

From:
Sent: Friday, December 01, 2017 4:16 PM
To: Review, Standards
Subject: Comments on Standards and Essential Skills

Thank you for your hard work in revising the standards! The committees have done an excellent job in reviewing and revising the documents.

I commend the committees for the strong inclusion of content regarding climate and climate change in the Science Standards. The committee provided a strong, balanced approach to help students explore these concepts and the issues that they will be helping to solve in the future.

I also commend both the science and social studies committees for their strong inclusion of language regarding human and environment interactions. Students have the opportunity to explore their role in the places we live, work, and play as Coloradans.

Colorado's Essential Skills demonstrate important skills that students need to have to be successful in life. They were well written and clear. Several of the essential skills could be strengthened within the content standards.

Entrepreneurial Skills

Critical Thinking/Problem Solving: Please consider adding more emphasis on planning in the standards. The standards in Science and Social Studies have a strong focus on designing solutions, but there needs to be opportunities to identify the steps it would take to enact those solutions. Without practicing these skills, students will not master the skills needed to solve problems.

Personal Skills

Personal Responsibility: Personal responsibility could be strengthened throughout the science standards. How do students plan to enact solutions they design? How does personal responsibility play a role in designing solutions.

Perseverance/Resilience: Particularly in science, Consider including more opportunities through evidence outcomes to help students develop the skills to evaluate the results of actions/solutions and make changes based on results.

Civic/Interpersonal Skills

Civic Engagement: Please consider including more emphasis on this skill in Science and more opportunities to directly practice skills in Social Studies. In several places throughout the Social Studies standards the language regarding "practicing" civic engagement skills was weakened to developing understanding or knowledge.

Thank you for all your hard work to ensure students in Colorado have the knowledge and skills they need to be successful.

Colorado Alliance for Environmental Education
1536 Wynkoop St, Suite 314
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www.cae.org

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From:
Sent: Monday, December 04, 2017 11:42 PM
To: Colsman, Melissa; Review, Standards
Cc:
Subject: Re: standards review

Melissa,

Thank you for continuing to share my input. Below are a few more thoughts to share:

Below is a Reading, Writing and Communicating standard (English) for every single grade level through 12th grade and starting in KINDERGARTEN:

"Apply knowledge and skills to implement sophisticated, appropriate, and workable solutions to address complex global problems using interdisciplinary perspectives independently or with others." (under Oral Expression and Listening, Colorado Essential skill #4.)

This is not appropriate in this subject matter, (English), it is a political/government agenda item.

General comments applicable to all standards using Science as an example:

I have skimmed over the science standards and noticed general statements about consumption of limited resources and awareness of consequences. Previously science class has required our middle school aged children to keep a journal of their family's habits of consuming resources to teach kids about their "footprint". Or to take an inventory of their medicine cabinet to compare different consumption rates. Such lessons have been highly controversial. If those lessons are still encouraged by the manner in which the standards are written please consider the following as you move forward in your revisions:

These sorts of lessons require children to question their lifestyle, their culture, their family traditions/ practices, their parent's judgement and authority, their nation's economic structure, their nation's political structure... when such issues are introduced at an age where the child is not yet physically and emotionally equipped to deal with these questions there can be serious consequences. One Dr. of Psychiatry spoke out against such lessons explaining that, taken together repeatedly in different subjects, this is causing our highly impressionable children to question their identity on too many levels while lacking the emotional development capacity to safely process these issues. This, he explained, is contributing to a fundamental emotional breakdown resulting in serious psychological manifestations ranging from cutting, to depression to suicide.

Taken together, many of the public education lessons have gone beyond teaching reading, writing and math and now get into shaping how our kids are to think and value. Although this might appear desirable as a social engineering avenue to address historic problems in hopes to "create a better world". Such meddling in the psyche of our young ones may have unintended and unanticipated consequences. For example, there has been an extreme educational focus on racial and gender tensions with the following outcomes: young males asserting that they should kill themselves simply because they are white and male.

We must exercise caution in our attempts to correct the ills of society through the public school system. The standards that go beyond academics into shaping the values of the next generation may be having unintended consequences. Please reconsider further deleting those parts of the standards that are targeted at shaping HOW the kids are to think about topics especially when these topics might conflict with the child's family, tradition, culture and or religion and instead, please consider narrowing the scope of the standards to academics.

Math:

Grade Level expectation 2. *'Communicate precisely to others, using clear definitions to justify their reasoning. They are able to use reasoning skills that rely on estimation, precision and comparison while continually asking themselves, "Does this make sense?"'*

This standard tests language rather than mathematical skills. This results in students who excel in math but lacking language communication skills to be potentially "held back" in their progress in math. Weakness in language skills could be a result of culture, foreign language as first language, or simply the manner in which an individual's brain processes information. This standard therefore results in necessarily disadvantaging certain individuals based on these characteristics. It is inherently **discriminating against individuals with characteristics that have nothing to do with the**

individual's ability to accurately do math. To eliminate this inequity, this standard should be removed entirely from the math standard in all grade levels.

