standard.			

1303	Throw these terrible standards out and adopt instead the excellent Next Generation				
	Science Standards developed by STEM professionals.				
1305	The addition of the Key Concepts column add vocabulary words that would normally				
	be the decision of local districts. This column is unnecessary and superfluous.				
1309	I believe it would serve the children of AZ better if we would just adopt the Next				
	Generation Science Standards.				
1311	The sheer willful ignorance of removing Evolution from the curriculum is mind bogling.				
1511	It would put Az students at a vast disadvantage when moving to higher education. If				
	the superintendent's intention is to replace evolutionary theory with intelligent				
	design she should be removed from office and barred from working in education for				
	life. Do jot do this.				
	Get a scientific expert to rewrite the content or undo the edits.				
1337	The Internal Review provided excellent additional development and clarification. The				
	Internal Review should be adopted.				
	Clearly include the teaching of the concept of evolution.				
1366	Original language should remain				
1384	By 5th grade the observations related to climate change should certainly be				
	introduced. I'm not going to give explicit examples: there are many sources of such				
	material				
1403	Teach evolution. Evolution is science.				
	evolution should be included in all grades				
	I really wish that they hadn't changed so much. For example. As a 5th grade science				
	teacher, almost all of my Earth and Space science standards are now in the 6th grade				
	standards per the draft. That leaves an entire quarter's worth of curriculum which				
	now has to be changed and readjusted without any textbooks. Why did they move				
	and change so much of the previous standards' content to different grade levels? I				
	don't understand their reasoning.				
	Bring back the word evolution.				
1526	Climate change, evolution, and big bang cosmology should be in these standards.				
	See comments from previous on 5.L4U4.11				
	See above				
	Remove all religious references.				
1575	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL				
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.				
1579	This seems to be the grade level when evolution is introduced, which seems a bit late				
	in my opinion. Be that as it may, IT IS NOT A THEORY. Do NOT call it such, it is a fact.				
1583	Adding and maintaining teaching Evolution needs to be continued.				
	I would like to see more of the engineering design process and computational thinking				
	to be included in these standards and all the science standards. The earlier we get				
	students to start thinking this way the better off they will be. We need to be				
	preparing our students for a future of technology!				
1603	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.				
	Teach Science and facts in Schools not faith and religion.				
	Students need MORE SCIENCE in every level!				
	N/A				
	,		-		
	Sure up wording around evolution topic				
	Fix evolution standards.				
	See comment #9				
	Seems appropriate. No issues.				
1689	See earlier general comments about the importance of including Evolution as the				
	underlying explanation of all aspects of Biology.				
	More critical thinking.				
1789	No need. Go with the scientific evidence not creationism or religious indoctrination!!				
	· · · · · · · · · · · · · · · · · · ·	 		•	

	Please do not muddy the language regarding evolution		
1796	Restore all original language referencing evolution proposed by the committee of		
1	educators with expertise in science education.		
1799	Teach Evolution		
	The original document, before internal review, provided the necessary background		
1000			
	about what core concepts were expected in science education.		
1811	Revert all of Diane Douglas's changes.		
1859	Continue to teach evolution. Do not remove it to teach creationism.		
	Life Science standards should be strictly and wholly secular in nature and follow the		
	most up to date science community's recommendations, including the proven		
	theories on evolution and Darwinism. Our children need the opportunity to receive		
,			
,	competitive and challenging educations at a playing field level to the rest of the nation		
,	and international STEM markets.		
1918	Refer to my response to question 17.		
1922	Evolution is an accepted theory of science. The striking of this word and replacing it		
!	with more generic terminology is misleading and weakens the standards. The		
,	redefining of evolution as seeks to make clear the unity and diversity of living and		
,	extinct organisms is meaningless and not in alignment with accepted scientific		
,	thinking. The term and definition of evolution should remain as is. The reason for		
,			
,	renaming of the scientific method to science and engineering is dubious and is not in		
,	alignment with accepted scientific thinking. The scientific method is a process by		
,	which facts demonstrate proof to validate or disqualify any scientific theory. The term		
,	scientific method should remain as is. The elimination of the scientific theory of the		
,	origin of the universe, known as the Big Bang is also dubious and not in alignment with		
,	accepted scientific thinking. References to the Big Bang should remain as is.The		
	changes outlined above weaken the Arizona K-12 science standards and moves us		
	away from creating a system that provided world-class education. I oppose these		
1			
1	changes.		
,			
1926	Darwin, please.		
1934	Abstract concepts such as density and atomic structure may be challenging for fifth		
!	grade students.		
1945	Evolution is presented as a theory, which is technically incorrect, and the curriculum		
13.5	fails to mention other proposed explanations of origins and development.		
,	hans to mention other proposed explanations of origins and development.		
1053	Tb		
	Teach proper evolution		
	Evolution must continue to be taught		
1995	Evolution, not intelligent design, is based in science. Science, not religion, should be		
	taught in science classes.		
2000	Nothing should be taught within or alongside science that does not have the same		
!	factual basis that all the core concepts included in the draft have. Non-science or		
,	pseudoscience, has no place in factual science learning for our youth.		
,			
2008	Seems too early to introsuce the periodic table		
	In the introductory paragraph (pg 29) keep genetic information passed from parent to		+
2013			
1	offspring . Does the Dept. of Education know something that the rest of the scientific		
1	community does not?Also in P1U1, remove the word atom from the text. We also		
1	cannot see electrons, proton, neutrons, etc.		
2015	Students need to be introduced to basic scientific literature.		
2030	L4		
	Evolution		
	All standards need to be included.		
	No comment. see previous comments.		

2093	All of the grade level standards are less clear in this draft than they were in the 2004			
	version. Is there some way to organize updated scientific structure so it's not so			
	clunky and redundant?			
2096	Add social sciences and sustainability			
2107	Genetic is not something 5th graders can understand at their age			
	Evolution is not described nor incorporated accurately. This must be changed.			
	, , ,			
2115	Stronger emphasis on the scientific method. See my comments above for Grade Four.			
	,			
2152	We should only be covering evolution in school. Creationism should be kept separate			
	from schools.			
2156	Include all of the crosscutting concepts (CCC) that could be aligned with the			
2130	standard(s) in the actual table. The introduction gives guidance of the CCC's for			
	kindergarten, however they need to be integrated into the standards or they will not			
	be taught as deemed in the introduction (3-dimensional instruction)			
	se taught as decined in the indicator (5 dimensional instruction)			
2199	Understanding the theory of evolution is critical to the fields of medicine, biology, and			
	applied science like agriculture.			
2208	Understanding evolution is critical to the fields of medicine, biology, and applied	+		
2208	science like agriculture.			
2250	Send the standards back for review.			
	Explain evolution.			
	Include Evolution, omit Creationism and Intelligent Design .			
	Teaching creationism, or the misnamed intelligent design, is a violation of the			
22/3				
	separation of church and state. If you want your kid to learn fantasy send him to			
	Sunday school. Public schools are for fact based subjects that our kids will need to			
	navigate the future, not the failed, undefined, and contradictory philosophies			
2206	responsible for most of the earths problems.			
	Reinstate evolution.			
2306	Not commenting here because my complaint is about Diane Douglas trying to sneak in			
	creationism and Intelligent Design into the state science standards.			
22.45	D ( ) : 20 )			
	Refer reply in 20 above.			
2354				
2364	Refer to the Next Generation Science Standards. They NGSS are good standards.			
	These are not.			
	Needs to go back to review.			
2380	Keep religious beliefs out of science standards and retain scientifically accurate core			
	ideas of evolution and climate change at all grade levels.			
2383	Fifth graders are not ready for Reproduction standards. The earth science and matter			
	standards pre-K their interest and they love it! The skeletal and muscular system is far			
	more appropriate, Fifth graders are not mature enough for these standards and it will			
	lead to further investigations that they aren't ready to hear in school!			
	Please revise.			
2419	I Call for the restoration of the ASE's description of evolution, which is scientifically			
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend			
	revisions to the treatment of evolution in passages that seem to have been similarly			
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
	Stick to actual science and stop dumbing down our children!			
2465	Get rid of the knowing and using science and key concepts. Integrate more the three			
	dimensions of A Framework for K-12 Science Education.			
2471	evolution rather than theory of			
	Restore 5.P1U1.1 to original language.			
	too few standards			
	see above			
2518	I couldn't care less about Fifth Grade.			

2520 Omitting information on change over time, evolution and the big bang theory, completely negates the validity of this document.	
2529 Include health standard that includes body awareness and human sexual education	
2539 Same as previous comments	
2543 TEACH EVOLUTION!	
2559 In fifth grade, students apply their understanding of scale at micro levels as they investigate changes in matter and at macro levels as they investigate patterns in space systems and environments In the internal review, space systems and environments is crossed out. This statement does not make sense when it is crossed out.	
2582 All the standards should be aligned with each grade level and grow in rigor as the student moves through the higher grade levels. The content, though, should be similar in all grade levels.	
2607 Do not attempt to deny or water down the concepts of evolution.	
2615 STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!! Evolution is real!	
2618 I disagree with the minimizing of the role Evolution plays in human history and science education. It is not debated in the Science community. The science standards of Arizona need to be compatible with modern scientific fact, not biases or religion. If Evolution is being wrongfully omitted I grieve to know what other facts the Arizona Department of Education will omit from Education. That is limiting future generations of American thinkers, who face scientific truths of the world and use the scientific method for progression of humanity. Please revise the k-12 science standards to fit current scientific fact, so that future generations will posses the knowledge they have the right to recieve from their Education department. Thank you.	
2642 In a closed system should not be substituted for the words Universe	

Survey Question	42. What would you like the working group to consider as they revise the Physical Science Standards in the Fifth Grade Science Standards?					
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes	
89	No comment	no				
114	Evolution section is weak and watered down. It needs to be strengthened.					
124	n/a	no				
143	5.P1U1.1 in a closed system should be removedthe amount of matter stays the same, some may leave the system but but leaving does not change the fact that you end with the same about of matter that you started with when there is a chemical reaction					
145	5.P1U1.1take out atom- this is 5th grade and particle is perfect. take out closed system- not necessar.					
	We should go back to the standards that the committee created and adopt those, not Diane Douglas's internal review copy.	no				
162	Adopt NGSS standards	no				
170	Funding	no				
186	I really like #1- 5th grade is now really heavy on physical science standards. I am not trained on these specific science skills for all of these contents. There are concerns about adding this on if I don't understand it concepts myself.	no				
187	Teachers in 5hth grade are not trained for this particular area in standards.					
188	This seems to be a very heavy topic you added to the standards. There is concern that teachers are not trained enough to teach this to kids.					
	A more clearer perimeters to teach within.					
	Simplification.					
218	the standards specifically state a closed system. Is any focus supposed to be paid to open systems?					

252			
252			
265	Page 29In the first paragraph, remove the additions by ADE and restore it to what the		
	teachers had there. Unless it was a grammatical fix, it should be returned to what the		
	teachers asked for.Remove Key Concept ColumnUnder 5.P1U1.1 remove '(atom)' and		
	'in a closed system' and under 5.P3U3.5 remove 'and design solutions'. What did the		
	teachers have here? Unless it was a grammatical fix, it should be returned to what		
	the teachers asked for.		
281	Nothing		
	Nothing in particular.		
	Wait to Test.		
	no suggestions		
	There should be a balance between the 3 sections of science but physical science has		
300	6 standards, earth only has 2 and life has 3.		
262	So many Physical Science Standards! In the 4th Grade there's so many Earth & Space		
303			
	Standards. Perhaps balance the material out better so each grade level isn't as heavy in one type of science.		
265			
365	Consider that the current draft is very heavy in physical sciences for fifth grade.		
390	Please consider removing the key concepts section. This makes the model more like		
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and		
	inquiry based.		
466	The curriculum and resources available		
476	Assuming that students already have electricity and magnetism when there is no		
	guarantee that third grade will even teach it. At our school, primary levels rarely		
	teach science content.		
491	Where us STEM (Science, Technology, Engineering and Math)		
497	Separate them. Make them more specific.		
512	Remove the key concepts as this unnecessary and is more about implementation and		
	should NOT be the intention of the standards.		
1008	Scientific standards should be based on scientific research and nothing else. Replacing		
	and watering down the proven science of evolution is a disservice to our kids, a		
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO		
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.		
1020	Page 32, Table, Row labeled P4 – see comment 19 - #3.		
	Evolution is not just a theory, it is well established fact by science. Making Biological		
	evolution to Theory of Evolution is a step backwards not an improvement.		
	crossion to meety of crossion is a step sackwards not an improvement.		
1001	A fifth grader's level of understanding of the Theory of Evolution.		
	Standard 1: Atom is a word students at this grade level can memorize, not		
1092	understand. The addition of closed system doesn't make sense as inserted. The		
	amount of matter stays the same whether you are in a closed system or not - it just		
	doesn't all stay within the system. Huge difference. Please do not create student		
1112	misconceptions.		
	Evolution is a scientific fact! To remove or try to water the process down from our		
	education standards is unacceptable! If we want current or new high dollar business		
	to come to Arizona we must have high standards for our school curriculum. Good and		
	factual science is a must for our standards!		
	No comment		
1167	That school is for teaching facts, not for promoting the views of any particular		
	religious group.		
1196	See above		
1203	Those writing these standards should be experts in science and/or education.At a		 
	minimum they should understand what the word THEORY means in scientific		
	terms.Eg: Evolution is a confirmed scienfic theory and understanding modern biology,		
	agriculture, genetics and human development is impossible without reference to that		
	established theory		
1219	Get rid of intelligent design. Restore references to evolution.	l	

			1	
	I have never taught 5th grade		-	
1223	Nothing in the proposed revisions for any grade are acceptable if they include			
	intelligent design or any other form of religious creationism by any other name, and if			
	references to evolution have been deleted or treat it as only a theory.			
	Don't revise.			
1297	5.P1U1.1 says Analyze and interpret data to explain that matter of any type can be			
	subdivided into particles too small to see (atom) and in a closed system, if properties			
	change or reactions occur, the amount of matter stays the same. This standard			
	combines two big ideas (particulate nature of matter and conservation of matter);			
	they should be two different standards. Furthermore, , 6.P1U1.3 states Develop and			
	use models to demonstrate that matter is made up of smaller particles called atoms.			
	It seems that 6.P1U1.3 should be before 5.P1U1.1 and that 5.P1U1.1 should be in 6th			
	grade and just address conservation of matter.			
1303	Throw these terrible standards out and adopt instead the excellent Next Generation			
	Science Standards developed by STEM professionals.			
1304	I would put in more physical science since children can intuitively understand			
	Newton's laws at this age.			
1305	Analyze and interpret data to explain that matter of any type can be subdivided into			
	particles too small to see (atom) and, in a closed system, if properties change or			
	reactions occur, the amount of matter stays the same. The addition of the word atom			
	assumes that it is scientifically impossible to see an atom, which is not true.			
1309	I believe it would serve the children of AZ better if we would just adopt the Next			
	Generation Science Standards.			
1311	The sheer willful ignorance of removing Evolution from the curriculum is mind bogling.			
	It would put Az students at a vast disadvantage when moving to higher education. If			
	the superintendent's intention is to replace evolutionary theory with intelligent			
	design she should be removed from office and barred from working in education for			
	life. Do jot do this.			
	Get a scientific expert to rewrite the content or undo the edits.			
1337	The Internal Review provided excellent additional development and clarification. The			
	Internal Review should be adopted.			
	Clearly include the teaching of the concept of evolution.			
	Original language should remain			
	Teach evolution. Evolution is science.			
	evolution should be included in all grades			
1449	There is SO MUCH information to be covered in Physical Science for 5th grade and			
	very little in the other science subjects. I wish this was better balanced.			
	Ditto.			
	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.			
1526	Climate change, evolution, and big bang cosmology should be in these standards.			
1530	5.P3U3.6- Energy is always present. This standard should read Analyze and interpret	 		
1538				
	data to determine how and where energy is transferred when objects move.			
1553	See above			
	Remove all religious references.			
	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL			
13/3	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.			
	ADVANCEIVENT OF RELIGION IN FUBLIC SCHOOLS, SCIENCE ONET IN SCIENCE CLASS.			
1500	Adding and maintaining teaching Evolution needs to be continued.			
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.			
	Teach Science and facts in Schools not faith and religion.			
1641				
	No comment.			
	Fix evolution standards.			
	See comment #9			
1004	See comment #3			

				·
1681	N/a			
1694	Only facts based on repeatable scientific tests.			
	No need. Go with the scientific evidence not creationism or religious indoctrination!!			
1702	Please do not muddy the language regarding evolution			
	Please do not muddy the language regarding evolution			
1/96	Restore all original language referencing evolution proposed by the committee of			
	educators with expertise in science education.			
1799	Teach Evolution			
1800	The original document, before internal review, provided the necessary background			
	about what core concepts were expected in science education.			
1911	Revert all of Diane Douglas's changes.			
	Continue to teach evolution. Do not remove it to teach creationism.			
1890	Life Science standards should be strictly and wholly secular in nature and follow the			
	most up to date science community's recommendations, including the proven			
	theories on evolution and Darwinism. Our children need the opportunity to receive			
	competitive and challenging educations at a playing field level to the rest of the nation			
	and international STEM markets.			
1918	Refer to my response to question 17.		1	
	This is going to be very challenging for fifth grade students. Teachers need scaffolding			
1554				
	and ample support. These concepts (atomic structure or solutions/suspensions) are			
	going to be tough. Teachers also need to make sure there is TIME in their day to			
	teach Science as it is frequently pushed to the wayside in elementary settings.			
1953	Teach proper evolution			
	Evolution, not intelligent design, is based in science. Science, not religion, should be			
	taught in science classes.			
2000	Nothing should be taught within or alongside science that does not have the same			
2000	factual basis that all the core concepts included in the draft have. Non-science or			
	l ·			
	pseudoscience, has no place in factual science learning for our youth.			
	Ambivalent.			
2032	Evolution			
2043	All standards need to be included.			
2062	No comment.			
	see previous comments.			
	See items 38 and 41 above.			
2152	We should only be covering evolution in school. Creationism should be kept separate			
	from schools.			
2156	Delete the word atom in 5.P1U1.1 evidence for deleting this term can be found on			
	pg 108 of the Framework, Boundary: at this grade level, mass and weight are not			
	distinguished, and no attempt is made to define the unseen particles or explain the			
	atomic-scale mechanism Key terms are not accurate for 5th grade level (nice to			
	know, but not have to know)Key Terms are not necessary (appropriate) based upon			
	the Framework pg. 108 please delete terms			
	and trainers at pg. 200 picase delete terms			
2250	Condition about the different control.		1	
	Send the standards back for review.		1	
	Explain evolution.		1	
	Include Evolution, omit Creationism and Intelligent Design .		1	
2273	Teaching creationism, or the misnamed intelligent design, is a violation of the		1	
	separation of church and state. If you want your kid to learn fantasy send him to		Ì	
	Sunday school. Public schools are for fact based subjects that our kids will need to		Ì	
	navigate the future, not the failed, undefined, and contradictory philosophies		1	
	responsible for most of the earths problems.			
2306	Not commenting here because my complaint is about Diane Douglas trying to sneak in		İ	
	creationism and Intelligent Design into the state science standards.		1	
	or eathorism and intelligent besign into the state science standards.			
<b></b>	Defendants in 20 shares		1	
	Refer reply in 20 above.			

2264	Refer to the Next Generation Science Standards. They NGSS are good standards.			
2304	These are not.			
2270				
	Needs to go back to review.			
	Keep religious beliefs out of science standards and retain scientifically accurate core			
	ideas of evolution and climate change at all grade levels.			
	Please revise.			
	Science classes must include the scientific research published in high ranking, peer-			
	reviewed journals of climate change, evolution, and mechanisms of natural selection			
	if student are to have a better understanding of the scientific process, theories, and			
	major mechanisms at work in our world. It is also essential preparation for higher			
	education as these are subjects that will be taught heavily in entry level biology class,			
	sometimes spanning an entire semester, and make up more advanced science course			
	such as organic evolution. It is imperative to a student's education in science that large			
	scientific fields such as evolution and climate change research not be censored like			
	banned books.			
2419	I Call for the restoration of the ASE's description of evolution, which is scientifically			
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend			
	revisions to the treatment of evolution in passages that seem to have been similarly			
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may			
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)			
2428	Stick to actual science and stop dumbing down our children!			
2487	Restore 5.P1U1.1 to original language.			
2515	see above			
2518	I couldn't care less about Fifth Grade.			
2520	Omitting information on change over time, evolution and the big bang theory,			
	completely negates the validity of this document.			
	TEACH EVOLUTION!			
2607	Do not attempt to deny or water down the concepts of evolution.			
	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!			
	Evolution is real!			
	this section is good			
	1	1	L	<u> </u>

Survey	43. What would you like the working group to consider as they revise the Earth and Space Science Standards in the Fifth Grade Science Standards?					
Comment #	Public Comment	Item Addressed	Actionable Yes/No	Potential Changes	Refinement Note	
56	page 30 - 5.E2U2.8 - Gravity is NOT directed down to the Earth. Gravitational pull pulls					
	to the center, and if strong enough out of the other way (Black Hole). OnEarth, Gravity					
	feels like it is directed down, but it is not down . the word is misleading and teaching					
	inaccurate concept of gravity.					
89	No comment					
114	Evolution section is weak and watered down. It needs to be strengthened.					
124	n/a					
143	5.E2U2.8Why add towards the center of the spherical Earth, are we really allowing the					
	individuals that believe the earth is flat to influence our state standards?					
145	5E2U2.8 Must we feed into the flat Earth people?					
155	More focus with engineering and computer science in these areas.					
157	We should go back to the standards that the committee created and adopt those, not					
	Diane Douglas's internal review copy.					
	Adopt NGSS standards					
	Funding					
	to link to the physical science standards about matter, once again consider a standard					
	that addresses the atoms (elements) that make up the minerals that then make up					
	rocks that are the crust of the earth.					