Grade level expectation 4. *“Communicate effective logical arguments using justification and proof. Argumentation involves making and testing conjectures, drawing valid conclusions, and justifying thinking.”*

Grade level expectation 5. *“Use critical thinking to recognize problematic aspects of situations, create models, and present and defend solutions.”*

In so far as these grade level expectations also rely on language communication skills, these should also be amended/ deleted.

Thank you for your dedication and hard work on the Colorado Academic Standards and thank you for your kind consideration of my comments.

Sincerely,

-----Original Message-----

From: Colman, Melissa <Colman M@cde.state.co.us>

To: Review, Standards <standardsreview2018@cde.state.co.us>

Cc:

Sent: Sun, Dec 3, 2017 10:00 am

Subject: RE: standards review

Thank you for this feedback, Along with any feedback you provide through the online system, this email will be provided to the Comprehensive Health and Physical Education review committee.

Kind regards,
Melissa

Melissa Colman, Ph.D.
Associate Commissioner
Student Learning



P 303.866.6737
201 East Colfax Avenue, Room 509, Denver, CO 80203
Colman M@cde.state.co.us | www.cde.state.co.us



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From:
Sent: Friday, December 01, 2017 11:42 PM
To: Colman, Melissa; Review, Standards
Cc:
Subject: Re: standards review

Melissa,
Thank you! I was able to access the standards this evening.

From:
Sent: Friday, December 01, 2017 2:20 PM
To: Review, Standards
Cc:
Subject: Standards Feedback

Hello!

My feedback is very general. I have taught an integrated science curriculum in the past and have found it EXTREMELY frustrating in helping students make big picture connections.

As a 7th grade life science teacher this year, I have had huge success by finding common threads of form + function, the cell as a system, levels of biological organization, etc. It also allows for constant spiraling of content and allows students to truly internalize and retain the knowledge and skills developed in each year. Before this school year I was at a school that taught using the integrated model. In fact, I taught 6th, 7th, and 8th grade and have seen firsthand the lack of continuity that occurs when you go from teaching cells one week to weather the next. This model sacrifices depth and the opportunity for students to dive deep into each of the units, while allowing each unit to build on the last.

I also think the proposed standards will hurt students by forcing teachers to adapt to content that they have not previously been specialized in. My background is in biology; it is my passion. By shifting the standards, my amount of intellectual prep will triple.

I hope you take this feedback into consideration. I realize this last point is somewhat selfish, but as you know, teacher happiness and fulfillment is something our state really struggles with and I think should be given significant weight in the conversation.

Thank you for the opportunity to give my input.

McAuliffe International School

From:
Sent: Tuesday, October 17, 2017 11:14 AM
To: Review, Standards
Subject: Science Feedback

My district is not very good about providing resources unless you are in one of the new schools with money and your PTA can afford to fundraise/or you have a lot of students so your site based budget is very large. If you are going to change, shift, or adjust science standards again, please be aware that a lot of teachers cannot afford to buy more supplies and resources for new units.

Thanks so much,

From:
Sent: Tuesday, October 17, 2017 2:32 PM
To: Review, Standards
Subject: Colorado science standards



Dear Standards Review and Revision Science Committee,

As the CEO Woot Math, a local K-12 ed-tech company, and a member of the Board of Directors of the National Center for Women in IT, I would like to offer my strongest recommendation that we adopt the proposed science standards.

It is critical for Colorado to seize this opportunity to help make science education more meaningful and relevant to our children's everyday lives. These standards are not only better aligned to national and international benchmarks, but more importantly they offer the potential to enable our students to be prepared for college and future careers. The standards are designed to focus on building a core foundation critical for more advanced knowledge. We want our children to have the foundation to understand science so that one day make sound decisions on topics and issues that will impact their lives.

We are at a time in history when being able to understand the nuance of complex issues will be critical for future generations. We must not shy away from adopting education standards that cover complex and nuanced topics like climate change, GMO, fracking, or evolution (to name just a few) even though many citizens hold beliefs that lead them to adopt very narrow and scientifically incomplete view of certain topics. It is critical that our science education standards are based on evidence and scientific principals and do not shy away from presenting the scientific point of view for all issues. It is time for us to embrace standards based on the National Research Council's Framework for K-12 Science Education - standards that will enable our children the best possible chance of success.

Sincerely,
Krista

	<p>Krista Marks CEO, Woot Math +1.303.449.MATH www.wootmath.com </p>
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Helping Teachers Close the Gap

From:
Sent: Tuesday, October 17, 2017 8:29 PM
To: Review, Standards
Subject: Science standards input

I encourage you to adopt the currently proposed new science standards for Colorado because these standards are better aligned to national and international benchmarks than the old Colorado standards. They help us catch up to where many states have already gone.

I have 2 children currently in the public school system in Colorado and want them to be adequately prepared for college and career outside as well as inside Colorado.

Thank you for your consideration.

Boulder, CO

From:
Sent: Tuesday, October 17, 2017 10:53 PM
To: Review, Standards
Subject: Climate Change in Science Curriculum

My daughter is a 1st grader in a Colorado public school. Climate change and all the obstacles it presents humanity will be a defining characteristic of her life and her children's. For her not to learn about recent research in the field as part of her earth science education is to deny her the perspective she needs to cope with the realities she will face. Please include climate change in the updated curriculum.

Many thanks,

From:
Sent: Wednesday, October 18, 2017 9:34 AM
To: Review, Standards
Subject: Comment on science education standard for State of Colorado

I am resubmitting my comment from earlier as I noted a typo. Please use this one!

Dear Sirs and Madames,

I'm am a parent of two Colorado school children, and am writing to voice my full support of the resolution to include climate science and evolution in science standards, as based on the National Research Council's Framework for K-12 Science Education. Please do not allow a strident and vocal minority impinge on the rights of our Colorado youth to receive a proper science education.

Please feel free to contact me with any questions.

Thank You.

From:
Sent: Wednesday, October 18, 2017 9:34 AM
To: Review, Standards
Subject: Standards review

Hello,

I'm am a parent of two Colorado school children, and am writing to voice my full support of the resolution to include climate science and evolution in science standards, as based on the National Research Council's Framework for K-12 Science Education. Please do not allow a strident and vocal majority impinge on the rights of our Colorado youth to receive a proper science education.

Please feel free to contact me with any questions.

Thank You.

Boulder, CO

From:
Sent: Wednesday, October 18, 2017 9:37 AM
To: Review, Standards
Subject: Including climate science and evolution in science standards

Hello,

I'm am a parent of three Colorado school children, and am writing to voice my full support of the resolution to include climate science and evolution in science standards, as based on the National Research Council's Framework for K-12 Science Education. Our Colorado youth have the righth to receive a proper science education.

Please feel free to contact me with any questions.

Thank You.

From:
Sent: Wednesday, October 18, 2017 10:07 AM
To: Review, Standards
Subject: Inclusion of climate science and evolution in our academic standards

Dear Review Committee,

I'm am a parent of two Colorado school children, and am writing to voice my full support of the resolution to include climate science and evolution in science standards, as based on the National Research Council's Framework for K-12 Science Education.

Please do not allow a strident and vocal minority impinge on the rights of our Colorado youth to receive a proper science education. Feel free to contact me with any questions.

Thank You.

From:
Sent: Wednesday, October 18, 2017 10:16 AM
To: Review, Standards
Subject: climate standards

I'm a parent and am writing to voice my full support of the resolution to include climate science and evolution in science standards, as based on the National Research Council's Framework for K-12 Science Education. Please do not allow a strident and vocal majority impinge on the rights of our Colorado youth to receive a proper science education.

Please feel free to contact me with any questions.

Thank You.

Boulder CO

From:
Sent: Wednesday, October 18, 2017 10:29 AM
To: Review, Standards

Hello:

In general, we would like to see all GLE's, EO's, and Elaborations of the GLE be coded the same as from the NGSS to add clarity and create an easier pathway to access resources.

Thanks you.

Secondary STEM and Innovation Science Instructional Coach

From:
Sent: Wednesday, October 18, 2017 2:31 PM
To: Review, Standards
Cc:
Subject: Next Generation Science Standards

As a Jefferson County parent, I am strongly favor the Next Generation Science Standards. This hands on approach to learning that teaches students about the engineering and scientific process for problem solving will arm our children with critical skills to succeed and be competitive in the future.

Thank you.

From:
Sent: Thursday, October 19, 2017 8:19 AM
To: Review, Standards
Subject: Support of the new standards

Dear Colleagues,

I write to strongly endorse the new Colorado Academic Standards in science. These are a dramatic improvement over our existing standards; by focusing on the core ideas and practices they offer much better depth, breadth and coherence of content while providing our students tools for future learning. These standards engage our students in elements of real scientific and engineering practice, coupled with the resources for studying and understanding the world. Such practices and tools are the best way we can invest in the welfare of our population and the future of this state.

As a practicing scientist and educator, I know the value of quality standards. These are essential. Ultimately, it is the clarity, rigor, and quality of these standards that will improve our capacity to educate, assess, and allocate resources in K12, one of the most essential forms of infrastructure for our state.

Thank you for your substantial work.

Most sincerely,

Professor,

From:
Sent: Friday, October 20, 2017 3:07 PM
To: Review, Standards
Subject: In support of New Science Standards

To Whom it May Concern:

I am very pleased with the new proposed science standards for our Colorado students. I am a parent and an educator (a counselor in Adams 12) and these standards seem like they will prepare our student better for college than what we currently have. Exposing them to engineering concepts will make what they learn in college more accessible and hopefully will help them be more successful.