		1		
186	The space topics have been limited. They don't teach as much as they used it. The			
	students used to get to spend a lot of time with space and kids at this age are so			
	fascinated with space and love it.			
187	I don't think that there is enough being taught in the new space standards. I think that			
	space is a fascinating subject and it really gets the student to engage.			
188	Bring back the space you removed.			
189	A more clearer perimeters to teach within.			
208	Simplification.			
218	5.E2U2.8 ignores the fact that other celestial bodies have a gravitational pull as well.			
	Do we focus on the gravitational pull of the sun in keeping the planets in orbit? What			
	about the moon and tides in relation to earth's gravity? I would recommend moving			
	several of the 6th grade standards to 5th grade so teachers can go deep into these			
	concepts rather than floating along the surface. Depth is better than breadth!			
	or topic to the design of the second of the			
252	n/c			
	Remove Key Concept ColumnsUnder the paragraph on Earth and Space Sciences,			
	remove 'position', under 5.E2U2.8 remove '(towards the center of the spherical			
	Earth)', and under 5.L3U1.9 remove 'can' and 'the' that were all added by ADE. What			
	did the teachers have here? Unless it was a grammatical fix, it should be returned to			
	what the teachers asked for.			
	Nothing			
	Nothing in particular.			
	Wait to Test.			
	no suggestions			
	Additional Earth and Space standards should be added and Physical standards should			
	be removed in order to create a balance for each discipline.			
	These standards are nicely written, developmentally appropriate and students find			
	these topics interesting in 5th Grade!			
365	It seems that the idea of gravity is repetitive when including it in physical science as			
	well as Earth and Space			
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
	inquiry based.			
	The curriculum and resources available			
	These standards seem to make a bit more sense.			
	Where is STEM - the engineering part			
497	Needs more depth. Make standards more clear as patterns in space can cover a lot of			
	information			
	Remove the key concepts as this unnecessary and is more about implementation and			
	should NOT be the intention of the standards.			
1001	Any change in curriculum de emphasizing the truth that evolution is a scientific fact,		$\exists$	
	evidenced by the replication of self copying dna in science labs and modern genetic			
	engineering efforts is wrong. Period. Evolution through natural selection over millenia			
	is a scientific fact.			
1008	Scientific standards should be based on scientific research and nothing else. Replacing		_	
	and watering down the proven science of evolution is a disservice to our kids, a			
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO			
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.			
1031	Climate change needs to be included			
	Page 29, Fifth Grade Introduction: patterns of Sun, moon, and starts(!) Note that,			
	unfortunately, other than in Second Grade there is nothing that mentions the Sun as a			
l I	star and the properties of stars (something that probably could have been introduced			
	earlier than high school)Page 30, 5.E2U2.8: As with grade 2, to me, 'gather' implies			
	making observations (and looking up as appropropriate) while 'obtain' can mean			
	looking it up in a book or on the Internet.			
	ויסטגוווק ונ עף ווו מ שטטג טו טוו נוופ ווונפרוופנ.			
			J	

1085	Evolution is not just a theory, it is well established fact by science. Making Biological		
	evolution to Theory of Evolution is a step backwards not an improvement.		
	, , , , , , , , , , , , , , , , , , , ,		
1001	A fifth grader's level of understanding of the Theory of Evolution.		
1092	Standard 8: the parenthetical statement does not add anything to this standard		
1113	Evolution is a scientific fact! To remove or try to water the process down from our		
	education standards is unacceptable! If we want current or new high dollar business		
	to come to Arizona we must have high standards for our school curriculum. Good and		
	factual science is a must for our standards!		
	factual science is a must for our standards!		
1165	No comment		
1167	That school is for teaching facts, not for promoting the views of any particular		
	religious group.		
	See above		
	Those writing these standards should be experts in science and/or education.At a		
	minimum they should understand what the word THEORY means in scientific		
	terms.Eg: Evolution is a confirmed scienfic theory and understanding modern biology,		
	agriculture, genetics and human development is impossible without reference to that		
	established theory		
	Get rid of intelligent design. Restore references to evolution.		
	Never taught 5th		
1223	Nothing in the proposed revisions for any grade are acceptable if they include		
	intelligent design or any other form of religious creationism by any other name, and if		
	references to evolution have been deleted or treat it as only a theory.		
	references to evolution have been deleted of treat it as only a theory.		
	Don't revise.		
1303	Throw these terrible standards out and adopt instead the excellent Next Generation		
	Science Standards developed by STEM professionals.		
	I believe it would serve the children of AZ better if we would just adopt the Next		
	Generation Science Standards.		
	The sheer willful ignorance of removing Evolution from the curriculum is mind bogling.		
	It would put Az students at a vast disadvantage when moving to higher education. If		
	the superintendent's intention is to replace evolutionary theory with intelligent		
	design she should be removed from office and barred from working in education for		
	life. Do jot do this.		
	Get a scientific expert to rewrite the content or undo the edits.		
1337	The Internal Review provided excellent additional development and clarification. The		
	Internal Review should be adopted.		
1339	Clearly include the teaching of the concept of evolution.		
1366	Original language should remain		
	Teach evolution. Evolution is science.		
	evolution should be included in all grades		
	I wish more of what used to be in 5th grade standards could be taken out of the 6th		
	grade earth and space science from the draft and added back in.		
1517	Ditto		
1518	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.		
	Climate change, evolution, and big bang cosmology should be in these standards.		
1526	chimate change, evolution, and big bang cosmology should be in these standards.		
	See above		
<u>15</u> 56	Remove all religious references.		
1575	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL		
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.		
į l	TO THE CONTROL OF THE COURT OF		
	Adding and maintaining teaching Evolution needs to be continued.		
1620	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.		
1628	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.  Teach Science and facts in Schools not faith and religion.		
	Teach Science and facts in Schools not faith and religion.		
1641	Teach Science and facts in Schools not faith and religion. N/A		
1641 1645	Teach Science and facts in Schools not faith and religion.		

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23/8]Needs to go back to review.	<u> </u>			
	2378	Needs to go back to review.		

2290	Keep religious beliefs out of science standards and retain scientifically accurate core		
2360	, ,		
2204	ideas of evolution and climate change at all grade levels.		
	Please revise.		
2390	Science classes must include the scientific research published in high ranking, peer-		
	reviewed journals of climate change, evolution, and mechanisms of natural selection		
	if student are to have a better understanding of the scientific process, theories, and		
	major mechanisms at work in our world. It is also essential preparation for higher		
	education as these are subjects that will be taught heavily in entry level biology class,		
	sometimes spanning an entire semester, and make up more advanced science course		
	such as organic evolution. It is imperative to a student's education in science that large		
	scientific fields such as evolution and climate change research not be censored like		
	banned books.		
2419	I Call for the restoration of the ASE's description of evolution, which is scientifically		
	accurate and pedagogically appropriate, unlike the proposed revision. I Recommend		
	revisions to the treatment of evolution in passages that seem to have been similarly		
	weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may		
	in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)		
2426	Make sure the students know that geological changes to the earth can take millions or		
	even billions of years.		
2428	Stick to actual science and stop dumbing down our children!		
2487			
2515	see above		
2518	I couldn't care less about Fifth Grade.		
2520	Omitting information on change over time, evolution and the big bang theory,		
	completely negates the validity of this document.		
2543	TEACH EVOLUTION!		
2607	Do not attempt to deny or water down the concepts of evolution.		
2615	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!!		
	Evolution is real!		
2618	I disagree with the minimizing of the role Evolution plays in human history and science		
	education. It is not debated in the Science community. The science standards of		
	Arizona need to be compatible with modern scientific fact, not biases or religion. If		
	Evolution is being wrongfully omitted I grieve to know what other facts the Arizona		
	Department of Education will omit from Education. That is limiting future generations		
	of American thinkers, who face scientific truths of the world and use the scientific		
	method for progression of humanity. Please revise the k-12 science standards to fit		
	current scientific fact, so that future generations will posses the knowledge they have		
	the right to recieve from their Education department. Thank you.		
	9 ,		
2642	this section is good		

Survey Duestion								
	Public Comment	Item Addressed	Actionable Yes/No	Potential Changes	Refinement Note			
89	No comment							
114	Evolution section is weak and watered down. It needs to be strengthened.							
124	n/a							
157	We should go back to the standards that the committee created and adopt those, not							
	Diane Douglas's internal review copy.							
162	Adopt NGSS standards							
170	Funding							
185	human development should not be allowed at this grade level							
186	Reproduction traits are not appropriate for 5th grade students. Some of these concepts are political and can become tricky in a 5th grade classroom.							

Interior and production is NOT grade level appropriate. Also some of the new concepts here are optical. Should not be taught in the dissessment.  187 Amove clears perimeters to treat within. As well ast seaching about reproduction in human and the control of the production of the p				
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				466
	+		They are excellent, supporting not only content knowledge scientific argumentation	
				4/2
and scientific practices.	 +			
476 Consider the major changes in the grade levels that you are making. In the current				476
standards, fifth grade has skeletal, muscular and nervous systems. Under the new				
standards, only reproduction, life cycles, and genetics are included. That's a really big			standards, only reproduction, life cycles, and genetics are included. That's a really big	
jump.			jump.	
497 reproduction traits may not be appropriate for all 5th grade students as human				497
growth and development varies by district and may not be taught until the end of the				.57
year. Is this in conjunction with the health standards? Is it different? Is it less specific?				
More information needs to be given	+			
512 Remove the key concepts as this unnecessary and is more about implementation and				512
		1	should NOT be the intention of the standards.	

516	Some of the topics lead to discussions about evolution I personally don't have a		
	problem with that, however, that is not always fully supported by the public.		
1008	Scientific standards should be based on scientific research and nothing else. Replacing		
	and watering down the proven science of evolution is a disservice to our kids, a		
	disservice to our teachers, and a disservice to our educational body. STOP TRYING TO		
	ERASE SCIENCE WITH YOUR PERSONAL RELIGIOUS BELIEFS.		
1017	7 The inclusion of evolution must be reinstated.		
1020	Page 32, Table, Row labeled L4 – see comment 19 - #4.		
	Please teach about evolution too		
1032	L4: The theory of evolution seeks to make clear the unity and diversity of living and		
	extinct organisms.See my comments on earlier page.		
1085	Evolution is not just a theory, it is well established fact by science. Making Biological		
	evolution to Theory of Evolution is a step backwards not an improvement.		
1091	A fifth grader's level of understanding of the Theory of Evolution.		
	Standard 10. Can is an inappropriate addition. Changes to an environment DO affect		
	the development of traits. Always! It may be at a negligible level, but it is ALWAYS at		
	some level.		
1113	We need to start teaching children about all aspects of life including evolution from		
	the very beginning.		
1164	1 1.L3U2.9, and the identical standard in grades 5 and 8 ignore that some plants,		
	notable two important desert plants, creosote and agaves, can also reproduce		
	through cloning, producing plants that are genetically identical to the parent plant.		
	through doming, producing plants that are generation, racinities to the parent plants		
116	No comment		
	7 That school is for teaching facts, not for promoting the views of any particular		
110.	religious group.		
1190	Environmental studies should include information regarding human impact.		
1130	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		
1196	See above		
	Those writing these standards should be experts in science and/or education.At a		
1200	minimum they should understand what the word THEORY means in scientific		
	terms.Eg: Evolution is a confirmed scienfic theory and understanding modern biology,		
	agriculture, genetics and human development is impossible without reference to that		
	established theory		
1210	Get rid of intelligent design. Restore references to evolution.		
	Never taught 5th		
	Nothing in the proposed revisions for any grade are acceptable if they include		
1225	intelligent design or any other form of religious creationism by any other name, and if		
	references to evolution have been deleted or treat it as only a theory.		
	references to evolution have been deleted of treat it as only a triebly.		
1224	Don't revise.		
	Please see my earlier comments (Qu 13/17) regarding the scope of evolution	-	
1232	education.		
	education.		L

1338	What follows is repeated for grades 3-5 and is based on the Distribition Table: L4:			
	The theory of evolution seeks to make clear the unity and diversity of living and			
	extinct organisms. 'This is imprecise. In each section this should read 'The study of			
	evolution seeks to demonstrateâ£!' First, evolution is an established scientific theory.			
	A scientific theory differs from the 'street' use of theory, which indicates a 'guess'			
	about causation or relationship. In contrast, a scientific theory can be tested and			
	potentially disproved. These tests are rigorous observational or experimental			
	attempts to demonstrate that the scientific theory cannot explain a pattern in nature.			
	Failure to disprove or refute the scientific theory increases confidence in it, although it			
	cannot be considered as proven. Two things distinguish evolution as a 'scientific			
	theory' from the more general use of 'theory.' First, as inferred above, it can be			
	tested and potentially falsified using experiment or observation. Second, it has been			
	tested time and time again, in many systems and with many organisms, for well over			
	150 years, and has withstood those tests. It has not been disproven. Thus it is the			
	STUDY of evolution â€" mechanisms of organic change, intrinsic or environmental			
	characteristics driving or influencing the nature or rate of change, etc. (studies of			
	which serve to 'test' the underlying theory) â€" that have provided evidence of 'the			
	unity and diversity of living and extinct organisms.'			
	, , , , , , , , , , , , , , , , , , , ,			
1220				
	Clearly include the teaching of the concept of evolution.			
	Original language should remain			
	Teach evolution. Evolution is science.			
	evolution should be included in all grades			
1449	Selective breeding, genetic information, adaptations, and mutations seem like heavy			
	subjects to be learned in 5th grade. I think this is too young a grade for some of these			
	subjects to be learned, not quite academically appropriate yet. Not sure how specific			
	or in depth we are supposed to get either since the standards are not specific			
	enough.And body systems which is only addressed in 3rd grade per the new science			
	standards draft should be added back into 5th or 6th grade as it was before. (5th			
	grade used to have Central Nervous system, brain, skeletal and muscular systems)			
	grade used to have central ivervous system, brain, skeletal and muscular systems)			
1500	The			
1500	They need to start learning about where they and everything came from, via evolution			
	Ditto			
	EVOLUTION IS ESSENTIAL SCIENCE ALL AGES SHOULD LEARN.			
1526	Climate change, evolution, and big bang cosmology should be in these standards.			
1538	5.L3U2.10 - The wording in this standard is teleological and suggest that these changes			
	can happen quickly. Remove the word the fromaffect the development of traits			
	Suggested revision: Construct an explanation based on evidence for how changed in			
	an environment can affect the development of traits within a population of organisms			
	over generations. This standard is also similar to 8.L4U2.11 and it is unclear what the			
	boundaries are for the 5th-grade version.			
	Southerness are not the still grade version.			
1550	See above			
	Remove all religious references.			
15/5	NO CREATIONISM! NO INTELLIGENT DESIGN. NO UNCONSTITUTIONAL			
	ADVANCEMENT OF RELIGION IN PUBLIC SCHOOLS. SCIENCE ONLY IN SCIENCE CLASS.			
1579	This seems to be the grade level when evolution is introduced, which seems a bit late			
	in my opinion. Be that as it may, IT IS NOT A THEORY. Do NOT call it such, it is a fact.			
	Teach it as a fact.	 		
1583	Adding and maintaining teaching Evolution needs to be continued.		_	
	See answers for Kindergarten. Actual SCIENCE would help. NOT RELIGION.			
	Teach Science and facts in Schools not faith and religion.			
	N/A			
	No comment.			
	1			

-				
1660	Fix evolution standards.			
1664	See comment #9			
	See first comment			
	De-emphasis of evolution does not advance science education. There is no scientific			
1073	l · · ·			
	controversy about evolution.			
1681	,			
1689	See earlier general comments about the importance of including Evolution as the			
	underlying explanation of all aspects of Biology.			
1694	Only facts based on repeatable scientific tests.			
	Use the word evolution and not theory of evolution			
	The unity and diversity of organisms, living and extinct, is the result of evolution.			
1707	The unity and diversity of organisms, living and extinct, is the result of evolution.			
1789	No need. Go with the scientific evidence not creationism or religious indoctrination!!			
1793	Please do not muddy the language regarding evolution			
1795	Evolution has been amply confirmed by science, just like photosynthesis or relativity.			
	It's absurd to use ambiguous or tentative language. These are very bad revisions that			
	were made, they clearly weren't endorsed by the writing committee, and it's			
	somewhat disrespectful to them to make these changes.Please don't avoid eduction			
	· · · · · · · · · · · · · · · · · · ·			
	on evolution.			
1796	Restore all original language referencing evolution proposed by the committee of			
	educators with expertise in science education.			
1799	Teach Evolution			
1800	The original document, before internal review, provided the necessary background			
	about what core concepts were expected in science education.			
	about mist core concepts were expected in science education			
1011	Revert all of Diane Douglas's changes.	+		
	Continue to teach evolution. Do not remove it to teach creationism.			
1875	Include direct mention of evolution and scientifically rigorous treatment of evolution!			
1883	include evolution			
1890	Life Science standards should be strictly and wholly secular in nature and follow the			
	most up to date science community's recommendations, including the proven			
	theories on evolution and Darwinism. Our children need the opportunity to receive			
	competitive and challenging educations at a playing field level to the rest of the nation			
	and international STEM markets.			
1918	Refer to my response to question 17.			
1926	Darwin, please.			
1929	5.L3U1.9 'patterns between the offspring' doesn't make grammatical/wording			
	sense.5.L3U2.10 Biology distinguishes between 'development' within the life of			
	individual organisms, i.e. going from egg to adult, and 'evolution', which describes			
	change at a population level over generations. It seems here what is meant is			
	' '			
	evolution, not development, so the term should be replaced. (that would match with			
	key concepts and mention of population, as well as long term patterns and genetic			
	change mentioned in adjoining standards)			
1934	I like these a lot.			
	Strengthen the teaching of evolution and global change to reflect the science of these			
	subjects.			
1045	Evolution is presented as a theory, which is technically incorrect, and the curriculum			
	fails to mention other proposed explanations of origins and development.			
1953	Teach proper evolution			
1968	keep the evolution.			
1975	By 5th grade students need to understand the evolution is a fact. Not an opinion or			
	theory.			
1005	Evolution, not intelligent design, is based in science. Science, not religion, should be			
	Later action, most interingent according based in solution, solution, most religion, should be			
	taught in science classes.	l l		

2000	Nothing should be taught within or alongside science that does not have the same		
	factual basis that all the core concepts included in the draft have. Non-science or		
	pseudoscience, has no place in factual science learning for our youth.		
2013	Evolution is NOT a theory!!!!Evolution as a theory is a religious belief, not a scientific		
	concept.		
2015	Ambivalent.		
2030	L4		
2032	Evolution		
2043	All standards need to be included.		
2062	Evolution needs to be added back in as fact.		
2079	see previous comments.		
2093	See items 38 and 41 above.		
2111	See previous comments on the treatment of evolutionary biology.		
2112	Evolution is not described nor incorporated accurately. This must be changed.		
2152	We should only be covering evolution in school. Creationism should be kept separate		
	from schools.		
2156	5.L3U2.10 Revise standard to Construct an explanation based on evidence that		
	changes in an environment can affect the frequencies of traits in a population of		
	organisms. Reasoning: biologist mainly apply development to the life process of an		
	individual organism, not to changes of the frequencies of traits in populations		
2199	Understanding the theory of evolution is critical to the fields of medicine, biology, and		
	applied science like agriculture.		
2203	Don't eliminate references to evolution, as it's necessary to understand life sciences.		
2208	Understanding evolution is critical to the fields of medicine, biology, and applied		
	science like agriculture.		
2210	Evolution must be taught		
2259	Send the standards back for review.		
2262	Explain evolution.		
2265	Include Evolution, omit ANY MENTION OF Creationism and Intelligent Design .		
2273	Teaching creationism, or the misnamed intelligent design, is a violation of the		
	separation of church and state. If you want your kid to learn fantasy send him to		
	Sunday school. Public schools are for fact based subjects that our kids will need to		
	navigate the future, not the failed, undefined, and contradictory philosophies		
	responsible for most of the earths problems.		
2286	Reinstate evolution.		
2292	This seems abstract for fifth grade: Construct an explanation based on evidence that		
	changes in an environment canaffect the development of the traits in a population of		
	organisms.Consider deleting that. What would this look like for fifth grade?		
2306	Not commenting here because my complaint is about Diane Douglas trying to sneak in		
	creationism and Intelligent Design into the state science standards.		
2345	Refer reply in 20 above.		
2354			
2364	Refer to the Next Generation Science Standards. They NGSS are good standards.		
	These are not.		
2378	Needs to go back to review.		
2380	Keep religious beliefs out of science standards and retain scientifically accurate core		
	ideas of evolution and climate change at all grade levels.	 	
2384	Please revise.		
	·		·