I also want to advocate that climate science and climate change is covered thoroughly in the curriculum. We need to make sure our students are well educated about that facts of the world they are growing up in.

Thank you for your time,

From:
Sent: Friday, October 20, 2017 3:35 PM
To: Review, Standards
Cc:
Subject: Next Generation Science Standards

To whom it may concern:

As a Jefferson County parent, I am strongly favor the Next Generation Science Standards. This hands on approach to learning that teaches students about the engineering and scientific process for problem solving will arm our children with critical skills to succeed and be competitive in the future.

Thank you.

Conifer, CO

From:
Sent: Friday, October 20, 2017 8:34 PM
To: Review, Standards
Subject: Please support standards for quality science education

Hello,

I am writing as a scientist in support of the new standards for science education proposed by the Colorado science standards committee. The proposed revised standards are necessary to align Colorado science teaching with national and international benchmarks, and bring Colorado science education up to date with current scientific knowledge.

-- Boulder, Colorado

From:
Sent: Monday, October 23, 2017 11:05 AM
To: Review, Standards
Subject: In Support of improving educational standards

Dear Committee,

I'm am a parent of two children who attend middle school and elementary school in Colorado and on behalf of my husband and I, we are writing in support of improving educational standards based on the National Research Council's Framework for K-12 Science Education. It seems clear to our family and these standards are better aligned to national and international benchmarks than the old Colorado standards and they help us catch up to where many states have already gone.

We are aware that there is already mobilization against the climate standards and we feel the need to express our our full support of the resolution to include climate science and evolution in science standards. Please do not allow a strident and vocal minority impinge on the rights of our Colorado youth to receive a proper science education.

Thank you for your time and consideration.

Sincerely,

From:
Sent: Thursday, October 26, 2017 7:43 AM
To: Review, Standards
Subject: Support for CO standards revision

To Whom It May Concern:

I am writing in support of the revision of the CO Science Standards. These standards are better aligned to national and international benchmarks than the old Colorado standards. They help us catch up to where many states have already gone. I am very happy to see they are more focused than the previous standards. They focus on a few core ideas in science that are really important for students to know and that are the building blocks for more advanced knowledge. Additional focus is possible, however, and I encourage further removal of topics that simply elaborate facts around a concept that can be taught more deeply by focusing on an existing area where it appears.

I want to encourage the review board to stand strong against pushback for the teaching of climate science, climate change, human reproduction, and human evolution. The standards should not be vulnerable to politicization. They must hone to the current scientific consensus. Teachers must also be provided with high quality materials and be protected from bogus materials.

Lastly, the standards need to emphasize more clearly the connections between topics that are only understood via systems thinking, especially climate change. I can see the connections, but I would not expect a non expert to be able to see (in this presentation) that the carbon cycle in one area of standards should be explicitly connected to greenhouse gas emissions and the greenhouse effect in a different area of the standards.

Thank you,

From:
Sent: Thursday, October 26, 2017 10:45 AM
To: Review, Standards
Subject: Support of New Colorado Science Standards

Hello,

I'm writing today to let you know that I support the new Colorado Science Standards. As a research scientist and someone soon receiving my doctorate in chemistry, it is incredibly important to me that students finish high school prepared to succeed in any field they choose and I believe these new standards will help students interested in science and engineering to be better prepared to compete at any university or scientific job they pursue. The new standards are more focused than the previous standards. They focus on a few core ideas in science that are really important for students to know and that are the building blocks for more advanced knowledge.

Thank you for your time and consideration,

Graduate Student

From:
Sent: Thursday, October 26, 2017 1:04 PM
To: Review, Standards
Subject: Comments on Science standards

I raise a clear concern with these standards. One of the key elements is understanding change. This is good. One of the big changes right now and that every student should start to understand why are there changes in the Earth's energy balance. Key concepts that MUST be taught are "what determines Earth's energy balance" and "How might these various terms have changed in the past, might be changing in the present, and the range of changes in the near future". These should be fundamental principles that all students understand by grade 12.

Nowhere in the "Earth Science" section is there specific reference to specifically what sets the planetary energy balance... There is text in the weather and climate section, but it could be more clearly articulated. The potential role of BOTH geological and anthropogenic processes to alter the composition of the atmosphere, especially greenhouse gases is essentially avoided. These are factual issues.

I teach a freshman course called "Global Change", and have done so for 30 years. It is clear that most freshman have no idea what determines Earth's energy balance. I can think of few other topics that are more important to stress in this document, which seems to be missing as written

The section ESS3.D: GLOBAL CLIMATE CHANGE really is irresponsible. There is no indication that human activity can already be documented with no ambiguity to be altering the composition of the atmosphere, particularly, but not only, in Greenhouse gases. This is a fact
The planetary temperature is rising. This is a fact
Deciphering why, is less factual, but to refuse to even note that this is an important area of scientific enquiry is irresponsible

This critical paragraph is confusing and at least misleading

The "greenhouse effect" keeps Earth's surface warmer than it would be otherwise. To maintain any average temperature over time, energy inputs from the sun and from radioactive decay in Earth's interior must be balanced by energy loss ~~due to radiation from the upper atmosphere.~~ However, what determines the temperature at which this balance occurs is a complex set of absorption, reflection, transmission, and redistribution processes in the atmosphere and oceans **and continents** that determine how long energy ~~stays trapped in these systems before being radiated away.~~ Certain gases in the atmosphere (water vapor, carbon dioxide, methane, and nitrous oxides), which absorb and retain energy that radiates from Earth's surface, ~~essentially insulate the planet.~~ **absorb a portion of Earth's radiation that would otherwise be lost to space, and in so doing raise Earth's temperature about 30 °C/60°F above what it would be otherwise.**

another technical error I caught

p. 126 "objects hotter than their surrounding environment cool down"

This is not a realistic statement. They do not cool down, they transfer energy to other elements of the system. To "cool down", without clearly articulating that the rest of the system must therefore "warm up" suggests there is no energy transfer.

Professor

From:
Sent: Thursday, October 26, 2017 2:48 PM
To: Review, Standards
Subject: Support for proposed standards

The new standards do a much better job of encouraging authentic experiences in science and engineering, which will help our students succeed.

Associate Professor

From:
Sent: Friday, October 27, 2017 9:41 AM
To: Review, Standards
Subject: Science Standards

These standards better prepare students for college and future careers, because they will give students a better understanding of what scientists and engineers do.

I like them because they are more focused than the previous standards. They focus on a few core ideas in science that are really important for students to know and that are the building blocks for more advanced knowledge.

--



From:
Sent: Saturday, October 28, 2017 9:17 AM
To: Review, Standards
Subject: Colorado State Science Standards Feedback

Hello,

I fully support climate change and evolution standards in K-12 science education in the state of Colorado. Our youth need to understand how these forces impact their lives and our world to be productive members of society and help us solve today's biggest problems.

Thanks for your consideration,

Boulder, CO

From:
Sent: Tuesday, October 31, 2017 12:48 PM
To: Review, Standards
Subject: Colorado science standards revision

These standards better prepare students for college and future careers, because they will give students a better understanding of what scientists and engineers do.

Associate Professor

CU Boulder

From:
Sent: Tuesday, October 31, 2017 3:32 PM
To: Review, Standards
Subject: Support for new CO academic standards

Hello,

I recently learned that Colorado is considering adopting new standards based on the National Research Council's Framework for K-12 Science Education. After looking over them, I wanted to express my strong support for them. These standards better prepare students for college and future careers because they have a stronger focus on developing an understanding for what scientists and engineers do. Although they are challenging, the students of Colorado would greatly benefit from the enhanced set of skills they would gain from an education system with these academic standards.

Thank you,

University of Colorado, Boulder

From:
Sent: Sunday, November 26, 2017 11:30 AM
To: Review, Standards
Cc:
Subject: comments on the Colorado Academic Standards

Dear CDE Standards Review and Revision team,
I am providing additional comments on the standards.

I have commented on the website on the rigor, specificity and clarity of several of the individual PGS, GLE and EOs, but I find the comments website format to be limiting in accepting only comments on individual items and not on the set as a whole. Here I offer comments on the disciplinary literacy, coherence, depth and breadth that form the criteria for the standards as an entire body.

I have reviewed the standards drawing on my education and expertise as a PhD-trained chemist, a college instructor of chemistry and Earth science, and a science education researcher who has published on learning and teaching Earth and physical science. With that background, I examined the standards in Earth science and physical science for middle school and high school. Overall, I found the proposed revisions to significantly strengthen the standards in specificity, without becoming prescriptive about teaching methods or curricula. Statements in the EO that define questions students will be able to answer are framed in straightforward and clear language that is accessible to students and parents while also meaningful to teachers with disciplinary background. In several cases, particularly in GLEs and EOs related to chemistry, generalizations were removed that had introduced vagueness or lack of clarity. I also find the standards to be more focused and rigorous compared to the prior version. The clarification texts and boundary texts set priorities and establish limits that are developmentally appropriate, thus supporting the coherence of the standards as a whole.

The set of PGS and GLEs that I reviewed indeed identify the major ideas essential to these disciplines. They are scientifically rigorous and supported by evidence that students can explore by using scientific and engineering practices and engaging with cross-cutting concepts. There are a variety of ways to explore each of these in depth, and with different topical domains that provide disciplinary breadth. The EOs identify age-appropriate ways for students to demonstrate these competencies and expectations through explaining, representing, and working with scientific evidence.