	Science classes must include the scientific research published in high ranking, peer- reviewed journals of climate change, evolution, and mechanisms of natural selection if student are to have a better understanding of the scientific process, theories, and major mechanisms at work in our world. It is also essential preparation for higher education as these are subjects that will be taught heavily in entry level biology class, sometimes spanning an entire semester, and make up more advanced science course such as organic evolution. It is imperative to a student's education in science that large scientific fields such as evolution and climate change research not be censored like banned books.  If evolution is a possible discussion, please word it appropriately. It is not a theory any		
2410	longer.		
2419	I Call for the restoration of the ASE's description of evolution, which is scientifically accurate and pedagogically appropriate, unlike the proposed revision. I Recommend revisions to the treatment of evolution in passages that seem to have been similarly weakened (e.g., the omission of absolute ages in 8.E1U1.6, the use of the word may in HS+B.L4U1.19, the failure to use the e-word in HS+B.L4U2.20)		
2428	Stick to actual science and stop dumbing down our children!		
2469	5.L3U2.10 currently reads Construct an explanation based on evidence that changes in an environment can affect the development of the traits in a population of organisms. This is inaccurate, confusing development with evolution . Development occurs within an organism, evolution does not. I think it should read Construct an explanation based on evidence that changes in an environment can affect the evolution of the traits in a population of organisms.		
2487	N/A		
2490	Topics of genetic inheritance and effects of the environment on traits should be delayed until high school.		
2515	see above		
2518	I couldn't care less about Fifth Grade.		
2520	Omitting information on change over time, evolution and the big bang theory, completely negates the validity of this document.		
2539	How will this create a solid knowledge without taking into account cells, cell division, and genetic trait linkage to chromosomes and DNA?		
	TEACH EVOLUTION!		
2605	Same comments as 2nd grade		
2607	Do not attempt to deny or water down the concepts of evolution.		
2615	STOP DENYING OUR KIDS A FULL EDUCATION WITH YOUR RELIGIOUS AGENDA!!! Evolution is real!		
2642	Language on evolution needs to make it clear what evolution is and why it is important, not to obscure that information.		
2653	I would like there to be an emphasis on this age group going outside, gardening, observing, going to enriching places in Science like the Botanical Garden, the zoo, National Parks, Science Museums, Outdoor classrooms.		

Public Comment Non-Survey	Public comment received outside of the survey						
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes		

y tion	46. What would you like the working group to consider as they revise the Sixth Grac	le Science Standards?			
	as and, revise the sixth order	2.2.3			
nment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
7	Should focus on life science!	No	K-12 Progression		
	the word forces is used a lot. it should be force not forces				
56		Yes	Other	<b>Grammatical Change</b>	
	Some of these standards our students need to know how to divide and multiply and			Take out	
	our students do not know how to do that in 6th grade			mathematical	
				wording in Key	
60		Yes	Key Concepts	Concepts	Standard 6.P3U2.4
	There needs to be clearer emphasis on the use of the metric system in all data				
65	collection and analysis in science at all levels.	Yes	Introduction	Add to Intro	
	Evolution section is weak and watered down. It needs to be strengthened.				
114	_	No	Standards		Not in 6th grade standards
	Standard 6.P4U3.5 should be moved to 8.P4U3.5, because it does not connect well				-
	with 6th grade content and would go better with 8th grade content.				
124		Yes	K-12 Progression		See comment #177
	There are many aspects of the current standards that were cut that are important.		==		
137	· ·	No	K-12 Progression		
	I think it is best to keep it on one topiclife science and weather	No	K-12 Progression		
	Opening paragraph must be returned to original.	No	K-12 Progression		
110	We should go back to the standards that the committee created and adopt those, not	110	K 12 Frogression		
157	Diane Douglas's internal review copy.	No	Other		
137	Why physical science standards will be difficult for 6th graders to understand; not	110	Other		
	mature enough; not enough background/prior knowledge; most haven't had Science				
	in elementary school (elem teachers tend to put Science and Social Studies to the side			Change	
	· · · · · · · · · · · · · · · · · · ·			"Demonstrate" to	
163	to focus on Math and ELA).	Vas	Ctandards	"Represent"	Standard C D1112 2
162		Yes	Standards	Represent	Standard 6.P1U2.3
	I trust the work of Science Specialists who devoted their time and energy to improve				
4.00	Arizona's science standards and request their direct incorporation as new standards.				
168		No	Standards		
170	Funding	No	Other		
	Grade 6 needs to be addressed as it has 16 standards compared to an average of 10-				
	12 for other grade levels. When one begins to unwrap those standards, there are				
	numerous learning targets. There will simply be too many learning targets to				
	effectively teach to the degree of depth desired. Reeves (2002) suggests having no				
	more than 13 power standards to determine what is most important. This, in theory,				
	means three standards in 6th grade may not be addressed ever.			Consider moving	
177		Yes	Standards	standards	
	Where is the connection between each sub-categoryWhat is he big idea/unit/overal			Label the Cross-	
	theme? It is unclear, the concepts are a little randomly thrown together.			Cutting Concepts in	
183		Yes	Other	the intro	6-8th grade headings
185	more specifications	No	Key Concepts	Re-write	
187	I think that it is a little much.	No	Other		
192	Moderate revisions	No	Other		
194	#NAME?	No	Other		Find comment in the survey
203	The Key concepts should be dropped from every grade level.	Yes	Key Concepts	Re-write	See comment #164
	Simplification.	No	Other		Too vauge

210	The standards should involve just the life science units	No	K-12 Progression		
	I'd like us to implement the Next Generation Science Standards, already in use in	-			
211	many states and districts. https://www.nextgenscience.org/	No	Other		
	Many districts consider 6th grade to be part of the elementary school rather than the				
	middle school. The number of standards they are expected to cover at the detail				
	indicated seems too much to cover in one year. Several of the 6th grade standards				
	are more appropriate for lower grade levels as it would allow depth of instruction				
240	rather than breadth of instruction. This would also allow for depth in 6th grade, too.	v	K 42 D		6
218		Yes	K-12 Progression		See comment #177
	Sixth grade should cover related topics like Earth, Space and Environmental Sciences.				
219		No	K-12 Progression		
	Teaching about cells and the atom within the same year will be too much for 6th				
	graders. They are two abstract concepts that students will have difficulty				
250	understanding.	No	K-12 Progression		
	There is too large of a gap in between when the students start learning about atoms				
258	and then start learning about stoichiometry.	No	K-12 Progression		
	Page 9, 21, 33Remove last sentence: 'Suggestions for key conceptsor maximum				
	content limits. Pages 12, 15, 19, 24, 28, 31, 37, 41, 45Remove these connections - as				
	soon as standards change the Science standards need to be changed. Each group of				
	standards needs to be stand alone. If ADE wants to have another document that				
	does a crosswalk of all of the standards in another document, that would be more			Revise last sentence	
	appropriate than the Science Standards.			of the grade level	
265		Yes	Introduction	introduction	6-8th grade introductions
203		163	introduction	introduction	0-8th grade introductions
	I think it is great to start them out early with supporting their reasoning. Our purpose				
	is for students to think. The internet has made everyone lazy so the crosscutting				
	concept of problem solving should be in every grade level.				
279		No	Other		
281	Nothing	No	Other		
	They seem to split hairs. E1U1.6 fits better as a concept in the 7th grade hydrological				
291	cycle than with anything in the 6th grade standards.	Yes	K-12 Progression		See comment #177
292	Nothing in particular.	No	Other		
321	kits align to standards	No	Curriculum		
335	no suggestions	No	Other		
340	Earth science all year is perfect for this age group.	No	K-12 Progression		
	I would like the working group to update the current (2004) standards, not gut and		_		
348	rewrite them.	No	Other		
	Look at the groupings of concepts, they are not cohesive. The standards are				
	progressive in nature from fifth grade to sixth grade but I don't think that sixth				
	graders are ready cognitively to grasp the new physical science standards. The				
	importance of basic background concepts/information will be key to student success				
	and needs to be addressed. Some type of document or articulation needs to be				
	included to show the correlation of math concepts needed for students to be				
	successful in reaching the science standards.				
366		Yes	Key Concepts		See comment #60
	Some type of document or articulation needs to be included to show the correlation				
	of math concepts needed for students to be successful in reaching the science				
367	standards.	Yes	Key Concepts		See comment #60

	I am not selecting for grades 6 and up as I don't feel I have enough experience to			
377	make recommendations for this level student.	No	Other	
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
390	inquiry based.	Yes	Key Concepts	See comment #203
	With the expectations placed on teachers for ELA Blocks, Math instruction, and			
	intervention time, I don't know how on earth 50 daily minutes of instruction can be			
	dedicated to Science. Yeah, yeah, integration - but when students are constantly			
	pulled out of classes and moving for different services and programs, that makes			
	integration a real challenge. Or some students simply lose out on instruction.			
418		No	Curriculum	
	Grade levels should be specialized so content makes sense and deeper thinking can			
	take place. When you stretch out a curriculum too much you lose that deep			
433	understanding	No	K-12 Progression	
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	Yes	Key Concepts	See comment #203
	Space science should remain in 7th or 8th grade. The abstract concepts need a			
527	foundation which is not there.	No	K-12 Progression	
551	Reverting to previous standards.	No	Other	State Department Directive

urvey Juestion	47. What would you like the working group to consider as they revise the Physical Science Standards in the Sixth Grade Science Standards?						
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes		
7	Should focus on life science.	No	K-12 Progression				
	page 34 - 6.P3U2.4 - force not forces						
56		Yes	Other	Grammatical change			
	Our kids will need to have a background knowledge of atoms and who is going to						
60	teach them	No	Other				
	In 6.P1U1.1, the key concepts of buoyancy and density do not fit within the standard						
	of states of matter. They are important concepts, but have nothing to do with change						
108	of state. 6.P4U3.5 implies energy is a thing.	Yes	Key Concepts	Re-write			
	Sixth grade students will have a hard time to think abstractly about small particles						
	such as atoms. Not developmentally appropriate. Move to 8th grade.						
111		Yes	Key Concepts		See comment #205		
	Evolution section is weak and watered down. It needs to be strengthened.						
114		No	Standard		Not addressed in 6th grade		
	We should go back to the standards that the committee created and adopt those, not						
157	Diane Douglas's internal review copy.	No	Other				
162	Adopt NGSS standards	No	Other				
170	Funding	No	Other				

				ı	
	Potential and Kinetic energy is random, does not flow with the rest of the unit and				
	states of matterThese concepts are also way above a 6th grader's level of				
	understanding. Many of these concepts are currently in the high school level classes.			Consider moving	
183		Yes	Standard	standard	Standard 6.P4U3.5
	I don't think its appropriate for this Grade level I think it should be left for 5th graDE				
187		No	K-12 Progression		
	-potential and kinetic energy is random-does not flow with the rest of the unit and				
	states of matter-concepts are not cohesive-way above 6th grade level.				
194		Yes	Standard		See comment #183
208	Simplification.	No	Other		
218	The focus on atomic structure and effects seems appropriate for 6th grade.	No	Other		
	Sixth grade should cover related topics like Earth, Space and Environmental Sciences.				
219		No	K-12 Progression		
	Students are not ready for the Bohr Model, Atom Structure, or John Dalton.				
245		Yes	Key Concepts		See comment #205
250	Teaching the Bohr model should be taught in 8th grade.	Yes	Key Concepts		See comment #205
	The atoms conversation should be moved to 7th grade.	Yes	K-12 Progression	Consider	
	Page 34In the first paragraph, remove the additions by ADE and restore it to what the				
	teachers had there. Unless it was a grammatical fix, it should be returned to what the				
265	teachers asked for Remove Key Concept Column	Yes	Key Concepts		See comment #205
	Nothing	No	Other		
	Nothing in particular.	No	Other		
	Field Trips which would support overall learning and incorporate necessary life skills				
321	to work effectively within a team model.	No	Curriculum		
	no suggestions	No	Other		
	Hard to see the learning progression in this area and how concepts are connected,				
	also science concepts are too advanced for 11-12 year olds. Brain development needs				
	to be taken into account and also a reasonable time frame to teach these advanced			Remove Bohr Model.	
366	concepts.	Yes	Key Concepts	John Dalton	
300	The vertical articulation needs to be considered to ensure students have the pre-		ney concepts	Join Date.	
	requisites needed to continue seamlessly into their next year of physical Science				
367		No	K-12 Progression		
307	Please consider removing the key concepts section. This makes the model more like	110	K 12 1 1061 C331011		
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
390	inquiry based.	Yes	Key Concepts		See comment #205
	Work on specializing current standards and skills. Not spacing them out.	No	Other		State Department Directive
	Engineering	No	Other		Too vauge
491	Remove the key concepts as this unnecessary and is more about implementation and	INO	Otilei		100 vauge
E13		Voc	Koy Conconts		See comment #205
	should NOT be the intention of the standards.  Creation of energy / Laws of motion / Temperature, heat	Yes No	Key Concepts K-12 Progression		See Comment #205
	57.	No	Curriculum		
551	Providing resources, materials, and key vocabulary terms.	INO	Curriculum		

Survey	
,	
Question	48. What would you like the working group to consider as they revise the Earth and Space Science Standards in the Sixth Grade Science Standards?
2000001	170. What would you like the working group to consider as they revise then Earth and Space Science Standards in the Sixth Grade Science Standards:

nent #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
7	Should focus on life science.	No	K-12 Progression		
	page 35 - 6.E2U1.7 - force not forces				
56		Yes	Standard	Grammatical change	
	Evolution section is weak and watered down. It needs to be strengthened.				
114		No	Standard		Not addressed in 6th grade
	6.E2U1.8 analyze and interpret data When you analyze data aren't you interpreting				
	it? This seems redundant to me. I would recommend removing the word interpret.				
143		No	Standard		Taken from the Framework
	More focus with engineering and computer science in these areas.				Computer science will have own
155		No	K-12 Progression		standards
	We should go back to the standards that the committee created and adopt those, not				Do not know which ones were
157	Diane Douglas's internal review copy.	No	Other		changed
	1111	No	Other		
170	Funding	No	Other		
187	Is appropriate	No	Other		
	#NAME?				
194		No	Other	Find actual comment	
208	Simplification.	No	Other		Too vauge
	The standards on gravitational force and the solar system better align with the 5th				
	grade standards. rather than spreading them out, put them together. Depth is better				
218	than breadth!	No	K-12 Progression		
	Sixth grade should cover related topics like Earth, Space and Environmental Sciences.				
219		No	K-12 Progression		
250	This should be taught in 7th grade	No	K-12 Progression		
	Page 35Remove Key Concept Column			Re-write key	
265		Yes	Key Concept	concepts	
	Need to add climate change and humans impact on the planet. Students need to				
274	learn early the effect they are having on this system.	No	Curriculum		
281	Nothing	No	Other		
291	6.E2U2.11 is the same standard and concept as 5.E2U1.7.	No	Standard		
-	I think space is to broad a topic to be taught in sixth grade. Their comprehension of it				
292	will become more real in 7th.	No	K-12 Progression		
321	Continue with SIMS field trip within Mesa Public District	No	Curriculum		
335	no suggestions	No	Other		
	The vertical articulation needs to be considered to ensure students have the				
	necessary background knowledge needed to continue seamlessly into their next year				
366	of Earth and Space Science.	No	K-12 Progression		
	The vertical articulation needs to be considered to ensure students have the pre-				
	requisites needed to continue seamlessly into their next year of Earth Science				
367		No	K-12 Progression		
	Please consider removing the key concepts section. This makes the model more like				
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
390	inquiry based.	Yes	Key Concept		See comment #254
	Remove the key concepts as this unnecessary and is more about implementation and				
512	should NOT be the intention of the standards.	Yes	Key Concept		See comment #254

Bodies of Water water / energy from the sun are a substantial foundation needed!			
527 (sun, moon, earth)	No	Curriculum	
551 Providing resources, materials, and key vocabulary terms.	No	Curriculum	

ey tion	49. What would you like the working group to consider as they revise the Life Scier	nce Standards in the Six	th Grade Science Standar	ds?	
	12. What would you like the working group to consider as they revise that the saler	lee Standards in the Six	Circulate Science Standar	43.	Π
ment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	For 6.L1U2.15 Construct an explanation to demonstrate the relationship between				
	major cell structures and cell functions (plant and animal). the major divisions in				
	types of cells are between prokaryotes and eukaryotes, not plants and animals.				
65	Bacterial cell structure needs to be included here.	No	Curriculum		
	Evolution section is weak and watered down. It needs to be strengthened.				
114		No	Other		Not addressed in 6th grade
	6.L1U2.13Carry out an investigationDo 6th grader have the developmental ability to			Change "carry out an	
	safely carry out this investigation and are 6th grade classrooms equipped with the			investigation" to	
	safety protocols to do this? I know our district is not			"Develop and use a	
143		Yes	Standard	Model"	Standard 6.L1U2.13
	6L1U2.13 This is not appropriate on several levels. 1. Our schools are not set up for				
	students in 6th grade to do these kinds of investigations. 2. Develop and Use a model				
	to explain that all living things would be much more appropriate.				
145		Yes	Standard		See comment #143
	We should go back to the standards that the committee created and adopt those, not				Do not know which lines were
157	Diane Douglas's internal review copy.	No	Other		changed
162	Adopt NGSS standards	No	Other		
170	Funding	No	Other		
	Why does photosynthesis get thrown into the other concepts because it has a word			Rewrite to	
	cell . It should be it's own concept.			"Construct an	
				explanation for the	
				process of	
				photosynthesis in	
183		Yes	Standard	cells"	Standard 6.L1U2.13
	#NAME?			Review actual	
194		No	Other	comment	
208	Simplification.	No	Other		Too vauge
218	The focus on photosynthesis seems out of place in this area.	Yes	Standard		See comment #183
	Sixth grade should cover related topics like Earth, Space and Environmental Sciences.				
219		No	K-12 Progression		
250	This should stay the same	No	Other		Too vauge
_	Page 36Under 6.L1U2.13 - remove 'Carry out an investigation to provide evidence'			Place "Plant and	
	and under 6.L1U2.15 remove '(plant and animal)'. What did the teachers have here?			Animal cells"	
	Unless it was a grammatical fix, it should be returned to what the teachers asked for.			inserted after the	
265		Yes	Standard	verb.	See also comment #143
	Add investigate each body system and how they interact with one another to				
274	maintain life.	No	Curriculum		
281	Nothing	No	Other		