In Earth science, I am strongly supportive of the PGS and GLEs that address human-Earth interactions and human impact on climate as a rigorous, focused, and relevant area of science education. Like other human-Earth interactions that affect resource use, energy development, and environmental quality, climate science is an essential, evidence-based domain of disciplinary knowledge that all Colorado citizens must understand. Through documented impacts on Colorado's economy and quality of life—the impacts of climate-driven changes in wildfire, precipitation, snowfall, insect infestations, and heat waves on tourism, recreation, development and agriculture—climate change is already affecting students' career and life opportunities and civic decision-making, even before they are of age to participate directly in these choices. Scientific modeling shows that these impacts will continue to be significant into the future. It is our responsibility to define educational standards that will prepare our students with the knowledge they need to be successful and resilient in their personal and professional decision-making and thoughtful in their choices as voters and leaders.

One minor note: PGS 3 and GLE 6 refer to interaction of humans with Earth's "surface" processes. This language is aligned with the Framework, but this term may be misinterpreted by laypersons as referring strictly to the visible, solid rock and soil surface of the Earth. I suggest that accessibility and specificity would be increased if the standards referenced Framework language that defines Earth's surface in a scientifically rigorous way that includes the atmosphere and surface waters as well as the upper layers of the Earth's crust that contain aquifers and mineral resources (pp. 169-172 in the Framework).

I congratulate the team on offering our state a strong set of standards that are aligned with best science education thinking and practice, and that will prepare Colorado students for lifelong learning, flexibility and success.

University of Colorado Boulder

From:
Sent: Monday, November 27, 2017 10:21 AM
To: Review, Standards
Subject: engineering practices

Please include the engineering PE's in the standards documents that are aligned to the content DCI from NGSS.

Secondary STEM and Innovation Science Instructional Coach

From:
Sent: Monday, December 04, 2017 10:46 AM
To: Review, Standards
Subject: General concerns regarding Science standards changes.

Thank you for your work on the standards! I realize this work is not easy and that with such a variety of stakeholders the process is made even more difficult. I have submitted feedback on most grade levels K-8 on individual standards but feel a need to communicate clearly about overarching concerns.

I realize the standards must be reviewed regularly by law and I fully support the rigor and thoughtfulness provided by the NGSS. Unfortunately, our system is very large and the sweeping changes that are being proposed require support that is not available in most districts across the state. Additional concerns include the following:

- I am wondering about the state assessment; at which grade levels will the assessment take place AND more importantly, will the assessment encompass one grade level or be a cumulative assessment as it was in the past. Backwards design would indicate that it is poor practice to designate standards to grade levels or design curriculum without an understanding of the assessment process. Without knowledge of the assessment plan it is out of order to provide input on standards.
- Although Colorado requires specific grade level standards K-8, the sequence of standards proposed is too drastic a change from our current sequence. The gaps in learning created by this change will be significant! With Colorado's current level of educational funding, the resources required to ensure a reasonable transition for students and teachers to these drastic changes would far exceed what is available, leaving students with significant gaps in learning.
- Please consider preserving the sequence but deepening the rigor, adding in the topics that are not currently represented. The addition of topics within current units will be much easier for teachers and students to navigate than the plan that is being proposed. Elementary teachers (as a whole, though certainly we have exceptions) struggle with science content and with feeling competent in the area of science. When they have time to deepen their own understanding of content it frees them up to focus on process. Focusing on process helps both students and teachers but when teachers are struggling with content they lose this focus. The reality of the current educational culture is that most of our teachers feel too vulnerable entering a teaching situation where they do not know the content, thus, they do not teach science, or read about science as an adjunct to literacy. Students need rich, hands on science that is messy, teachers struggling with content generally will not risk doing hands on, minds on science.
- The current proposed plan requires teachers at ALL grade levels K-8 to learn new content. Kids end up being the losers here. In theory, I agree that teachers should be learners and that being in place of learning reminds us how hard it is for students (I have said these things to full districts of teachers in my position as we have navigated the change of standards in the past), however the reality I have seen while walking classrooms in 2 very large districts, is that

when teachers are uncomfortable with content or when they need to change, they either don't teach science or they continue teaching what they have taught in the past. When it is too hard or puts them in place of 'looking stupid', they default to teaching what they know. Funds are not available in most districts to support teachers in this level of change.

- At the middle level, it is easy to crosswalk the NGSS topically with our current standards and add rigor to the current units to reflect the rigor of the NGSS. The ability of our middle level teachers to navigate added rigor is preferable to the proposed drastic change. 6th grade teachers have just figured out how to teach atoms and molecules in a way that reaches our 6th grade students. 7th grade teachers have finally embraced geologic time and natural selection and have made the transition to teaching Earth, and Physical science in addition to Life. Again, the drastic changes proposed will cause teachers and administrators alike to throw up their hands.
- K-2 evidence outcomes and questions are worded for high school and are not accessible to our primary teachers. These must be reworded to reach the intended audience!

Thank you for your consideration of this frank feedback. Please call if you have questions.