	These standards are the only set that seem well put together and thought out to be			
291	used as a flowing unit by teachers.	No	Other	
292	Nothing in particular.	No	Other	
321	None	No	Other	
335	no suggestions	No	Other	
	This section of the 6th grade standards appears to be the most cohesive of the three.			
	Background knowledge and essential knowledge from prior grades needs to be built			
366	upon.	No	Other	
	The vertical articulation needs to be considered to ensure students have the pre-			
	requisites needed to continue seamlessly into their next year of Life Science			
367		No	K-12 Progression	
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
390	inquiry based.	Yes	Key Concepts	See comment #183
	Once again, why is evolution missing? This is a central idea in biology and yet the 6th			
413	grade standards leave it out completely.	No	Curriculum	
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	Yes	Key Concepts	See comment #183
527	structure and functions of living organisms.	No	Curriculum	
551	Providing resources, materials, and key vocabulary terms.	No	Curriculum	

irvey					
estion	51. What would you like the working group to consider as they revise the Seventh G	rade Science Standard	s?		
	Dublic Courses at	A -+1  -  - \/ /B!	Itaaa Aalalaaaaa	Constant Char	Committee Notes
mment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
7		No	K-12 Progression		
	There needs to be clearer emphasis on the use of the metric system in all data				
65	collection and analysis in science at all levels.	Yes	Introduction	Add to introduction	
	Evolution section is weak and watered down. It needs to be strengthened.				
114		No	Curriculum		
123	Maybe adding back Space and removing Physical	No	K-12 Progression		
	I think it is best to keep it earth science and similar throughout the year for better				
140	understanding	No	K-12 Progression		
	While looking at the linear distribution of Earth Space Science standards (7/8th grade)				
	I became concerned with the standard 7.E1U2.5According to the explanation:				
	Students should develop an understanding of the role of hear energy in warming the				
	Earth and driving cycles in weather and climate. How does the standard 7.E1U2.5				
	help them do this? Plate tectonics should not be included in these standards.				
143		Yes	Standard	Move to 8th grade	Standard 7.E1U2.5
145	Go back to the original first paragraph	No	Other		Too vauge
	We should go back to the standards that the committee created and adopt those, not				
157		No	Other		Do not know what was changed
	Newton's Laws are difficult to learn; again-maturity isn't there yet; would have to				0
162	reteach the concepts when you get to 8th grade.				
	I trust the work of Science Specialists who devoted their time and energy to improve				
	Arizona's science standards and request their direct incorporation as new standards.				
168	· · · · · · · · · · · · · · · · · · ·	No	Other		
		No	Other		
170	Add a standard that once again goes addresses learning about how rocks form and	140	Other		
	how to identify them. Even if it has been covered in the earlier grades, I guarantee				
	they will not remember how to go through the process of identifying them. This				
	provides great opportunities to teach many of the skills needed in doing science:				
470	observation, testing, recording data and identification.				
172		No	Other		
187		INU	Other	Re-write key	
202	The Key concepts should be dropped from every grade level.	Vac	Vay Canagata	,	
203		Yes	Key Concepts	concepts	T
		No	Other		Too vauge
210	6 67 7	No	K-12 Progression		
	I'd like us to implement the Next Generation Science Standards, already in use in				
	7 0 0	No	Standards		
219	7th grade should cover just Life Science. Please just adopt NGSS standards.	No	Standards		

		Т	ı		T
	Concern: Teaching Physics Content in 7th GradeTeachers believe that the students in				
	7th grade do not have enough math content knowledge to adequately perform in				
	physics. Additionally, rate of change is a concept generally taught in 8th grade and				
	directly relates to the physics formulas. Solution: Keep Physics Standards in 8th				
	GradeOur PLC strongly believes that physics is a topic much better suited for 8th				
	grade curriculum. All of us who have taught 8th grade for many years know that even				
	in 8th grade, students struggle with deciphering the formulas and understanding the				
	rate of change of speed or velocity. Additionally, we believe that any Earth science				
	concepts should continue to be taught in 7th grade so that there is ample time to			To address public	
	continue to teach physics in 8th. Research for Concern/Solution:Tina Chuek			concern regarding	
	(ell.stanford.edu) suggests providing student learning experiences that integrate skills			grade level content:	
	and knowledge across grade levels. Keeping physics in 8th grade will ensure an			Move 7.P3U2.3 to	
	integrated approach to learning for students. Additionally, see 8.EE.B.5 and 8.F.B.4			8th & move	
	and their correlation with Motion and Forces.			8.P4U1.3 and	
	and their correlation with Motion and Forces.			8.P4U1.4 to 7th	
222		Yes	Standard	grade	
222	Math concepts may be to difficult and some of the topics might complement areas	163	Standard	Remove reference of	
220	R covered either before or after grade 7	Yes	Key Concepts	math	
230	They aren't ready for the math involved in physics the connection could be much	res	key concepts	IIIdui	
245	greater if they physics was left in 8th grade and the space science in 7th grade.	Vac	Standard		See comment #222
		Yes			See comment #222
250	7th grade should continue to focus on earth and space science.	No	K-12 Progression	D	
25-	Ensure grade level math is supportive		14.	Remove reference of	
257		Yes	Key Concepts	math	
	Page 9, 21, 33Remove last sentence: 'Suggestions for key conceptsor maximum				
	content limits. Pages 12, 15, 19, 24, 28, 31, 37, 41, 45Remove these connections - as				
	soon as standards change the Science standards need to be changed. Each group of				
	standards needs to be stand alone. If ADE wants to have another document that				
	does a crosswalk of all of the standards in another document, that would be more			Revise last sentence	
	appropriate than the Science Standards.			of the grade level	
265		Yes	Introduction	introduction	6-8th grade introductions
	I think it is great to start them out early with supporting their reasoning. Our purpose				
	is for students to think. The internet has made everyone lazy so the crosscutting				
	concept of problem solving should be in every grade level.				
279		No	Other		
281	Nothing	No	Other		
292	Nothing in particular.	No	Other		
335	no suggestions	No	Other		
340	Life science is perfect for this age group	No	Other		
	As stated previously, moving force and motion to this grade level makes not sense. It				
	needs to stay with the 8th grade curriculum. Also, the age of the earth curriculum				
	makes more sense being associated with fossils and plate tectonics.				
373	·	Yes	Standards		See comment #222
	Please consider removing the key concepts section. This makes the model more like				
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
390	Dinquiry based.	Yes	Key Concepts		See comment #203
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	l .	,	I.	

	Moving Force and Motion into 7th grade is not a good idea because mathematically			
	they are not ready for these concepts and it does not fit with the rest of their			
	curriculum. Keeping it in 8th grade is a better fit with Chemistry and Energy. This will			
	provide more cohesion within the concepts.			
402	1.	Yes	Standards	See comment #222
	Keep force and motion in 8th grade. It does not fit the 7th grade curriculum. Students			
	are not mathematically ready for the equations and concepts. The force and motion			
	and Newton's Laws fits best with Energy and Chemistry units.			
404	,	Yes	Standards	See comment #222
	The concepts in motion and Newton's laws being taught in the 7th grade is a bad idea			
	because the students are not prepared for those concepts. These concepts should be			
405	taught in the 8th grade.	Yes	Standards	See comment #222
	Mathematically students will not be ready to handle the force and motion formulas			
	etc. In addition, it is a better fit with 8th grade's energy and chemistry. This ensures			
406	uniformity with the concepts.	Yes	Standards	See comment #222
433	Same as 6th	No	Other	Too vauge
449	Newton's Laws. I don't think students will be there with their math skills.	Yes	Standards	See comment #222
451	Change the wording to make it more friendly to 7th grade students.	No	Curriculum	
	I believe the standards are too high in rigor for the first year of implementation, I			
463	believe the first couple years will be rough	No	Standards	
	Force an Motion is not appropriate for 7th grade. Students need mastery of			
	mathematics standards that are not taught until 8th grade (specifically algebra, slope,			
	and two step equations) in order to successfully master speed, velocity, acceleration,			
	momentum, and Newton's 2nd law - all of which fall in Force and Motion.			
472		Yes	Standards	See comment #222
	With AIMS only being 4th and 8th back off of the vague scientific process standards.			
	This year is a great opportunity to learn actual science not just scientific thinking.			
484		No	Standards	State Department Directive
	Consider not adopting the Force and Motion standard and keep it in 8th grade			
	because 7th grade is not mathematically ready for the equations and the force and			
	motion standard fits more closely for the standards in 8th grade.			
499		Yes	Standards	See comment #222
	Remove force and motion and put it as an 8th standard. Students in 7th aren't ready			
	for the math and concepts that are involved. Force and motion standard works well			
	with energy and chemistry. These three topics intertwine with each other and should			
	all three be taught together in the 8th grade. Add back the 7th Earth Science			
	standard of age of the earth. This must be taught in order to understand fossils and			
	geological processes.			
509		Yes	Standards	See comment #222
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	Yes	Key Concepts	See comment #203
	It would be helpful if there was continuity between the standards. A reason to be			
	8p	No	K-12 Progression	
527	It lacks depth and breadth.	No	Standards	

	There are a few standards that have moved grade levels. I don't think it is an			
	advantage to add Earth and Space 8.E1U1.6 (ages of rock) this standard should stay			
	with 7th grade where rocks and fossils are taught. You can't teach about fossils and			
	rocks without talking about the age of the earth. Also moving the force and			
	motion/Newton's laws standard from 8th to 7th is a bad idea. When students enroll			
	in high school 9th grade standard Science class is physics and chemistry. We are			
	putting our students at a disadvantage by the lapse in time between 7th and 9th			
	grade. This force and motion standard fits perfectly with the energy standards that			
	8th will teach. It ties all of the concepts together. transfer of energy can be directly			
	related to forces and motion.			
529		Yes	Standards	See comment #222

Survey	^				
Question	52. What would you like the working group to consider as they revise the Physical S	Science Standards in the 1	Seventh Grade Science S	Standards? T	
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	Should focus on earth science.	No	K-12 Progression	00	
	page 38 - 7.P2U1.1 - force not forcesuse the words attract and repel - consider			Change grammar	
56	revising the wording of this standard.	Yes	Standards	mistake	
	7.P3U2.3 is a HUGE amount of information and content. You might consider breaking				
108	it out into more standards.	No	Curriculum		
	Evolution section is weak and watered down. It needs to be strengthened.				
114	-	No	Curriculum		
	Remove standards 7.E1U2.5 it does not help students develop an understanding of				
	the role of hear energy in warming the Earth and driving cycles in weather and				
	climate.				
				Change heading of	
				the Earth and Space	
				to: Students develop	
				an understanding of	
				the results of energy	
				flowing and matter	
				cycling within and	
				among the Earth's	
				system. (Taken from	
143		Yes	Standards	Framework pg. 181)	
	7E1U2.5 Seems like this was just stuck in for someone preference since the focus of				
	7th grade is weather and climate. Not connected or relevant to weather and climate.				
145		Yes	Standards		See comment #143
	We should go back to the standards that the committee created and adopt those, not				
157	Diane Douglas's internal review copy.	No	Other		We do not know what was changed
162	Adopt NGSS standards	No	Standards		
170	Funding	No	Other		
208	Simplification.	No	Other		Too vauge
219	7th grade should cover just Life Science. Please just adopt NGSS standards.	No	K-12 Progression		

	·			
	Concern: Teaching Physics Content in 7th GradeTeachers believe that the students in			
	7th grade do not have enough math content knowledge to adequately perform in			
	physics. Additionally, rate of change is a concept generally taught in 8th grade and			
	directly relates to the physics formulas. Solution: Keep Physics Standards in 8th			
	GradeOur PLC strongly believes that physics is a topic much better suited for 8th			
	grade curriculum. All of us who have taught 8th grade for many years know that even			
	in 8th grade, students struggle with deciphering the formulas and understanding the			
	rate of change of speed or velocity. Additionally, we believe that any Earth science			
	concepts should continue to be taught in 7th grade so that there is ample time to			
	continue to teach physics in 8th. Research for Concern/Solution:Tina Chuek			
	(ell.stanford.edu) suggests providing student learning experiences that integrate skills			
	and knowledge across grade levels. Keeping physics in 8th grade will ensure an			
	integrated approach to learning for students. Additionally, see 8.EE.B.5 and 8.F.B.4			
	and their correlation with Motion and Forces.			
	and their correlation with wotion and roices.			
222		Yes	Standards	See comment #222
222	Students are not ready for the abstract and often complex mathematical practices	103	Standards	See comment #222
2/15	associated with physics.	Yes	Standards	See comment #222
243	The physics standards should be focused in 8th grade because they are able to	163	Standards	See comment #222
	understand the concepts. The majority of the AzMerit is heavily tested on physics, but			
250	the majority of it is taught in 7th grade,	Yes	Standards	See comment #222
230	Introducing physics may be tricky as forces and motion are complex areas for the 7th	res	Standards	See comment #222
257	grade.	Yes	Standards	See comment #222
237		163	Standards	See comment #222
	Page 38In the first paragraph, remove the additions by ADE and restore it to what the			
205	teachers had there. Unless it was a grammatical fix, it should be returned to what the	Voc	Kou Concents	Coo comment #202
	teachers asked for Remove Key Concept Column	Yes No	Key Concepts Other	See comment #203
	Nothing	No		
	Nothing in particular.		Other	
335	no suggestions	No	Other	
200	Adding force and motion to seventh does not allow students to fully grasp the	W	St I I	5
389	concepts in math that are necessary to understand each concept.	Yes	Standards	See comment #203
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and	.,		
390	inquiry based.	Yes	Key Concepts	See comment #203
	Moving Force and Motion into 7th grade is not a good idea because mathematically			
	they are not ready for these concepts and it does not fit with the rest of their			
	curriculum. Keeping it in 8th grade is a better fit with Chemistry and Energy. This will			
	provide more cohesion within the concepts.			
402		Yes	Standards	See comment #203
	Keep force and motion in 8th grade. It does not fit the 7th grade curriculum. Students			
	are not mathematically ready for the equations and concepts. The force and motion			
	and Newton's Laws fits best with Energy and Chemistry units.			
404		Yes	Standards	See comment #203
	The concepts in motion and Newton's laws being taught in the 7th grade is a bad idea			
	because the students are not prepared for those concepts. These concepts should be			
405	taught in the 8th grade.	Yes	Standards	See comment #203

	Mathematically students will not be ready to handle the force and motion formulas			
	etc. In addition, it is a better fit with 8th grade's energy and chemistry. This ensures			
400		V	Chan danda	6
406	uniformity with the concepts.	Yes	Standards	See comment #203
	Again, Newton's Laws. I don't think they are appropriate for middle school at all. It			
	think they should be taught in High School.	Yes	Standards	See comment #203
463	Randomly inserted, doesn't relate much to anything else	No	K-12 Progression	
	Force an Motion is not appropriate for 7th grade. Students need mastery of			
	mathematics standards that are not taught until 8th grade (specifically algebra, slope,			
	and two step equations) in order to successfully master speed, velocity, acceleration,			
	momentum, and Newton's 2nd law - all of which fall in Force and Motion.			
472		Yes	Standards	See comment #203
	Consider not adopting the Force and Motion standard and keep it in 8th grade			
	because 7th grade is not mathematically ready for the equations and the force and			
	motion standard fits more closely for the standards in 8th grade.			
499		Yes	Standards	See comment #203
	Remove force and motion and put it as an 8th standard. Students in 7th aren't ready			
	for the math and concepts that are involved. Force and motion standard works well			
	with energy and chemistry. These three topics intertwine with each other and should			
	all three be taught together in the 8th grade. Add back the 7th Earth Science			
	standard of age of the earth. This must be taught in order to understand fossils and			
	geological processes.			
509		Yes	Standards	See comment #203
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	Yes	Key Concepts	See comment #203
527	Renewable / non renewable resources	No	Curriculum	
	There are a few standards that have moved grade levels. I don't think it is an			
	advantage to add Earth and Space 8.E1U1.6 (ages of rock) this standard should stay			
	with 7th grade where rocks and fossils are taught. You can't teach about fossils and			
	rocks without talking about the age of the earth. Also moving the force and			
	motion/Newton's laws standard from 8th to 7th is a bad idea. When students enroll			
	in high school 9th grade standard Science class is physics and chemistry. We are			
	putting our students at a disadvantage by the lapse in time between 7th and 9th			
	grade. This force and motion standard fits perfectly with the energy standards that			
	8th will teach. It ties all of the concepts together. transfer of energy can be directly			
	related to forces and motion.			
529		Yes	Standards	See comment #203
323	1	103	Standards	Jee comment #203

Survey Question	53. What would you like the working group to consider as they revise the Earth and Space Science Standards in the Seventh Grade Science Standards?					
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes	
	Evolution section is weak and watered down. It needs to be strengthened.					
114		No	Curriculum			
123	yes, I believe and feel they go together.	No	Other			
	We should go back to the standards that the committee created and adopt those, not				We do not know which ones were	
157	Diane Douglas's internal review copy.	No	Other		changed	

162	Adopt NGSS standards	No	Standards		
170	Funding	No	Other		
	Add a standard for identifying and classifying rocks/minerals and their uses. Especially				
	important as in 8th grade they will need this information to cremate a model that				
172	explains geologic time, scaffolding	No	Curriculum		
208	Simplification.	No	Other		Too vauge
219	7th grade should cover just Life Science. Please just adopt NGSS standards.	No	Standards		
250	The earth and space standards should be expanded.	No	K-12 Progression		
257	I like this set.	No	Other		
	Page 39Remove Key Concept ColumnRemove 7.E1U2.5, and renumber 7.E1U3.6 to .5				
	and all of the 7.L 7-11 to 6-10. Since it is in green, the teacher's did not indicate that				
	this is a standard that should be taught at the 8th grade level.				
265		No	Key Concepts		See comment #143
281	Nothing	No	Other		
292	Nothing in particular.	No	Other		
	no suggestions	No	Other		
	The very few standards left of earth science at this grade level are all random:The				
	cycles (including atmosphere, which is taught in 6th grade)Plate tectonics which				
	relates to Earth's interior, as well as rocks, minerals, volcanoes, and earthquakes,				
	none of which are taught at all in 7th gradeWeather?				
364		Yes	Standards		See comment #143
	Please consider removing the key concepts section. This makes the model more like				
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			Re-write key	
390	inguiry based.	Yes	Key Concepts	concepts	
	more space science	No	Curriculum	'	
	Take away the age of the earth and add it back to 7th grade because it makes no				
	sense not to teach about the age of the earth when teaching about fossils and				
499	geological processes.				
	Add back the 7th Earth Science standard of age of the earth. This must be taught in				
509	order to understand fossils and geological processes.				
	Remove the key concepts as this unnecessary and is more about implementation and				
512	should NOT be the intention of the standards.	Yes	Key Concepts		See comment #390
	It would help for students to see more of a tie in to the life sciences and physical		, ,		
	sciences. For instance, how are landslides affected by the rock cycle or how does the				
513	rock cycle affect the carrying capacity.	No	Curriculum		
	environmental science / space - solar system planets/ gravity/ etc weather possibly	-			
527	to tie in with seasons	No	Curriculum		
<u> </u>	There are a few standards that have moved grade levels. I don't think it is an	-			
	The state of the s		1		
	advantage to add Earth and Space 8.E1U1.6 (ages of rock), this standard should stay				
	advantage to add Earth and Space 8.E1U1.6 (ages of rock) this standard should stay with 7th grade where rocks and fossils are taught. You can't teach about fossils and				

Survey					
Question	54. What would you like the working group to consider as they revise the Life Science Standards in the Seventh Grade Science Standards?				
Comment #	Public Comment	Item Addressed	Actionable Yes/No	Potential Changes	Refinement Note

7	Should focus on earth science.	No	K-12 Progression	
	Evolution section is weak and watered down. It needs to be strengthened.			
114		No	Curriculum	
123	I feel and think it looks good the way its presented	No	Other	
	We should go back to the standards that the committee created and adopt those, not			
157	Diane Douglas's internal review copy.	No	Other	We do now know what was changed
162	Adopt NGSS standards	No	Standards	
170	Funding	No	Other	
208	Simplification.	No	Other	Too vauge
219	7th grade should cover just Life Science. Please just adopt NGSS standards.	No	Standards	
238	laws of motion, forces/physics should come later	Yes	Standards	See comment #203
	Where it says refer to standard should be explained more. The standard does not			
250	offer enough information.	Yes	Key Concept	See comment #390
257	I think this set hits the mark.	No	Other	
265	Page 40Remove Key Concept Column	Yes	Key Concept	See comment #390
281	Nothing	No	Other	
292	Nothing in particular.	No	Other	
335	no suggestions	No	Other	
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
390	inquiry based.	Yes	Key Concept	See comment #390
	Why is the relatedness of life missing? Ecology is introduced, yet not evolution, even			
	though both of these are inseparable. The interdependence of organisms and their			
	environment can only be understand in the context of evolution.			
413		No	Curriculum	
484	No life science in 7th or 8th	No	K-12 Progression	
	Take away the age of the earth and add it back to 7th grade because it makes no			
	sense not to teach about the age of the earth when teaching about fossils and			
499	geological processes.			
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	Yes	Key Concept	See comment #390
527	not much here ecosystems	No	Curriculum	

rvey					
estion	56. What would you like the working group to consider as they revise the Eighth Gra	de Science Standards	?		
mment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	Should focus on physical science.	No	K-12 Progression	Juggested Changes	Committee Notes
	Align the standards in such a way that the students have time to get the appropriate	NO	K-12 FTOGTESSION		
	learning prio to taking the standardized test in the spring. The way it is now the				
	testing comes before teachers have time to teach all of the necessary contents that's				
	included on the test. Having said that, I hoping the group will create a more updated				
_	test and eliminate the very antiquated AIMS test.				
9		No	Other		
	In eighth grade students should be learning the basics including evolution and bio				
	diversity	No	Curriculum		
	Do not remove the term evolution from the standards.	No	Curriculum		
45	Please follow the National science education standards.	No	Other		
	There needs to be clearer emphasis on the use of the metric system in all data			Add this to the	
65	collection and analysis in science at all levels.	Yes	Introduction	introduction	
	Evolution section is weak and watered down. It needs to be strengthened.				
114		No	Curriculum		
	Standard 8.E1U16 about rocks and fossils should go to 7.E1U2.5 because it is out of				
124	place in 8th grade standards and fits logically with 7th grade.				
	I think 8th grade science should still remain all physical sciencechemistry and			To address public	
	physics (looks like Newton's laws are not on the 8th grade draft?)			concern regarding	
				grade level content:	
				Move 7.P3U2.3 to	
				8th & move	
				8.P4U1.3 and	
				8.P4U1.4 to 7th	
140		Yes	Standards	grade	
	The Earth and Space section says that students will explore natural and human-	. 65	Starradi do	B. dae	
	induced changes in Earth systems over time. The 7th grade standard 7.E1U2.5 would				
	fit better in this section then were it currently is. (plate tectonics)				
143	, "				
	Go back to the original paragraph	No	Other		Too vauge
143		INO	Other		100 vauge
455	We should go back to the standards that the committee created and adopt those,		0.1		
157	not Diane Douglas's internal review copy.	No	Other		We do not know what was chang
	Earth History is usually taught in 7th with 8th grade focusing on Genetics, Chemistry,				
	and Forces (Newton's Laws). Those units are more difficult to learn and 8th grade				
162	has the maturity to learn and understand the concepts.				
	I trust the work of Science Specialists who devoted their time and energy to improve				
	Arizona's science standards and request their direct incorporation as new standards.				
168		No	Other		
170	Funding	No	Other		
	The Key concepts should be dropped from every grade level.			Re-write key	
203		Yes	Key Concepts	concepts	
	Simplification.	No	Other		Too vauge
210	This should cover physics, chemistry, and genetics				
	I'd like us to implement the Next Generation Science Standards, already in use in				
211	many states and districts. https://www.nextgenscience.org/	No	Standards		
	8th grade should just adopt on topic like Physical Sciences. See NGSS standards.				
219		No	Standards		

				1	
	Concern: Teaching Physics Content in 7th GradeTeachers believe that the students in				
	7th grade do not have enough math content knowledge to adequately perform in				
	physics. Additionally, rate of change is a concept generally taught in 8th grade and				
	directly relates to the physics formulas. Solution: Keep Physics Standards in 8th				
	GradeOur PLC strongly believes that physics is a topic much better suited for 8th				
	grade curriculum. All of us who have taught 8th grade for many years know that				
	even in 8th grade, students struggle with deciphering the formulas and				
	understanding the rate of change of speed or velocity. Additionally, we believe that				
	any Earth science concepts should continue to be taught in 7th grade so that there is				
	,				
	ample time to continue to teach physics in 8th. Research for Concern/Solution:Tina				
	Chuek (ell.stanford.edu) suggests providing student learning experiences that				
	integrate skills and knowledge across grade levels. Keeping physics in 8th grade will				
	ensure an integrated approach to learning for students. Additionally, see 8.EE.B.5				
	and 8.F.B.4 and their correlation with Motion and Forces.				
			Charada ada		C
222		Yes	Standards		See comment #140
250	The standards need to be revised.	No	Standards		Too vauge
	I am concerned about the large gap between when the atom conversation starts and				
	where 8th grade is supposed to pick it back up again.				
261	1 moving physics back over to 8th grade	Yes	Standards		See comment #140
	Page 9, 21, 33Remove last sentence: 'Suggestions for key conceptsor maximum				
	content limits. Pages 12, 15, 19, 24, 28, 31, 37, 41, 45Remove these connections - as				
	soon as standards change the Science standards need to be changed. Each group of				
	standards needs to be stand alone. If ADE wants to have another document that				
	does a crosswalk of all of the standards in another document, that would be more			Revise last sentence	
	appropriate than the Science Standards.			of the grade level	
265		Yes	Introduction	introduction	6-8th grade levels
	I think it is great to start them out early with supporting their reasoning. Our purpose				
	is for students to think. The internet has made everyone lazy so the crosscutting				
	concept of problem solving should be in every grade level.				
279	9	No	Other		
283	1 Nothing	No	Other		
	get rid of the space standards				
290	i i	No	K-12 Progression		No space standards exist in 8th grade
292	Nothing in particular.	No	Other		
	no suggestions	No	Other		
	Physical science is perfect for this age group.	No	Other		
	See earlier comments.	No	Other		Too vauge
	Be more explicit with what the standard means.	No	Other		<u> </u>
	The 8th grade science standards, as they are in the new proposed standards, are not				
1	appropriate to the needs of Arizona students. There needs to be a greater focus on				
	the physical sciences, such as chemistry and physics. Students are not prepared for				
	the content of chemistry and physics before reaching the 8th grade level as they are				
	proposed on the new standards. In order to appropriately prepare Arizona 8th grade				
	students to be successful in high school, the physical sciences need to be the focus in				
	the 8th grade year.				
I	· .	L.,			
358		No	K-12 Progression		

	T	T	1		,
	The 8th grade science standards are very disjointed and lack any kind of connectivity.				
	There are standards that do not appear to belong with the standards, such as the				
	geological column to communicate ages of rock layers and fossils. The 8th grade				
	standards seem incomplete and not all appropriate to the grade level being assessed				
	(without guaranteed background knowledge being taught in previous years) such as				
	the wave characteristics and interactions using mathematical models. The Key				
	Concepts listed as not appropriate to the grade level as well, such as the covalent				
	and iconic bonds, chemical formulas (with exception of basic compound formulas),				
	wavelength, amplitude, and frequency.				
371		No	Curriculum		
	Force and motion needs to stay in 8th grade because the students are more				
	mathematically equipped to handle it and it flows into the other subjects of energy				
	and chemistry. Also, it is continued on in 9th grade so there is a natural flow that will				
272	be lost if it gets moved to 7th grade.	Yes	Standards		See comment #140
3/3	Please consider removing the key concepts section. This makes the model more like	163	Standards		See comment #140
200	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and	Vac	Kay Canaanta		See Comment #203
390	inquiry based.	Yes	Key Concepts		See Comment #203
	Moving Force and Motion into 7th grade is not a good idea because mathematically				
	they are not ready for these concepts and it does not fit with the rest of their				
	curriculum. Keeping it in 8th grade is a better fit with Chemistry and Energy. This				
	will provide more cohesion within the concepts.				
402		Yes	Standards		See comment #140
	Keep force and motion in 8th grade. It does not fit the 7th grade curriculum.				
	Students are not mathematically ready for the equations and concepts. The force				
	and motion and Newton's Laws fits best with Energy and Chemistry units.				
404		Yes	Standards		See comment #140
	The concepts in motion and Newton's laws being taught in the 7th grade is a bad				
	idea because the students are not prepared for those concepts. These concepts				
405	should be taught in the 8th grade.	Yes	Standards		See comment #140
	Mathematically students will not be ready to handle the force and motion formulas				
	etc. In addition, it is a better fit with 8th grade's energy and chemistry. This ensures				
406	uniformity with the concepts.	Yes	Standards		See comment #140
433	Same as 6th	No	Other		Too vauge
	Standard 8.1EU3.7 is not appropriate among the rest of the 8th grade curriculum.				
	These concepts are disjointed and out of place among the rest of the science				
	standards for this grade. I cannot imagine how fractals would pertain to the				
	remaining standards, and in fact, they do not have much merit being a science				
	standard at all. there are many more applicable math concepts that can be				
	reinforced in science as standards, for example algebra/slope (force and motion),				
	ratios (genetics), carbon dating/exponential decay (chemistry).			Revise and remove	
472		Yes	Key Concepts	math reference	
	Space science back to 7th grade	No	Standards		Space is not in 8th grade
	Keep force and motion in the 8th grade standard because this standard works well				,
	with the concepts of chemistry and energy. Also, in 9th grade science, high				
	schoolers take chemistry and physics so it is a nice foundation for the				
490	physics/chemistry class they take in 9th grade.	Yes	Standards		See comment #140
-133	In the state of th	· ==	1		

	Remove force and motion from 7th and put it as an 8th standard. Students in 7th			
	aren't ready for the math and concepts that are involved. Force and motion standard			
	works well with energy and chemistry. These three topics intertwine with each other			
	and should all three be taught together in the 8th grade. Add back the 7th Earth			
	Science standard of age of the earth. This must be taught in order to understand			
	fossils and geological processes.			
509		Yes	Standards	See comment #140
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	Yes	Key Concepts	See Comment #203
	There is not enough if a joining of the disciplines. How does the models created also			
513	help to explain the physics or impact on living organisms.	No	Curriculum	
	There are a few standards that have moved grade levels. I don't think it is an			
	advantage to add Earth and Space 8.E1U1.6 (ages of rock) this standard should stay			
	with 7th grade where rocks and fossils are taught. You can't teach about fossils and			
	rocks without talking about the age of the earth. Also moving the force and			
	motion/Newton's laws standard from 8th to 7th is a bad idea. When students enroll			
	in high school 9th grade standard Science class is physics and chemistry. We are			
	putting our students at a disadvantage by the lapse in time between 7th and 9th			
	grade. This force and motion standard fits perfectly with the energy standards that			
	8th will teach. It ties all of the concepts together. transfer of energy can be directly			
	related to forces and motion.			
529		Yes	Standards	See comment #140

Survey						
Question	57. What would you like the working group to consider as they revise the Physical	Science Standards in the	Eighth Grade Science St	andards?rds?		
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes	
45	Please follow the National science education standards.	No	Other			
	Evolution section is weak and watered down. It needs to be strengthened.					
114		No	Curriculum			
	8.P4U1.3The word store is not a common word used, what is meant by this? Is this					
	referring to all types of potential energy, there needs to be some clarification					
	here. Also renewable and nonrenewable resources not power typesinaccurate (key			Change "store" to		
143	concepts)	Yes	Standard	"source"	Standard 8.P4U1.3	
	We should go back to the standards that the committee created and adopt those,					
157	not Diane Douglas's internal review copy.	No	Other		We do not know what was changed	
162	Adopt NGSS standards	No	Other			
170	Funding	No	Other			
208	Simplification.	No	Other			
	8th grade should just adopt on topic like Physical Sciences. See NGSS standards.					
219		No	Other			

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1

	Force and motion standards need to be incorporated in this grade level because			
	students are learning the same math that goes hand in hand with the concepts that			
389	are necessary to grasp in science.	Yes	Standard	See comment #140
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
390	inquiry based.	Yes	Key Concepts	See Comment #203
	Moving Force and Motion into 7th grade is not a good idea because mathematically			
	they are not ready for these concepts and it does not fit with the rest of their			
	curriculum. Keeping it in 8th grade is a better fit with Chemistry and Energy. This			
	will provide more cohesion within the concepts.			
402		Yes	Standard	See comment #140
	Keep force and motion in 8th grade. It does not fit the 7th grade curriculum.			
	Students are not mathematically ready for the equations and concepts. The force			
	and motion and Newton's Laws fits best with Energy and Chemistry units.			
404		Yes	Standard	See comment #140
	The concepts in motion and Newton's laws being taught in the 7th grade is a bad			
	idea because the students are not prepared for those concepts. These concepts			
405	should be taught in the 8th grade.	Yes	Standard	See comment #140
	Mathematically students will not be ready to handle the force and motion formulas			
	etc. In addition, it is a better fit with 8th grade's energy and chemistry. This ensures			
406	uniformity with the concepts.	Yes	Standard	See comment #140
	Newtons laws need to be included in 8th grade curriculum.	Yes	Standard	See comment #140
	Keep force and motion in the 8th grade standard because this standard works well			
	with the concepts of chemistry and energy. Also, in 9th grade science, high			
	schoolers take chemistry and physics so it is a nice foundation for the			
499	physics/chemistry class they take in 9th grade.	Yes	Standard	See comment #140
	Remove force and motion from 7th and put it as an 8th standard. Students in 7th			
	aren't ready for the math and concepts that are involved. Force and motion standard			
	works well with energy and chemistry. These three topics intertwine with each other			
	and should all three be taught together in the 8th grade.			
509		Yes	Standard	See comment #140
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	Yes	Key Concepts	See Comment #203
	Mathematical models for force / motion / speed etc Chemistry - from building		.,	
527	blocks to reactions	No	Curriculum	
	Please don't move the force and motion/Newton's laws standard from 8th to 7th.			
	This is a bad idea. When students enroll in high school 9th grade standard Science			
	class is physics and chemistry. We are putting our students at a disadvantage by the			
	lapse in time between 7th and 9th grade. This force and motion standard fits			
	perfectly with the energy standards that 8th will teach. It ties all of the concepts			
	together. transfer of energy can be directly related to forces and motion.			
520	,	Ves	Standard	See comment #140
529	,	Yes	Standard	See comment #140

Survey Question	58. What would you like the working group to consider as they revise the Earth and Space Science Standards in the Eighth Grade Science Standards?					
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes	

	should focus on physical science	No	K-12 Progression		
	Please follow the National science education standards.	No	Other		
	Move space to 7th grade.	No	Other		No space in 8th grade
E	volution section is weak and watered down. It needs to be strengthened.				
114		No	Curriculum		
Т	he Earth and Space section says that students will explore natural and human-				
ir	nduced changes in Earth systems over time. The 7th grade standard 7.E1U2.5 would				
fi	it better in this section then were it currently is. (plate tectonics)				
143		Yes	Standards		See draft standards A1 Pg. 39
٧	We should go back to the standards that the committee created and adopt those,				
157 n	not Diane Douglas's internal review copy.	No	Other		We do not know what was chang
162 A	Adopt NGSS standards	No	Other		
170 F	unding	No	Other		
Н	How about predicting geologic processesrather than hazardsthese processes are				
О	only hazards when people or the things they build are in the way. Consider flooding:				
t	o the ancient Egyptians, flooding was a blessing, not a hazard! Standard 8 implies				
tl	hat the consumption of resources by humans is bad for the Earth. And then the				
	easonable conclusion is that the earth is better off without humans? Truly believe				
	ve need to conserve, but also need to educate the students about the positive side				
	of resource consumption: in this age, in the developed world because of resources				
	ve live to the age of 80+, can travel into space and can communicate into space. If				
	ou go back to the stone age: average life span, 25 year, travel 25 miles in a day and				
1 -	communicate over the distance that the human voice travels! So need to be certain				
	Ill sides of resource consumption are considered.				
ľ	in states of resource consumption are constant car				
172		Yes	Standards	Find a better word	
	implification.	No	Other	ind a secter word	Too vauge
	Sth grade should just adopt on topic like Physical Sciences. See NGSS standards.				
219	Same should just adopt on topic line in hysical solenoes, see Ness standards.	No	Other		
	ossils/rocks and geologic time earlier in the sequence (grade 7?)	Yes	Standards	Consider moving	
	The standards would make more sense with the new 7th and 6th grade standards.	163	Stariaaras	consider moving	
	Ith and 6th grade should share the earth and space standards for middle school				
	ogether.	Yes	Standards	Consider moving	
	The earth and space standards are oddly placed and do not flow with the rest of the	103	Staridards	Consider moving	
	tandards that are listed. Refer to standards need to offer more of an explanation,				
	pecause the standard is broad. We need guidance on what to teach.				
250	recause the standard is broad. We need guidance on what to teach.	Yes	Standards	Consider moving	
	Dago A2 Damaya Kay Canaant Calyman	Yes	Key Concepts	Consider moving	See Comment #203
	Page 43Remove Key Concept Columns		Other		See Comment #203
	Nothing	No No			
	need to get rid of	No	Other		
	Nothing in particular.	No	Other		
	no suggestions	No	Other		
	Reference to what they learned in 6th grade	No	Curriculum		
	We dont need to teach one small standard about geology. That can becovered in				
	th grade when they teacher geology and changing enviromonents				
341		Yes	Standards	Consider moving	

				I
	The Earth and Space science standards should be moved to the 6th grade year. This			
	would be more appropriate to the cognitive and academic progress that students			
	should have made by this year. The standards should be grouped by core ideas, not			
	by cross-cutting concepts. Key-Concepts should not be included in the standards as			
	they are written, as they do not match the needs of the students or are appropriate			
	to the content being taught			
358				
	The 8th grade Earth and Space science have no connection to any of the other			
	standards, especially the standard about developing and using a geological column to			
	communicate relative ages of rock layers and fossils (8.E1U1.6). This is the only			
	standard that has anything to do with the structure and age of the earth. The			
	standard about obtaining, evaluating, and communicating information about			
	technologies that use data and historical patterns to predict natural hazards			
	(8.E1U3.7) seem like it would be more appropriate with a weather standard or where			
	seismology is being taught as part of the larger curriculum. The standard about			
	constructing and supporting an argument about how human consumption of limited			
	resources impact the geosphere (8.E1U4.8) do connect with the natural selection			
	standards in the life science.			
371				
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
390	inquiry based.			
	For 8.E1U1.6 - Develop and use a model of Earth's geological column to			
	communicate relativeages of rock layers and fossils. It needs to include information			
416	about determining absolute age, not just relative ages of rock.			
	Geologic-Time Scale. Students at this age have a hard time thinking about the past			
	and future. To teach students Geologic Time Scales and Era's would be hard for their			
449	minds to wrap around and grasp.			
472	Seismology would fit much more sensibly in 7th grade.			
475	Move to 7th grade			
	Remove the standard for teaching the age of the earth and put it back into the 7th			
	grade standard as it flows with teaching fossils and geological processes.			
499				
	Remove the Earth Science standard of age of the earth. This must be taught in order			
	to understand fossils and geological processes which are taught in the 7th grade.			
509				
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.			
	There is great tie ins to modeling but the standards are still disjointed.			
	none need to focus on the big stuff!			
	I don't think it is an advantage to add Earth and Space 8.E1U1.6 (ages of rock) this			
	standard should stay with 7th grade where rocks and fossils are taught. You can't			
	teach about fossils and rocks without talking about the age of the earth.			
529	y y			
323	1		l	I

Survey	
Question	59. What would you like the working group to consider as they revise the Life Science Standards in the Eighth Grade Science Standards?

omment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	Should focus on physical science.				
26	As above Do not remove concepts like evolution from teaching				
	Do not eliminate the term evolution from the standards. It is a key science term and				
24	it is unnecessary to edit this standard in the way it was for the internal review				
	version of the standards.				
45	Please follow the National science education standards.				
	page 44 - 8.L4U2.12 - why aren't we using the words adapt and evolve? this seems				
	like someone just doesn't want to use the actual term/vocabulary. adapting and				
56	evolving is exactly what it is				
	8.L4U2.12 SHOULD be worded Gather and communicate evidence on how the				
	process of natural selection provides an explanation of how new species can evolve.				
	Natural selection is the primary mechanism of evolution and the wording should not				
65	be removed.				
	Evolution section is weak and watered down. It needs to be strengthened.				
114					
	Life science statement should go back to original. Develop and use a model to explain				
	natural selection- this is all that needs to be stated. 8.I4U2.12 should say: Gather and				
	communicate evidence on how the process of natural selection provided an				
	explanation of how new species an evolve.				
145					
457	We should go back to the standards that the committee created and adopt those,				
	not Diane Douglas's internal review copy.				
	Adopt NGSS standards				
	Funding				
208	Simplification.				
240	8th grade should just adopt on topic like Physical Sciences. See NGSS standards.				
219					
220	Use caution when introducing evolution among a variety of species. Will this relate to				
	human evolution?				
	Stated previously.				
250	this is organized well.				
	Page 43Remove Key Concept ColumnsUnder 8.E1U1.6 remove 'Develop and', under				
	'Life Sciences' paragraph, remove 'how traits within populations change over time',				
	and under 8.L3U4.10 remove 'or not'. What did the teachers have here? Unless it				
	was a grammatical fix, it should be returned to what the teachers asked for Page				
	44Remove Key Concepts ColumnWhy is there a blank row above 8.L4U2.12?What				
	did the teachers have for 8.L4U2.12, if anything? Restore it to what the teachers				
	asked for Page 46in cell E1, U2 remove 7.E1U2.5in cell E1, U3 rename 7.E1U3.6 to .6				
	(renumber)Renumber 7.L7 to .6, .8 to .7, .9 to .8, .10 to .9, .11 to .10 (renumber)				
265					
	Nothing				
	Nothing in particular.				
	no suggestions				
	Keep genetics and heredity here as a prep for HS				