P-12 Science Coordinator

From:
Sent: Monday, December 04, 2017 2:41 PM
To: Review, Standards
Subject: Earth Science Standards

As a scientist, former member of the BVSD Board of Education and a member of a Science Education and Outreach program, I am writing to express my support for the Earth Science standards that are currently in review. These standards better prepare students for college and future careers, because they will give students a better understanding of what scientists and engineers in terms of tackling a problem through the development of critical thinking skills. As we all know, we must prepare students for future jobs that may not even exist today. Therefore, it's critical that K-12 students graduate with an understanding of the large important themes in Earth Science, as well as the knowledge of how to think critically about these themes, e.g. How were the data derived, what other data do I need to support my claims, how do I think about solving a problem etc.

I am particularly impressed by the build-up of knowledge-base through the various grade levels for students to develop a deep-rooted understating of how to understand the process of climate change and that humans are impacting the climate. This will be one of the major issues that our future students will have to grapple with. Be it trying to engineer a solution, or try to adapt to a future changing climate, it's important that students have a clear understanding of climate change by the time they graduate from high school.

Sincerely,

From: Anthes, Katy
Sent: Tuesday, December 05, 2017 1:24 PM
To: Barbara McLachlan
Cc: Colzman, Melissa;
Subject: RE: Science Standards

Thank you Representative McLachlan,

As a part of the standards review process I mentioned today, a committee of Science educators is in the process of bringing forward any suggested changes to the Science standards to the State Board of Education. We have heard that these changes are more substantive and so some are concerned about that—as your constituent is below.

We are still in the beginning feedback process of any real changes to the standards so this is important feedback for us to see. We will make sure the committee gets this feedback as they consider what they recommend to the State Board.

If you would like further follow-up on this—Melissa Colzman can assist you. I have CC'd her here.

Thank you ,
Katy

Katy Anthes, Ph.D.
Commissioner



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From: Barbara McLachlan [<mailto:rep.mclachlan@gmail.com>]
Sent: Tuesday, December 05, 2017 12:01 PM
To: Anthes, Katy
Subject: Fwd: Science Standards

Thanks for your testimony today. Can you help me answer this question? Barbara

Sent from my iPhone

Begin forwarded message:

From:

Date: December 1, 2017 at 3:57:56 PM MST

To: barbara.mclachlan.house@state.co.us

Subject: Science Standards

Dear Barbara,

I hope you remember meeting me at Pagosa Springs Middle School. I am a science teacher and a Fellow of Teach Plus. I wanted to make you aware of a change to the Colorado Science standards slated for this upcoming week at CDE. As a part of the regular 6-year review, there are extensive changes to the current science standards being suggested.

I don't think that the plight of rural schools is at all being considered in these proposed changes. Not only do rural schools struggle to recruit teachers in the field of science, but also we struggle to retain teachers in this field. The proposed changes are dramatically different than the current standards particularly regarding the grade level at which certain concepts are supposed to be covered. This is a problem when teachers are asked to be experts in the subjects they teach which is accomplished through experience and curricular materials & support. Having taught the current set of standards for only 3 years, I'm looking at a complete rewrite of 80% of all my lessons throughout the year. Even though I am dedicated to doing what it takes to effectively educate my students, I know they won't get the quality of education they would if I were allowed to teach familiar standards I'm currently invested in.

Rural districts, like mine, also struggle to fund the purchase of new curriculum that matches each grade level set of standards.

The proposed changes place rural schools at even a farther disadvantage in lifting their students to higher levels of learning.

I ask that you would please consider my plea and, if you can, weigh in on the CDE's decision making.

Let me know if you have any questions,
Thanks :)



Begin forwarded message:

From:

Date: December 10, 2017 at 7:12:32 AM MST

To:

Subject: Re: Science or Belief?

Dear State Board of Science Education Member,

I love science. The word “science” means “to know,” as I’m sure you are aware of. Did you hear the news this past week of the student at Bret Harte High School in California (Grayson Mobley) who was told by one of his science teachers when he walked into his science class on the first day of school that: “any notion of God or creation needs to be left outside the classroom.” The teacher also said: “Science is fact and religion is faith.” But, did the teacher really mean: “Evolution is a fact, and creation didn’t happen”?

The student and his attorney met with the district school board this past week and the student presented his case. He said: “I’m here tonight to safeguard my constitutional rights. Free speech is granted to all American citizens, including minors. I am an American citizen.” Throughout the whole process the student has been very respectful, and has not caused any problems in class.

[Litigation possible](#)

The attorney said: “I ask the school to allow what the Supreme Court allows and what the California Department of Education allows.” “We are hopeful the board will do the right thing and restore the Constitution to Bret Harte,” Glaser responded. “However, if the board clings to this unconstitutional policy, then my clients are prepared to litigate.”

Do you as a State School Board member understand the difference between “science” and “scientific naturalism”?

Science Defined:

“Science... is the systematic and unbiased study of the world, including everything that can be seen or detected in nature, man, and society, and the knowledge that grows out of such study.”