	The life science standards should be moved to the 7th grade year. This would be		
	more appropriate to cognitive and academic progress of the students at this point. It		
	would also begin to prepare Arizona students to be successful in high school. The		
	standards should be grouped by core ideas, not by cross-cutting concepts. Key-		
	Concepts should not be included in the standards as they are written, as they do not		
	match the needs of the students or are appropriate to the content being taught		
358			
	The life science standards are appropriate, but additional adaptations standards		
	should be added back, to help support the natural selection standards (8.L4U2.11		
371	and 12)		
	Please consider removing the key concepts section. This makes the model more like		
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and		
390	inquiry based.		
	Moving Force and Motion into 7th grade is not a good idea because mathematically		
	they are not ready for these concepts and it does not fit with the rest of their		
	curriculum. Keeping it in 8th grade is a better fit with Chemistry and Energy. This		
	will provide more cohesion within the concepts.		
402	·		
	Keep force and motion in 8th grade. It does not fit the 7th grade curriculum.		
	Students are not mathematically ready for the equations and concepts. The force		
	and motion and Newton's Laws fits best with Energy and Chemistry units.		
404			
	Mathematically students will not be ready to handle the force and motion formulas		
	etc. In addition, it is a better fit with 8th grade's energy and chemistry. This ensures		
406	uniformity with the concepts.		
475	Information for thewe stards is fine.		
484	No life science stick with chemistry and physics		
	Remove the standard for teaching the age of the earth and put it back into the 7th		
	grade standard as it flows with teaching fossils and geological processes.		
499			
	Remove the key concepts as this unnecessary and is more about implementation and		
512	should NOT be the intention of the standards.		
527	genetics and heredity		
529	Life Science standards seem solid		

HS Standards as they apply

to Earth and Space Science:

urvey		12			
uestion	61. What would you like the working group to consider as they revise the High Scho	olA Essential Science S	tandards?		,
omment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	Evolution, the Big Bang, and the billion year old age of the Earth must be accurately				The Big Bang Theory is the only
	represented in this standards! Religion has no place in the classroom.				scientific theory for the creation of
					the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation fo
19		Yes	standard	Bang	the creation of the universe.
	As stated before, no removal of words which carry conflicking messages for those				The Big Bang Theory is the only
	with religious beliefs. Teach your religion at home.				scientific theory for the creation
					the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
24		Yes	standard	Bang	the creation of the universe.
	Do not remove the terms evolution and big bang theory. These are key science				The Big Bang Theory is the only
	terms that are part of the science community and should be taught using the correct				scientific theory for the creation
	terminology. There is no reason to edit these standards to not include these terms.				the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
31		Yes	standard	Bang	the creation of the universe.
	The Big Bang is a fundamental part of science like the theory of evolution. Keep				The Big Bang Theory is the only
	religion and god out of the science or you will create very confusing students with no				scientific theory for the creation
	place is today work environment.				the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
40		Yes	standard	Bang	the creation of the universe.
	They are biased by not crossing out accepted scientific theories such as Big Bang and				The Big Bang Theory is the only
	Evolution.				scientific theory for the creation
					the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
43		Yes	standard	Bang	the creation of the universe.
	The original standards as created by the Science Teachers is very easy to read and			_	The Big Bang Theory is the only
	easy to understand. It covers what our children need to know. I STRONGLY				scientific theory for the creation
	DISAGREE with the editing taking out evolution and Big Bang Theory from the high				the universe. Earth and Space
	school science curriculum.			replace language	Science should address the
				specific to the Big	scientifically based explanation for
49		Yes	standard	Bang	the creation of the universe.

		T			1
	HUGE CONCERN In the Evolution standard for life sciences the word 'evolution' is				
	crossed out twice. I think that is a serious edit to cross out the word evolution in the				
	evolution standard. I'm a little shocked to see this in 2018. Evolution is a HUGE part				
	of biology and should not be something to fearespecially when knowledge of				
	mechanisms of biological evolution are helping to create so many life saving				
	medicines and helping us to understand biological life. We really need to get over				
	seeing this word as a threat.				
6:	1				
	1. We should require four credits of science in high school in order to make sure our				
	students are truly competitive with those from other states. The breadth of the				
	standards here are good, but trying to achieve that in three years inevitably will lead				
	to a shallow understanding of some of them. 2. There needs to be clearer emphasis				
	on the use of the metric system in all data collection and analysis in science at all				
	levels. 3. Many of the edits introduced during the Douglas internal review damage				
	the rigor of these standards by obscuring or minimizing core concepts in science such				
	as evolution through natural selection, explanations of cosmological evolution				
	through the big bang theory, and man's impact on the environment and climate				
	change. 4. The inclusion of the key concepts lists returns us to the old model of				
	science as a noun, instead of effective research-based model of science as a verb			2	
	using inquiry and experimentation and emphasizing the processes of science. The	4.1		2. state use of	
	key concepts list should be part of a document detailing the state assessment, not	1. No		metrics in science in	
	this standards document.	2. Yes		3. introduction.	
		3. Yes	standards 4. K	,	
6		4. Yes	Concepts	4. none	4. ADE directed to be included.
	Add in species evolution and the Big Bang				The Big Bang Theory is the only
					scientific theory for the creation of
					the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
6	5	Yes	standard	Bang	the creation of the universe.
	The deletion of evolution and Big Bang theory need to be included in these standards				The Big Bang Theory is the only
					scientific theory for the creation of
					the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
6	7	Yes	standard	Bang	the creation of the universe.
	Include evolution and the Big Bang theory.			<u> </u>	The Big Bang Theory is the only
					scientific theory for the creation of
					the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
69		Yes	standard	Bang	the creation of the universe.
0.	No! Bring back all scientific theories!	100	Standard	Dulig	The Big Bang Theory is the only
	וויס: שוווק שמכת מוו שכופוונוווכ נוופטוופש:				scientific theory for the creation of
					the universe. Earth and Space
				renless lengues	
				replace language	Science should address the
		W	ata a da ad	specific to the Big	scientifically based explanation for
8:	5	Yes	standard	Bang	the creation of the universe.

	Make sure that fundamental science concepts that will prepare students for college are taught; including evolution & the big bang theory.				The Big Bang Theory is the only scientific theory for the creation of
				replace language	the universe. Earth and Space Science should address the
8	6	Yes		specific to the Big Bang	scientifically based explanation for the creation of the universe.
8:	Core, not essential.	Yes	other	replace word "core"	Core indicates central focus of standard
9:	Why are they not core standards? If it generates an opportunity for high school 2 credit, keep the name.	Yes	see comment 89		
	Need to keep in evolution rather than changing it to biological diversity. Remove that evolution MAY result from natural selection and keep it that is results from.				
109	9 Evolution section is weak and watered down. It needs to be strengthened.				
114	4				
	Go back to Core standards NOT essential. Put the marked out information back in.				
14	5 Leave in Note on page 48- critical to have it.	Yes	see comment 89		
	We should go back to the standards that the committee created and adopt those,				
	7 not Diane Douglas's internal review copy.				
163	2 Adopt NGSS standards				
	I trust the work of Science Specialists who devoted their time and energy to improve				
168	Arizona's science standards and request their direct incorporation as new standards.				
170	0 Funding				
	1. Need to make the Earth and Space science essential standards more rigorous, as				
	most high schools in AZ do not include an Earth science class, or if they do, most				
	advanced students don't take it. So, to make certain these students get enough			HS+E.E1U4.13	
	Earth Science to be literate in Earth science, please make the Essential standards			change hazard to	
	more rigorous. 2. Once again: remove the word			natural geologic and	
	hazard and replace it with natural geologic processes, because that is what			atmospheric	Humans consider natural processes
	earthquakes, volcanic eruptions, floods, tornadoes, hurricanes, landslides are!	1. no		processes (including	· ·
17		2. Yes	2. Standard	climate change)	there.
	3 The Key concepts should be dropped from every grade level.	Yes	see comment 65	ominate onange)	
	8 Simplification.	no	See deminion de		
	I'd like us to implement the Next Generation Science Standards, already in use in				
21	1 many states and districts. https://www.nextgenscience.org/				
	It doesn't make sense for certain topics to be taught in all sciences!! Why/how				
	would Biology teach about Kepler's Laws? Why/how would Physics teachers teach				
	about DNA and mitosis? There should be certain topics that are limited to the				
	appropriate subject area. I suppose that some review will need to be done before				
	students take a test over the essentials in 11th grade, but that should be done by the				
	appropriate content teachers.				
228					
	Biology, physics, chemistry, and earth science in 3 credits?		1		
204	Pages 47 - 70Restore to what the teachers asked for. Remove additions by ADE.		+		
	Remove the references to 'formerly the scientific method', and the Key Concept				
36					
26:	5 Columns.				
	It is appropriate in some areas, but lacking in others. It goes in depth in some areas,				
27	7 but lacks in others.				

	Our purpose is for students to think. The internet has made everyone lazy so the				
	crosscutting concept of problem solving should be in every grade level.				
279					
	1 Nothing				
	Nothing in particular.				
	I would add the following to be an essential standard instead of a plus. These are				
	very common in Bio classes across all campuses that I have visited and would do the				
	students a disservice if they were not all taught across the state. This list was created				
	with efforts of most of the biology teachers from the Leonagroup.HS+B.L2U1.2				
	HS+B.L2U3.3HS+B.L4U1.4 HS+B.L1U2.7 HS+B.L2U2.8 HS+B.L1U2.10				
	HS+B.L1U2.13HS+B.L3U1.16HS+B.L4U1.19				
298					
	Return evolution standards to how the educators wrote them				
	Address a realistic timeframe to teach these standards accounting for a loss of 20				
	days per year for various testing requirements and the typical lack of technology				
313	available in the science classroom.				
335	no suggestions				
	#NAME?				
	The 3 years of standards do not give enough rigor to students who are pursuing				
376	STEM or science fields in college.				
	The essential standards would result in the unintended consequence of limiting				
	opportunities for all students to have access to rigorous and meaningful science				
	instruction. Many teachers will only teach the essential standard and ignore the				
	others. All standards, even the + standards should be taught to all students. My				
	recommendation would be to incorporate learning progressions along with each				
	standard and incorporate statements for assessment boundaries.				
380	·				
	Do not remove the understanding of fossil fuels and how they negatively impact the				
386	environment!	no	standards		is already addressed in HS+E.E1U4
	I believe the working group should reconsider their format. Look to see how the				
	Math Standards are written and presented: Overall essential standards, with each				
	standard broken down into which math course it should be taught in.				
387	7				
	Please consider removing the key concepts section. This makes the model more like				
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
390	D inquiry based.				
	Consider the metric system and innumeracy. Neither of these is addressed properly				
430	across the standards.				
	The essential standards have a fairly large amount of detail that will be challenging to				
	fully address in three science courses. There is also the additional problem of				
	implementation. Most schools have separate Biology and Chemistry courses, but the				climate change is in standards.
	remaining Earth Science and Physical Science material do not marry very well into a				HS.E1U4.14, HS+E.E1U4.13 and
	single course. Where is the emphasis on climate change in the Essential Standards?				HS+E.E1U4.15 all address climate
431	1	yes	standards	none	change.
·	The positive and negative impacts sections should provide some specific examples				
442	2				
-	Remove the key concepts as this unnecessary and is more about implementation and				
512	2 should NOT be the intention of the standards.	Yes	see comment 65		

	HS.L1U2.24 Key concepts: consider changing wording to Relate cell structure to cell		
	FUNCTION, organ systems . Purpose implies something intentional. HS.L2U2.28 Key		
	Concepts: change wording to chromosomes which determine SEX at conception		
	rather than gender. Gender is a social construct; sex is the biological anatomy of		
	reproductive structures. Consider revising the evolution standards. All students, not		
	just the HS+, need to be able to 1) Communicate scientific information that common		
	ancestry and biological evolution are supported by multiple lines of empirical		
	evidence. 2) Construct an explanation based on evidence that the process of		
	evolution primarily results from the 4 factors. 3) apply concepts of statistics and		
	probability to support explanations that organisms with adventageous heritable		
	traits (adaptations) tend to increase in proportion to organisms lacking this trait. 4)		
	construct an explanation based on evidence for how natural selection leads to the		
	adaptation of populations. 5) Evaluate evidence supporting claims that changes in		
	teh environmental conditions may result in increases in the number of some species,		
	the emergence of new species over time, and the extinction of other species.		
569			

HS Standards as they apply to Physical

Science:

Survey					
Question	61. What would you like the working group to consider as they revise the High Scho	ol Essential Science Sta	ndards?		
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	Evolution, the Big Bang, and the billion year old age of the Earth must be accurately				
	represented in this standards! Religion has no place in the classroom.			Include all scientific	
				evidence based	
				content, accepted	
				by the scientific	
				community, into	This is a building block for future AP
19	9	Yes	Standards	standards	and college classes.
	As stated before, no removal of words which carry conflicking messages for those				
24	4 with religious beliefs. Teach your religion at home.	See comment #19			
	Do not remove the terms evolution and big bang theory. These are key science				
	terms that are part of the science community and should be taught using the correct				
	terminology. There is no reason to edit these standards to not include these terms.				
3:	1	See comment #19			
	The Big Bang is a fundamental part of science like the theory of evolution. Keep				
	religion and god out of the science or you will create very confusing students with no				
40	place is today work environment.	See comment #19			
	They are biased by not crossing out accepted scientific theories such as Big Bang and				
4:	Evolution.	See comment #19			
	The original standards as created by the Science Teachers is very easy to read and				
	easy to understand. It covers what our children need to know. I STRONGLY				
	DISAGREE with the editing taking out evolution and Big Bang Theory from the high				
49	school science curriculum.	See comment #19			

		T	1		T
	HUGE CONCERN In the Evolution standard for life sciences the word 'evolution' is				
	crossed out twice. I think that is a serious edit to cross out the word evolution in the				
	evolution standard. I'm a little shocked to see this in 2018. Evolution is a HUGE part				
	of biology and should not be something to fearespecially when knowledge of				
	mechanisms of biological evolution are helping to create so many life saving				
	medicines and helping us to understand biological life. We really need to get over				
	seeing this word as a threat.				
61		See comment #19			
	1. We should require four credits of science in high school in order to make sure our				
	students are truly competitive with those from other states. The breadth of the				
	standards here are good, but trying to achieve that in three years inevitably will lead				
	to a shallow understanding of some of them. 2. There needs to be clearer emphasis				
	on the use of the metric system in all data collection and analysis in science at all				
	levels. 3. Many of the edits introduced during the Douglas internal review damage				
	the rigor of these standards by obscuring or minimizing core concepts in science such				
	as evolution through natural selection, explanations of cosmological evolution				
1	through the big bang theory, and man's impact on the environment and climate				
	change. 4. The inclusion of the key concepts lists returns us to the old model of				
	science as a noun, instead of effective research-based model of science as a verb			Add expectation of	
	using inquiry and experimentation and emphasizing the processes of science. The			metrics as data	
	key concepts list should be part of a document detailing the state assessment, not			collection method to	
	this standards document.			science and	
	this standards document.				Scientific measurement is addressed
65		Yes	Introduction, key concept		in the introduction (p.47).
66		See comment #19	introduction, key concept	introductions.	in the introduction (p.47).
	The deletion of evolution and Big Bang theory need to be included in these standards	See comment #15			
67	,	See comment #19			
	Include evolution and the Big Bang theory.	See comment #19			
	No! Bring back all scientific theories!	See comment #19			
- 83	Make sure that fundamental science concepts that will prepare students for college	See comment #15			
96		See comment #19			
	are taught; including evolution & the big bang theory.  Core, not essential.	See comment #19			
89	·				
	Why are they not core standards? If it generates an opportunity for high school				
92	credit, keep the name.				
	Need to keep in evolution rather than changing it to biological diversity. Remove that				
	evolution MAY result from natural selection and keep it that is results from.				
109		See comment #19			
1	Evolution section is weak and watered down. It needs to be strengthened.				
114		See comment #19			
	Go back to Core standards NOT essential. Put the marked out information back in.				
145	Leave in Note on page 48- critical to have it.				
	We should go back to the standards that the committee created and adopt those,				
	not Diane Douglas's internal review copy.				
162	Adopt NGSS standards				
	I trust the work of Science Specialists who devoted their time and energy to improve				
1	Arizona's science standards and request their direct incorporation as new standards.				
168					
170	Funding				

	h	I	1		T
	Need to make the Earth and Space science essential standards more rigorous, as				
	most high schools in AZ do not include an Earth science class, or if they do, most				
	advanced students don't take it. So, to make certain these students get enough			HS.E1U4.14 Change	
	Earth Science to be literate in Earth science, please make the Essential standards			hazard to "natural	
	more rigorous. Once again: remove the word hazard and replace it with natural			geologic processes.	
	geologic processes, because that is what earthquakes, volcanic eruptions, floods,			See also plus	
	tornadoes, hurricanes, landslides are!			standards	
172		Yes	Standards	HS+.E1U4.13	
203	The Key concepts should be dropped from every grade level.				
208	Simplification.				
	I'd like us to implement the Next Generation Science Standards, already in use in				
211	many states and districts. https://www.nextgenscience.org/				
	It doesn't make sense for certain topics to be taught in all sciences!! Why/how				
	would Biology teach about Kepler's Laws? Why/how would Physics teachers teach			Supporting	
	about DNA and mitosis? There should be certain topics that are limited to the			document that	
	appropriate subject area. I suppose that some review will need to be done before			includes potential	
	students take a test over the essentials in 11th grade, but that should be done by the			scope and sequence	
	appropriate content teachers.			of courses, similar to	
228	1	Yes	Organization	NGSS	
	Biology, physics, chemistry, and earth science in 3 credits?	. 65	o-gameation	Assessment will	
	biology, physics, chemistry, and cardi science in 5 creates.			need to be realistic	
				for a 2.75 year time	Promptly notify districts of
264		Yes	Assessment	span	assessment boundaries
204	Pages 47 - 70Restore to what the teachers asked for. Remove additions by ADE.	res	Assessment	Spair	assessifient boundaries
	,				
205	Remove the references to 'formerly the scientific method', and the Key Concept				
205	Columns.				
277	It is appropriate in some areas, but lacking in others. It goes in depth in some areas,				
2//	but lacks in others.				
	Our purpose is for students to think. The internet has made everyone lazy so the				
	crosscutting concept of problem solving should be in every grade level.				
279					
	Nothing	No			
292	Nothing in particular.	No			
	I would add the following to be an essential standard instead of a plus. These are				
	very common in Bio classes across all campuses that I have visited and would do the				
	students a disservice if they were not all taught across the state. This list was created				
	with efforts of most of the biology teachers from the Leonagroup.HS+B.L2U1.2				
	HS+B.L2U3.3HS+B.L4U1.4 HS+B.L1U2.7 HS+B.L2U2.8 HS+B.L1U2.10				
	HS+B.L1U2.13HS+B.L3U1.16HS+B.L4U1.19				
298					
300	Return evolution standards to how the educators wrote them	See comment #19			
	Address a realistic timeframe to teach these standards accounting for a loss of 20				
	days per year for various testing requirements and the typical lack of technology				
313	available in the science classroom.				
	no suggestions	No			
	#NAME?	No			
334				1	1
334	The 3 years of standards do not give enough rigor to students who are pursuing				

		1			
	The essential standards would result in the unintended consequence of limiting				
	opportunities for all students to have access to rigorous and meaningful science				
	instruction. Many teachers will only teach the essential standard and ignore the				
	others. All standards , even the + standards should be taught to all students. My				
	recommendation would be to incorporate learning progressions along with each				
	standard and incorporate statements for assessment boundaries.				
380	0				
	Do not remove the understanding of fossil fuels and how they negatively impact the			HS.E1U4.14 Add	
	environment!			fossil fuels to key	
				concepts or	
386	6	Yes	Standards and Key Concepts	standard	
	I believe the working group should reconsider their format. Look to see how the				
	Math Standards are written and presented: Overall essential standards, with each				
	standard broken down into which math course it should be taught in.				
387	7				
	Please consider removing the key concepts section. This makes the model more like				
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
390	0 inquiry based.				
	Consider the metric system and innumeracy. Neither of these is addressed properly				
430	0 across the standards.				
	The essential standards have a fairly large amount of detail that will be challenging to				
	fully address in three science courses. There is also the additional problem of				
	implementation. Most schools have separate Biology and Chemistry courses, but the			HS.E1U4.14 Add	
	remaining Earth Science and Physical Science material do not marry very well into a			climate change to	
	single course. Where is the emphasis on climate change in the Essential Standards?			key concepts or	
43:	1	Yes	Standards and Key Concepts	standard	
	The positive and negative impacts sections should provide some specific examples		, .		
442					
	Remove the key concepts as this unnecessary and is more about implementation and				
512	should NOT be the intention of the standards.				
	HS.L1U2.24 Key concepts: consider changing wording to Relate cell structure to cell				
	FUNCTION, organ systems . Purpose implies something intentional. HS.L2U2.28 Key				
	Concepts: change wording to chromosomes which determine SEX at conception				
	rather than gender. Gender is a social construct; sex is the biological anatomy of				
	reproductive structures. Consider revising the evolution standards. All students, not				
	just the HS+, need to be able to 1) Communicate scientific information that common				
	ancestry and biological evolution are supported by multiple lines of empirical				
	evidence. 2) Construct an explanation based on evidence that the process of				
	evolution primarily results from the 4 factors. 3) apply concepts of statistics and				
	probability to support explanations that organisms with adventageous heritable				
	traits (adaptations) tend to increase in proportion to organisms lacking this trait. 4)				
	construct an explanation based on evidence for how natural selection leads to the				
	adaptation of populations. 5) Evaluate evidence supporting claims that changes in				
	teh environmental conditions may result in increases in the number of some species,				
	the emergence of new species over time, and the extinction of other species.				
	the emergence of new species over time, and the extinction of other species.				
569					
203	기 기 기 기 기 기 기 기 기 기 기 기 기 기 기 기 기 기 기	I			

HS Standards as they apply to Life Science:

urvey uestion	61. What would you like the working group to consider as they revise the High Scho	ol Essential Science S	tandards?		
omment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	Evolution, the Big Bang, and the billion year old age of the Earth must be accurately				
	represented in this standards! Religion has no place in the classroom.				
19		No	Comment-Negative		
	As stated before, no removal of words which carry conflicking messages for those				
24	with religious beliefs. Teach your religion at home.	No	Comment-Negative		
	Do not remove the terms evolution and big bang theory. These are key science				
	terms that are part of the science community and should be taught using the correct				
	terminology. There is no reason to edit these standards to not include these terms.			Return the term	
31		Yes	Standard	Evolution	Big Bang Earth and Space Scien
	The Big Bang is a fundamental part of science like the theory of evolution. Keep				
	religion and god out of the science or you will create very confusing students with no				
40	place is today work environment.	No	Comment-Negative		
	They are biased by not crossing out accepted scientific theories such as Big Bang and			Return the term	
43	Evolution.	Yes	Standard	Evolution	Big Bang Earth and Space Scien
	The original standards as created by the Science Teachers is very easy to read and				
	easy to understand. It covers what our children need to know. I STRONGLY				
	DISAGREE with the editing taking out evolution and Big Bang Theory from the high			Return the term	
49	school science curriculum.	Yes	Standard	Evolution	Big Bang Earth and Space Scien
	HUGE CONCERN In the Evolution standard for life sciences the word 'evolution' is				
	crossed out twice. I think that is a serious edit to cross out the word evolution in the				
	evolution standard. I'm a little shocked to see this in 2018. Evolution is a HUGE part				
	of biology and should not be something to fearespecially when knowledge of				
	mechanisms of biological evolution are helping to create so many life saving			Return "mechanism	
	medicines and helping us to understand biological life. We really need to get over			of biological	
	seeing this word as a threat.			evolution" All LS4 is	
61		Yes	Standard	included	
	1. We should require four credits of science in high school in order to make sure our				
	students are truly competitive with those from other states. The breadth of the				
	standards here are good, but trying to achieve that in three years inevitably will lead				
	to a shallow understanding of some of them. 2. There needs to be clearer emphasis				
	on the use of the metric system in all data collection and analysis in science at all				
	levels. 3. Many of the edits introduced during the Douglas internal review damage				
	the rigor of these standards by obscuring or minimizing core concepts in science such				
	as evolution through natural selection, explanations of cosmological evolution				
	through the big bang theory, and man's impact on the environment and climate				
	change. 4. The inclusion of the key concepts lists returns us to the old model of				
	science as a noun, instead of effective research-based model of science as a verb				
	using inquiry and experimentation and emphasizing the processes of science. The				
	key concepts list should be part of a document detailing the state assessment, not			2. Adressed #430	
	this standards document.			3. Evolution	
	tina standards document.			Adressed #61	
	1	1	1	Mulessen HOT	I

	Add in species evolution and the Big Bang			Return the term	
66		Yes	Standard	Evolution	Big Bang Earth and Space Scie
	The deletion of evolution and Big Bang theory need to be included in these standards			Return the term	
67		Yes	Standard	Evolution	Big Bang Earth and Space Scie
	Include evolution and the Big Bang theory.			Return the term	
69		Yes	Standard	Evolution	Big Bang Earth and Space Scie
83	No! Bring back all scientific theories!	No	Comment-Negative		
	Make sure that fundamental science concepts that will prepare students for college			Make sure to	
86	are taught; including evolution & the big bang theory.	Yes	Standard	include all LS4	
	Core, not essential.				
				Combine essential	
				and Plus and add in	
				assessment	
89		Yes	Coding	boundaries	
	Why are they not core standards? If it generates an opportunity for high school		3		
92	credit, keep the name.	No	Other	See Suggested #89	
	Need to keep in evolution rather than changing it to biological diversity. Remove that	111		TTT SUBBESTEE WOS	
	evolution MAY result from natural selection and keep it that is results from.			Change May to	
109	·	Yes	Standard	Primarily	
103	Evolution section is weak and watered down. It needs to be strengthened.	163	Standard	Filliarity	
111	_	Voc	Standard	Coo Suggested #96	
114		Yes	Standard	See Suggested #86	
	Go back to Core standards NOT essential. Put the marked out information back in.			Add in removed	
	Leave in Note on page 48- critical to have it.				
				comments to explain	
4.45				the core and	
145		yes	Introduction	essential standards	
	We should go back to the standards that the committee created and adopt those,				
	not Diane Douglas's internal review copy.	No	Comment-Negative		
162	Adopt NGSS standards	Yes	Standards		
	I trust the work of Science Specialists who devoted their time and energy to improve				
	Arizona's science standards and request their direct incorporation as new standards.				
168		No	Comment - Positive		
170	Funding	No	Other		
	Need to make the Earth and Space science essential standards more rigorous, as				
	most high schools in AZ do not include an Earth science class, or if they do, most				
	advanced students don't take it. So, to make certain these students get enough				
	Earth Science to be literate in Earth science, please make the Essential standards				
	more rigorous. Once again: remove the word hazard and replace it with natural				
	geologic processes, because that is what earthquakes, volcanic eruptions, floods,				
	tornadoes, hurricanes, landslides are!			See Earth and Space	
172		Yes	Standards	Review	See Earth and Space Review
203	The Key concepts should be dropped from every grade level.	Yes	Key Concepts		' '
	Simplification.	No	Other		
	I'd like us to implement the Next Generation Science Standards, already in use in				
	many states and districts. https://www.nextgenscience.org/	Yes	Standards		

			1	T
	It doesn't make sense for certain topics to be taught in all sciences!! Why/how			
	would Biology teach about Kepler's Laws? Why/how would Physics teachers teach			
	about DNA and mitosis? There should be certain topics that are limited to the			
	appropriate subject area. I suppose that some review will need to be done before			
	students take a test over the essentials in 11th grade, but that should be done by the			
	appropriate content teachers.			Clarity of intent of
228	1	Yes	Instruction	standards
	Biology, physics, chemistry, and earth science in 3 credits?	No	Other	
	Pages 47 - 70Restore to what the teachers asked for. Remove additions by ADE.	111		
	Remove the references to 'formerly the scientific method', and the Key Concept			
	Columns.			
	Columns.			
				Remove reference
				"formerly scientific
				method" see
				suggested changes
				#203 - Learning
				progressions from
				framework and
				workgroup
265		yes	Standard	discussion 5/17/18
	It is appropriate in some areas, but lacking in others. It goes in depth in some areas,			
277	but lacks in others.	No	Other	
	Our purpose is for students to think. The internet has made everyone lazy so the			
	crosscutting concept of problem solving should be in every grade level.			
279				
281	Nothing	No		
292	Nothing in particular.	No		
	I would add the following to be an essential standard instead of a plus. These are			
	very common in Bio classes across all campuses that I have visited and would do the			
	students a disservice if they were not all taught across the state. This list was created			
	with efforts of most of the biology teachers from the Leonagroup.HS+B.L2U1.2			
	HS+B.L2U3.3HS+B.L4U1.4 HS+B.L1U2.7 HS+B.L2U2.8 HS+B.L1U2.10			
	HS+B.L1U2.13HS+B.L3U1.16HS+B.L4U1.19			
298				
300	Return evolution standards to how the educators wrote them			
	Address a realistic timeframe to teach these standards accounting for a loss of 20			
	days per year for various testing requirements and the typical lack of technology			
313	available in the science classroom.			
	no suggestions	No		
	#NAME?	No		
	The 3 years of standards do not give enough rigor to students who are pursuing			
376	STEM or science fields in college.			
	The essential standards would result in the unintended consequence of limiting			
	opportunities for all students to have access to rigorous and meaningful science			
	instruction. Many teachers will only teach the essential standard and ignore the			
	others. All standards , even the + standards should be taught to all students. My			
	recommendation would be to incorporate learning progressions along with each			
	standard and incorporate statements for assessment boundaries.			
300	•	Voc	Organization	Soo Suggested #90
380		Yes	Organization	See Suggested #89

	Do not remove the understanding of fossil fuels and how they negatively impact the				
386	environment!				
	I believe the working group should reconsider their format. Look to see how the				
	Math Standards are written and presented: Overall essential standards, with each				
	standard broken down into which math course it should be taught in.				
387					
	Please consider removing the key concepts section. This makes the model more like				
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
	inquiry based.				
				For 3 dimensional	
				Learning "However,	
				in order to facilitate	
				students' learning,	
				the dimensions must	
				be woven together	
				in standards,	
				curricula,	
				instruction, and	Page 29 and 30 of K-12 Framework
				assessments." Page	missing language of crosscutting
390		Yes	Key Concepts	29 K-12 Framework	standards
	Consider the metric system and innumeracy. Neither of these is addressed properly				
430		No	Cirriculum		
	The essential standards have a fairly large amount of detail that will be challenging to				
	fully address in three science courses. There is also the additional problem of				
	implementation. Most schools have separate Biology and Chemistry courses, but the				
	remaining Earth Science and Physical Science material do not marry very well into a				
	single course. Where is the emphasis on climate change in the Essential Standards?				
431		No	Cirriculum		
	The positive and negative impacts sections should provide some specific examples				
442		No	Cirriculum		Too could direct instruction
	Remove the key concepts as this unnecessary and is more about implementation and				
	should NOT be the intention of the standards.			Learning	
				progressions from	
				framework and	
				workgroup	
512	2	Yes	Key Concepts	discussion 5/17/18	

	HS.L1U2.24 Key concepts: consider changing wording to Relate cell structure to cell				
	, ,				
	FUNCTION, organ systems . Purpose implies something intentional. HS.L2U2.28 Key				
	Concepts: change wording to chromosomes which determine SEX at conception				
	rather than gender. Gender is a social construct; sex is the biological anatomy of				
	reproductive structures. Consider revising the evolution standards. All students, not				
	just the HS+, need to be able to 1) Communicate scientific information that common				
	ancestry and biological evolution are supported by multiple lines of empirical				
	evidence. 2) Construct an explanation based on evidence that the process of				
	evolution primarily results from the 4 factors. 3) apply concepts of statistics and				
	probability to support explanations that organisms with adventageous heritable				
	traits (adaptations) tend to increase in proportion to organisms lacking this trait. 4)				
	construct an explanation based on evidence for how natural selection leads to the				
	adaptation of populations. 5) Evaluate evidence supporting claims that changes in				
	teh environmental conditions may result in increases in the number of some species,				
	the emergence of new species over time, and the extinction of other species.			1. Change "Purpose"	
				to "Function"	
				2. Change "Gender"	
569		Yes	Key Concepts	to "Sex"	

Public Comment Non-Survey	Public comment received outside of the survey							
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes			
	HS.B1U1.1 Understand the strengths and weaknesses of philosophies used and the various methods of science studies, assumptions and the peer review process.	N			1. Already addressed in the Science & Engineering Practices. This can be seen on p. 3, in the introduction of the standards (obtain, evaluate, and communicate information). 2. Regarding the addition of "information" in the text, the term information is vague, science is observable and testable.			

vey stion	63. What would you like the working group to consider as they revise the High School	ol Plus (HS+Phy) Standa	ards for Physics courses?		
	, , , , , , , , , , , , , , , , , , , ,		,		
nment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	Some topics are now taught in the second year high school course. I would have those				
	topics reflect that they are taught to students taking two years of physics in high				
106	school.	No	Standards		These are the essential standards
	Evolution section is weak and watered down. It needs to be strengthened.				
114		No			Not physics standards related
154	I am pleased to see that the need for a real Physics curriculum is being addressed	No	Positive comment		
134	We should go back to the standards that the committee created and adopt those, not	No	Positive comment		
157	Diane Douglas's internal review copy.	No	Standards		Too vague
	Adopt NGSS standards	No	standards		Not in our control
	Funding	No	Standards		Not in our control
	The Key concepts should be dropped from every grade level.	110			
	The net consepts should be dropped from every grade level.			Move away from	
				vocab lists.	
				Incorporate learning	
203		Yes	Key Concepts	progression.	
	Simplification.	No	,	progression.	Too vague
	The Plus Standards seem pretty good, except that light is not directly mentioned and				
	it is an important topic.			Committee should	
				review this addition	
228		Yes	standards	of light	
	Pages 47 - 70Restore to what the teachers asked for. Remove additions by ADE.			_	
	Remove the references to 'formerly the scientific method', and the Key Concept				
	Columns.			Change the word	
				"formerly" to "build	
			standards, key concepts,	upon", "building	
265		Yes	introduction	beyond", "based on"	
	It is appropriate in some areas, but lacking in others. It goes in depth in some areas,			Revisit depth in next	
277	but lacks in others.	Yes	standards	committee	Look at specificity
	Our purpose is for students to think. The internet has made everyone lazy so the				
	crosscutting concept of problem solving should be in every grade level.				Already adressed in Science and
279		No	negative comment		Engineering Practices
	Nothing	No			
	Nothing in particular.	No			
335	no suggestions	No			
	I find that the plus is good, but have some difficulty getting all the content (with				
	another class like chem) into their HS career as they are closely related. The students			Clarify what is the	
_	would not be able to be involved in multiple, deep content if doing a STEM career.			purpose of the plus	
376		Yes	Standards	standards.	
	I believe the working group should reconsider their format. Look to see how the			2 documents: a)	
	Math Standards are written and presented: Overall essential standards, with each			Essential b) Essential	
	standard broken down into which math course it should be taught in.		Organization, Key	and Plus combined	
387	'	Yes	concepts	to one	

	Please consider removing the key concepts section. This makes the model more like our PO model giving teachers a checklist, rather than leaving it 3 dimensional and inquiry based.			Move away from vocab lists.	
				Incorporate learning	
390		Yes		'	See comment 203
430	Good start. Change out breadth of knowledge for greater depth though.	No	Positive comment		Too broad
	Remove the key concepts as this unnecessary and is more about implementation and				
	should NOT be the intention of the standards.			Change to learning	
512		Yes	Key Concepts	progression	

Survey Question	65. What would you like the working group to consider as they revise the High School	ol Plus (HS+C) Standard:	s for Chemistry courses?		
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
45	Please follow the National science education standards.	No			Too broad
	Evolution section is weak and watered down. It needs to be strengthened.				
114		No			Not related to chemistry standards
	I want to ensure there are hands-on experiments so students can experience that				
	type of learning in our classrooms.				Science and Engineering Practices are
154		No	Instruction		embedded in standard
	We should go back to the standards that the committee created and adopt those, not				
	Diane Douglas's internal review copy.	No	Standards		Too vague
	Adopt NGSS standards	No	Standards		Not in current groups control
170	Funding	No			Not in current groups control
	The Key concepts should be dropped from every grade level.				
				Move away from	
				vocaulary lists to	
				learning progression,	
!				or something	
				similar, per grade	
203		Yes	Key Concepts	band.	
	Simplification.	No			Too vague
228	ŭ ,	No			
	Pages 47 - 70Restore to what the teachers asked for. Remove additions by ADE.			Change the word	
	Remove the references to 'formerly the scientific method', and the Key Concept			"formerly" to	
	Columns.			"building upon",	
			Key Concepts,	"building beyond",	
265		Yes	Introduction	etc	Too vague
	It is appropriate in some areas, but lacking in others. It goes in depth in some areas,				
	but lacks in others.			Revisit depth in	Specificity also needs to be looked at-
277		Yes	Standards	committee	Consider depth boundaries
	Our purpose is for students to think. The internet has made everyone lazy so the				
	crosscutting concept of problem solving should be in every grade level.				Already adressed in Science and
279		No			Engineering Practices
	Nothing	No			
	Nothing in particular.	No			
335	no suggestions	No			
	Hs+C.P1U3.2 discusses nuclear changes that are far beyond even college level				
	understanding. Teaching this without more basic content understanding will be				
	impossible. I suggest removing this standard completly				
354		Yes	Standards		
	I believe the working group should reconsider their format. Look to see how the				
	Math Standards are written and presented: Overall essential standards, with each				
	standard broken down into which math course it should be taught in.			Format should be a	
				I -	Renaming "Plus" standards, to clarify
				for essential	that it is not just honors. Not visually
				standards vs. entire	having a separate column for
			Organization, Key	course standards	essential and plus, but acknowledging
387		Yes	Concepts	(including plus)	assessed state standards.

	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
390	inquiry based.	Yes	Key Concepts	Addressed in 203
430	Good start. Change out breadth of knowledge for greater depth though.	No	Positive comment	Too broad
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	No	Key Concepts	Move away from vocab list

Survey Question	67. What would you like the working group to consider as they revise	the High School Plu	ıs (HS+E) Standards	for Earth/Space Sciences courses?	
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
6	P.62 Replace stricken language regarding the Big Bang Theory.	Yes	standard	replace language specific to the Big Bang	The Big Bang Theory is the only scientific theory for the creation of the universe. Earth and Space Science should address the scientifically based explanation for the creation of the universe.
0	This section needs to include the big bang theory, not creation.	res	Standard	replace language specific to the big bang	scientifically based explanation for the creation of the universe.
11	This section needs to include the big bang theory, not creation.	Yes	standard	replace language specific to the Big Bang	same as comment 6
	I don't know how you could well prepare a student entering college without ever learning about the Big Bang Theory or having the opportunity to analyze the evidence that supports it. Again, that is a disservice to our students.				
13		yes	standard	replace language specific to the Big Bang	same as comment 6
19	Evolution, the Big Bang, and the age of the Earth must be represented accurately. Drop the religious nonsense.	yes	standard	replace language specific to the Big Bang	same as comment 6
26	Cannot simply remove teaching a well-established scientific theory such as the big bang.	yes	standard	replace language specific to the Big Bang	same as comment 6
	The original draft of the standards are excellent, but the internal review erroneously removes the following section of the standard, supporting evidence for the Big Bangtheory and the scale of the Universe Please do not remove this from the				
31	standard.	yes	standard	replace language specific to the Big Bang	same as comment 6
40	Big Bang theory must to be part of the program	yes	standard	replace language specific to the Big Bang	same as comment 6
43	They are biased by not crossing out accepted scientific theories such as Big Bang and Evolution.	yes	standard	replace language specific to the Big Bang	same as comment 6
45	Please follow the National science education standards.	no	other		The State Board of Education determined that Arizona would write our own standards
	The original standards as created by the Science Teachers is very easy to read and easy to understand. It covers what our children need to know. I STRONGLY DISAGREE with the editing taking out evolution and Big Bang Theory from the high school science				
49	curriculum.	yes	standard	replace language specific to the Big Bang	same as comment 6
	use specific vocabulary and terms. do not shy away from these terms. they need to used and understood.HS.E2U2.17 - I am concerned about the lack of using septic terms and theories that are fact-based and show viable arguments for the concept of expansion the universe and the Big Bang theory. This is not philosophy class. We want our students to have a solid foundation of understanding of how the world/universe works. Analysis of why is a different discipline of study.				
56		yes	standard	replace language specific to the Big Bang	same as comment 6
61	Many of the earth science standards are more focused on environmental science, which is greatbut it doesn't leave much left to teach in just earth science.	yes	standard	none	Did not find that 4 standards that relate to env sci detract from the Earth Sci standards.
65	For HS.E2U2.17, return specific mention of the big bang theory.	yes	standard	replace language specific to the Big Bang	same as comment 6
67	The deletion of evolution and Big Bang theory need to be included in these standards	yes	standard	replace language specific to the Big Bang	same as comment 6
80	Omitting the Big Bang theory just makes you look stupid. Let scientists write the standards.	yes	standard	replace language specific to the Big Bang	same as comment 6

	1	1	1	1	
	I'm a grandmother as well as a concerned citizen and a geologist who spent over 25				
	years in the field of marine geological research (Deep Sea Drilling Project and the				
	Ocean Drilling Program). Our main areas of research include climate studies,				
	tectonics, evolution (paleobiology, stratigraphy, geomicrobiology, mass extinctions,				
	etc), geochemistry. I am shocked that the proposed AZ Science Standards include no				
	mention of global warming and a minor and insignificant mention of climate change.				
	This is shameful, especially since the next generation of school children will be the				
	ones left to understand and deal with the effects of global warming/climate change.				
	In addition, as someone who has seen evolution being put to the test in the field by				
	watching paleontologists in action, I find it absurd that most references to evolution				
	are crossed out or diluted in meaning. Arizona cannot expect it's poorly funded				
	teachers and schools to excel, especially when the teachers are not encouraged to				
	teach the fundamentals of science, fundamentals that serve as the bedrock				
	foundation for science in the real world.				
	Total addition for science in the real world.			Put evolution back in Life Science no	climate change is in standards. HS.E1U4.14, HS+E.E1U4.13 and
91		was	standard		=
91		yes	Stanuaru	change to Earth Science	HS+E.E1U4.15 all address climate change.
	Evolution section is weak and watered down. It needs to be strengthened.				
114		Yes	standard	Put evolution back in Life Science	Evolution should be taught in science.
	Page 62 Return to: Analyze, interpret supporting evidence for the Big Bang theory and				
145	the scale of the Universe.	yes	standard	replace language specific to the Big Bang	same as comment 6
	We should go back to the standards that the committee created and adopt those, not				
157	Diane Douglas's internal review copy.	no	same as comment 45		
162	Adopt NGSS standards	no	same as comment 45		
	Talking about the evolution of planetary structures makes no sense whatsoever. This				
	is another politically driven topic based on a great deal of speculation. We simply				
	haven't been able to observe these things for a long enough period of time to come to				
	any conclusions about their evolution . The curriculum needs to be purged of ALL				
	politically motivated content, whether it be by governmental fiat, lobbying, or				
	Establishment science which systematically crowds out dissenting opinions.				
165		no			
	Too narrow a focus on the causes of climate: it is not just the flow of energy that				
	creates climate changes! Climate models require very sophisticated computing				
	equipment: something not available to high school students, and rarely available to				
	college students, unless they are working with a professor who has funding to				
	research and create a climate model. Rather one might want to focus on creating an				
	explanation of the difference between climate and weather. And possibly discuss				
	how even using very sophisticated weather modeling equipment, that weathermen				
	frequently get the prediction incorrectso how accurate can climate models be, when				
	they have a much longer time frame involved. Consider moving standard 8 to the list				
	of Earth Science Essential standards. Consider adding to standard 15: creating a				
	quantitative model that illustrates how the Earth Systems affect each other (without				
	any impact from humans).				
172		no			
203	The Key concepts should be dropped from every grade level.	yes	key concepts	none	ADE directed to be included
	Simplification.	no	, , , , , , , , , , , , , , , , , , ,		
200	The concepts of analysis of light (spectra) and the Hertzsprung-Russell Diagram are				
	important enough to receive proper mention—possibly as their own + Standard.				
220		wor	ctandard	nono	Committee instructed to stay away from performance ob'
228		yes	standard	none	Committee instructed to stay away from performance objectives
	I would like to see separate domains pertaining to areas of study under				
	Environmental Science. There are several items I would want to see included.				
	Explicit language about human-caused climate change should be included.				
236		no			
	Pages 47 - 70Restore to what the teachers asked for. Remove additions by ADE.				
	Remove the references to 'formerly the scientific method', and the Key Concept			remove phrase "formerly known as the	
265	Columns.	yes	introduction	scientific method"	The SEP are not the as the Scientific Method.
	Our purpose is for students to think. The internet has made everyone lazy so the	ĺ			
	crosscutting concept of problem solving should be in every grade level.				
279		no			
281	Nothing Nothing in particular.	no no			

335	no suggestions	no		
	These standards do not consider the lack of math skills found in Earth Science			
374	classrooms.	no		This can be addressed with local curriculum.
	I believe the working group should reconsider their format. Look to see how the Math			
	Standards are written and presented: Overall essential standards, with each standard			
	broken down into which math course it should be taught in.			
387		no	Organization	ADE does not dictate course sequence in HS.
	Please consider removing the key concepts section. This makes the model more like			
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and			
390	inquiry based.	yes	see comment 203	
	Humans will no doubt explore our solar system, and at present, there is research			
	being done to put humans back on the moon and on to Mars. Do the Earth & Space			
	standards cover students' learning/exploring about traveling to or living on Mars?			
	(shorter question: Do the standards cover students learning about the exploration of			
	traveling to and living on the planet Mars?)			
394		no		
	Good start. Change out breadth of knowledge for greater depth though. Add			
	something about the timescale of the universe and the age of planet Earth. Don't call			
430	things spheres if at all avoidable.	yes	see comment 6	
	Where is the emphasis on climate change? This is the most serious issue facing this			
	generation of students, yet this is barely addressed as a footnote to the effect of the			
	Sun on the climate, and only in the Plus Standards. People of all countries will need			
	to work together immediately to reduce the global consequences of climate change.			
	It is shameful that this is barely addressed in any way, shape, or form.			
431		yes	see comment 91	
	Remove the key concepts as this unnecessary and is more about implementation and			
512	should NOT be the intention of the standards.	yes	see comment 203	

Public Comment Non-Survey	Public comment received outside of the survey				
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	HS+E.E1U2.3 Assess the confidence level of your predictions in light of the wide range of results from the current set of global climate models.	у	standard	none	Addition introduces bias - the assumption is that current climate data is inaccurate.
B-2	HS.E2U2.17 add to key concepts: Strengths and weaknesses of theories	у	key concepts	none	The terrms "strength" and "weakness" are subjective and introduce bias based on feelings rather than facts.

rey stion	61. What would you like the working group to consider as they revise the High Scho	ol Essential Science S	Standards? EARTH/SPA	CE	
nment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes
	Evolution, the Big Bang, and the billion year old age of the Earth must be accurately				The Big Bang Theory is the only
	represented in this standards! Religion has no place in the classroom.				scientific theory for the creation of
					the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
19	9	Yes	standard	Bang	the creation of the universe.
	As stated before, no removal of words which carry conflicking messages for those	103	Staridard	Dang	The Big Bang Theory is the only
	with religious beliefs. Teach your religion at home.				scientific theory for the creation
	with religious beliefs. reach your religion at nome.				the universe. Earth and Space
				ranlass language	•
				replace language	Science should address the
		.,		specific to the Big	scientifically based explanation fo
24		Yes	standard	Bang	the creation of the universe.
	Do not remove the terms evolution and big bang theory. These are key science terms				The Big Bang Theory is the only
	that are part of the science community and should be taught using the correct				scientific theory for the creation
	terminology. There is no reason to edit these standards to not include these terms.				the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
33	1	Yes	standard	Bang	the creation of the universe.
	The Big Bang is a fundamental part of science like the theory of evolution. Keep				The Big Bang Theory is the only
	religion and god out of the science or you will create very confusing students with no				scientific theory for the creation
	place is today work environment.				the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
40	0	Yes	standard	Bang	the creation of the universe.
	They are biased by not crossing out accepted scientific theories such as Big Bang and			. 0	The Big Bang Theory is the only
	Evolution.				scientific theory for the creation
	LVOID II.				the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
4.		Vas	standard		,
43		Yes	standard	Bang	the creation of the universe.
	The original standards as created by the Science Teachers is very easy to read and				The Big Bang Theory is the only
	easy to understand. It covers what our children need to know. I STRONGLY				scientific theory for the creation of
	DISAGREE with the editing taking out evolution and Big Bang Theory from the high				the universe. Earth and Space
	school science curriculum.			replace language	Science should address the
				specific to the Big	scientifically based explanation for
49		Yes	standard	Bang	the creation of the universe.
	HUGE CONCERN In the Evolution standard for life sciences the word 'evolution' is				
	crossed out twice. I think that is a serious edit to cross out the word evolution in the				
	evolution standard. I'm a little shocked to see this in 2018. Evolution is a HUGE part				
	of biology and should not be something to fearespecially when knowledge of				
	mechanisms of biological evolution are helping to create so many life saving				
	medicines and helping us to understand biological life. We really need to get over				
	seeing this word as a threat.				
6:					

	1. We should require four credits of science in high school in order to make sure our				
	students are truly competitive with those from other states. The breadth of the				
	standards here are good, but trying to achieve that in three years inevitably will lead				
	to a shallow understanding of some of them. 2. There needs to be clearer emphasis				
	on the use of the metric system in all data collection and analysis in science at all				
	levels. 3. Many of the edits introduced during the Douglas internal review damage				
	the rigor of these standards by obscuring or minimizing core concepts in science such				
	as evolution through natural selection, explanations of cosmological evolution				
	through the big bang theory, and man's impact on the environment and climate				
	change. 4. The inclusion of the key concepts lists returns us to the old model of				
	science as a noun, instead of effective research-based model of science as a verb				
	using inquiry and experimentation and emphasizing the processes of science. The key			2. state use of metrics	
	concepts list should be part of a document detailing the state assessment, not this	1. No		in science in	
	standards document.		2. other	introduction.	
	Standards document.			3. see comment 19	
65			4. Key Concepts		4. ADE directed to be included.
65		4. 165	4. Key Concepts	4. 110116	The Big Bang Theory is the only
	Add in species evolution and the Big Bang				scientific theory for the creation of
					•
					the universe. Earth and Space
					Science should address the
		.,			scientifically based explanation for
66		Yes	standard	Bang	the creation of the universe.
	The deletion of evolution and Big Bang theory need to be included in these standards				The Big Bang Theory is the only
					scientific theory for the creation of
					the universe. Earth and Space
					Science should address the
					scientifically based explanation for
67		Yes	standard	Bang	the creation of the universe.
	Include evolution and the Big Bang theory.				The Big Bang Theory is the only
					scientific theory for the creation of
					the universe. Earth and Space
				replace language	Science should address the
				specific to the Big	scientifically based explanation for
69		Yes	standard	Bang	the creation of the universe.
	No! Bring back all scientific theories!				The Big Bang Theory is the only
					scientific theory for the creation of
					the universe. Earth and Space
				replace language	Science should address the
					scientifically based explanation for
83		Yes	standard		the creation of the universe.
	Make sure that fundamental science concepts that will prepare students for college			-	The Big Bang Theory is the only
	are taught; including evolution & the big bang theory.				scientific theory for the creation of
					the universe. Earth and Space
					Science should address the
					scientifically based explanation for
86		Yes	standard		the creation of the universe.
	Core, not essential.			ŭ	Core indicates central focus of
89		Yes	other	replace word "core"	standard
63		103	Ottici	TEPIACE WOLL COLE	Juli i u u i

	·				
	Why are they not core standards? If it generates an opportunity for high school				
92	credit, keep the name.	Yes	see comment 89		
	Need to keep in evolution rather than changing it to biological diversity. Remove that				
	evolution MAY result from natural selection and keep it that is results from.				
109					
	Evolution section is weak and watered down. It needs to be strengthened.				
114					
	Go back to Core standards NOT essential. Put the marked out information back in.				
145	Leave in Note on page 48- critical to have it.	Yes	see comment 89		
	We should go back to the standards that the committee created and adopt those, not				
157	Diane Douglas's internal review copy.				
	Adopt NGSS standards				
	I trust the work of Science Specialists who devoted their time and energy to improve				
	Arizona's science standards and request their direct incorporation as new standards.				
168	· · · · · · · · · · · · · · · · · · ·				
	Funding				
	Need to make the Earth and Space science essential standards more rigorous, as				
	most high schools in AZ do not include an Earth science class, or if they do, most				
	advanced students don't take it. So, to make certain these students get enough Earth			HS+E.E1U4.13 change	
	Science to be literate in Earth science, please make the Essential standards more			hazard to natural	
	rigorous.  2. Once again: remove the word hazard			geologic and	
	and replace it with natural geologic processes, because that is what earthquakes,			~ ~	Humans consider natural processes
	volcanic eruptions, floods, tornadoes, hurricanes, landslides are!	1. no		(including climate	hazardous because we put ourselves
172	·	2. Yes	2. Standard	·         =	•
	The Key concepts should be dropped from every grade level.	Yes	see comment 65	change)	there.
			see comment 65		
208	Simplification.	no			
211	I'd like us to implement the Next Generation Science Standards, already in use in				
211	many states and districts. https://www.nextgenscience.org/				
	It doesn't make sense for certain topics to be taught in all sciences!! Why/how would				
	Biology teach about Kepler's Laws? Why/how would Physics teachers teach about				
	DNA and mitosis? There should be certain topics that are limited to the appropriate				
	subject area. I suppose that some review will need to be done before students take a				
	test over the essentials in 11th grade, but that should be done by the appropriate				
	content teachers.				
228					
264	Biology, physics, chemistry, and earth science in 3 credits?				
	Pages 47 - 70Restore to what the teachers asked for. Remove additions by ADE.				
	Remove the references to 'formerly the scientific method', and the Key Concept				
265	Columns.				
	It is appropriate in some areas, but lacking in others. It goes in depth in some areas,				
277	but lacks in others.				
	Our purpose is for students to think. The internet has made everyone lazy so the				
	crosscutting concept of problem solving should be in every grade level.				
279					
	Nothing				
292	Nothing in particular.				

		T			
	I would add the following to be an essential standard instead of a plus. These are very				
	common in Bio classes across all campuses that I have visited and would do the				
	students a disservice if they were not all taught across the state. This list was created				
	with efforts of most of the biology teachers from the Leonagroup.HS+B.L2U1.2				
	HS+B.L2U3.3HS+B.L4U1.4 HS+B.L1U2.7 HS+B.L2U2.8 HS+B.L1U2.10				
	HS+B.L1U2.13HS+B.L3U1.16HS+B.L4U1.19				
298					
	Return evolution standards to how the educators wrote them				
300	Address a realistic timeframe to teach these standards accounting for a loss of 20				
	days per year for various testing requirements and the typical lack of technology				
242					
	available in the science classroom.				
	no suggestions				
354	#NAME?				
	The 3 years of standards do not give enough rigor to students who are pursuing STEM				
376	or science fields in college.				
	The essential standards would result in the unintended consequence of limiting				
	opportunities for all students to have access to rigorous and meaningful science				
	instruction. Many teachers will only teach the essential standard and ignore the				
	others. All standards , even the + standards should be taught to all students. My				
	recommendation would be to incorporate learning progressions along with each				
	standard and incorporate statements for assessment boundaries.				
380					
	Do not remove the understanding of fossil fuels and how they negatively impact the				
386	environment!	no	standards		is already addressed in HS+E.E1U4.14
	I believe the working group should reconsider their format. Look to see how the				
	Math Standards are written and presented: Overall essential standards, with each				
	standard broken down into which math course it should be taught in.				
387	_				
	Please consider removing the key concepts section. This makes the model more like				
	our PO model giving teachers a checklist, rather than leaving it 3 dimensional and				
390	inquiry based.				
	Consider the metric system and innumeracy. Neither of these is addressed properly				
430	across the standards.				
	The essential standards have a fairly large amount of detail that will be challenging to				
	fully address in three science courses. There is also the additional problem of				
	implementation. Most schools have separate Biology and Chemistry courses, but the				climate change is in standards.
	remaining Earth Science and Physical Science material do not marry very well into a				HS.E1U4.14, HS+E.E1U4.13 and
	single course. Where is the emphasis on climate change in the Essential Standards?				HS+E.E1U4.15 all address climate
431	, ,	yes	standards	none	change.
.51	The positive and negative impacts sections should provide some specific examples	<i>i</i>		- · · ·	0
442					
772	Remove the key concepts as this unnecessary and is more about implementation and				
512	should NOT be the intention of the standards.	Yes	see comment 65		
312	Ishould NOT be the intention of the standards.	103	acc comment oa	l	

	HS.L1U2.24 Key concepts: consider changing wording to Relate cell structure to cell				
	FUNCTION, organ systems . Purpose implies something intentional. HS.L2U2.28 Key				
	Concepts: change wording to chromosomes which determine SEX at conception				
	rather than gender. Gender is a social construct; sex is the biological anatomy of				
	reproductive structures. Consider revising the evolution standards. All students, not				
	just the HS+, need to be able to 1) Communicate scientific information that common				
	ancestry and biological evolution are supported by multiple lines of empirical				
	evidence. 2) Construct an explanation based on evidence that the process of				
	evolution primarily results from the 4 factors. 3) apply concepts of statistics and				
	probability to support explanations that organisms with adventageous heritable traits				
	, , , ,				
	(adaptations) tend to increase in proportion to organisms lacking this trait. 4)				
	construct an explanation based on evidence for how natural selection leads to the				
	adaptation of populations. 5) Evaluate evidence supporting claims that changes in teh				
	environmental conditions may result in increases in the number of some species, the				
	emergence of new species over time, and the extinction of other species.				
56					
	Change standard for evolution and natural selection so they are not presented as a			See suggested	
42	7 belief, but as an ideas supported by evidence.	Yes	Standard	changes #61	
	Good start. Change out breadth of knowledge for greater depth though. Add more				
	about evolution, and possibly make it first as it is the foundational theory of the field.				
43		Yes	Organization		
	As written, the essential standard for evolution reads more like an extended				
	exploration of genetic diversity, and less like requiring an understanding of the				
	process of evolution. The Plus Standards are barely better, rephrasing the source				
	material to include the word may, when over 160 years of peer-reviewed research				
	continue to support natural selection as a fundamental cause of change in species				
	over time. It also fails to fully explore additional causes of natural selection, or some				
	of the best available evidence for evolution (DNA). Evolution is a cornerstone idea in				
	biology that is the basis for much of modern medicine and helps us to better				
	understand changes in communities. In the AP Biology course administered by				
	College Board, evolution is listed as the first of four big ideas that define biology.				
	These big ideas were developed in communication with the expectations of college				
	professors across the country of what they expected students to learn about in				
	biology. Why have these standards been revised to sound as though we are uncertain				
	about the idea?			See comment #61 and	
				change May to	
43	1	yes	Standard	Primarily	
	Please do not water down the evolution standards. By doing so, you decrease				
	scientific literacy. There are 30 plus scientific organizations which have felt strongly				
	enough about this topic to make public statements about it. I will be happy to				
	provide you with references if requested.				
43	l	Yes	Standards	Include LS. 4	
	Remove the key concepts as this unnecessary and is more about implementation and			See suggested	
51	2 should NOT be the intention of the standards.	Yes	Key Concepts	changes #203	
	1	1	1 -,		

	<del>,</del>			,
	The theory of evolution by natural selection is not tentative. HS+B.L4U1.19 MUST be			
	rewrittenthe process of evolution MAY result from natural selection must be			
	changed to remove the ambiguity or suggestion that evolution is not driven by			
	natural selection. Nowhere in the standards does it suggest that students evaluate			
	the idea that organisms MAY be made up of cells, or that matter MAY be made of			
	atoms. The THEORY of evolution deserves the same treatment as the cell THEORY,			
	the atomic THEORY, and the kinetic molecular THEORY. It does not SEEK to explain; it			
	does explain and any ambiguous language does not belong in these standards.L4 on			
	page 78 must also be revised are believe to is inappropriate for these standards.No			
	where in this document is Charles Darwin mentioned, though the following scientists			
	are: Bohr, Dalton, Newton.Consider revising the evolution standards. All students, not			
	just the HS+, need to be able to 1) Communicate scientific information that common			
	ancestry and biological evolution are supported by multiple lines of empirical			
	evidence. 2) Construct an explanation based on evidence that the process of			
	evolution primarily results from the 4 factors. 3) apply concepts of statistics and			
	probability to support explanations that organisms with adventageous heritable traits			
	(adaptations) tend to increase in proportion to organisms lacking this trait. 4)			
	construct an explanation based on evidence for how natural selection leads to the			
	adaptation of populations. 5) Evaluate evidence supporting claims that changes in teh			
	environmental conditions may result in increases in the number of some species, the			Remove the word
	emergence of new species over time, and the extinction of other species.			MAY and add
				"Primarily" Comments
				reflect all progressions
				from the LS4 of K12
569		Yes	Standards	Framework

Public Comment Non-Survey	Public comment received outside of the survey					
Comment #	Public Comment	Actionable Yes/No	Item Addressed	Suggested Changes	Committee Notes	
Need to add a new standard	Need to add in new standard for feedback mechanisms for maintaining homeostasis					
	HS.B1U1.1 Understand the strengths and weaknesses of philosophies used and the various methods of science studies, assumptions and the peer review process.	N			1. Already addressed in the Science & Engineering Practices. This can be seen on p. 3, in the introduction of the standards (obtain, evaluate, and communicate information). 2. Regarding the addition of "information" in the text, the term information is vague, science is observable and testable.	