The New Standard Encyclopedia

Notice it says: “unbiased study of the world.”

Scientific Naturalism Defined:

“The belief that the natural world, known and experienced scientifically, is all that exists and that there is no supernatural or spiritual creation, control, or significance.”

Webster’s New World Dictionary of the American Language, 1976, p. 947

[Where Does Science End and Philosophical Worldviews Begin?](#)

This is where the problem is. Real science has limits. It has no position on the supernatural, it is neutral, it is not anti. There is a distinct difference between "science," and "scientific naturalism." Which do you allow to be taught by the teachers in your state?

“We can’t allow supernatural creation to be discussed in the classroom.”

Is that being neutral, or is it being anti?

“We can’t discuss the appearance of design in the classroom.”

Is that being neutral, or is it being anti?

Dr. Scott Todd, Kansas State University, writing in Nature 401 (6752):423, Sept. 30, 1999 said this:

“Even if all the data point to an intelligent designer, such an hypothesis is excluded from science because it is not naturalistic.”

Is that what “science” means: “happened naturally”? When have teachers crossed the line from studying nature to promoting scientific naturalism, which is a philosophical belief system, not science.

Starting with different assumptions leads to different conclusions in almost every case.

“Once a scientist (or anyone else) considers facts through a preconceived filter, the true quest for knowledge stops. The mistake becomes assuming your hypothesis is true, and looking at all evidence in that light. When that occurs, it fails to be science.”

Darrin Yeager. <http://www.dyeager.org>

Secular Humanism is an attempt to function as a civilized society with the exclusion of God and His moral principles.

Humanist Charles F. Potter wrote: "Education is thus a most powerful ally of humanism, and every American school is a school of humanism. What can a theistic Sunday school's meeting for an hour once a week and teaching only a fraction of the children do to stem the tide of the five-day program of humanistic teaching?"

(Charles F. Potter, "Humanism: A New Religion," 1930)

"The battle for humankind's future must be waged and won in the public-school classroom by teachers who correctly perceive their role as the proselytizers of a new faith: A religion of humanity -- utilizing a classroom instead of a pulpit to carry humanist values into wherever they teach. The classroom must and will become an arena of conflict between the old and the new -- the rotting corpse of Christianity, together with its adjacent evils and misery, and the new faith of humanism."

John J. Dunphy, in his award-winning essay, The Humanist (1983).

By your current positions and stand in your state, are you allowing “science” to be promoted in your classrooms, or Scientific Naturalism and Secular Humanism? Real science has to do with what we **know**

about the world around us. But how do we know when we have crossed the line and are teaching philosophical **beliefs** about what we **know**? Is evolution science, or a philosophical belief system? What has actually been observed? What do we actually observe happening now?

In most states in the United States of America, State School Boards are making decisions that allow atheism, scientific naturalism, and humanism to be promoted in our science classrooms.

We say: "One Nation under God," but is that still true today? What part have you played in that? What will you do in the future? You are having a part in shaping the lives of the next generation of Americans. Have we lost sight of what has made America the greatest nation on earth?

In the Love of True Science and America,

www.True-Science.org

From:
Sent: Tuesday, December 05, 2017 10:30 AM
To: Review, Standards
Subject: Standards Review 2018

In general the revisions are very encouraging. Below are a few highlight observations.

Science:

The format of Grade Level Expectations and Evidence Outcomes create a very clear lens to determine what learning will look like and how it can be measured in the classrooms. The Boundary statements will provide clarity for districts and buildings to identify clear learning targets and focus on how to use manageable content as a vehicle to develop inquiry and solutions. It would make life much easier and learning more focused if the social studies standards could follow a similar format.

Social Studies:

In general the revisions have created clarity and stronger alignment between the focus of the four disciplines. Too many of the grade level expectations act more as titles than learning targets. Hard to know what learning should look like and how to measure the statement when there is no action included.

Economics: The size of the high school economic standards are a concern. The current set of standards include 7 grade level expectations with 29 evidence outcomes. These in and of themselves present a challenge for districts and buildings to design meaningful learning opportunities that are connected and relevant. The revised high school standards include 8 grade level expectations and 43 evidence outcomes. More work needs to be done here in determining critical learning outcomes. Shoving the math related personal financial standards in as new outcomes is not reasonable. Several of the evidence outcomes for personal financial literacy are completely disjointed with the appearance that they were PFL math standards that needed a place to be housed (i.e. 6th Grade E.2.e). They don't add to the flow of concept understanding or skill development.

History:

One of the first grade evidence outcomes looks to be a knee jerk reaction to the current political atmosphere. The first grade history 2.c evidence outcome reaches beyond grade level appropriateness. I appreciate the focus of students learning about the multicultural and democratic way of life in our country. However, the example of a raised fist for resistance is not appropriate for first grade. The symbolism and complexity of the fist is beyond the conceptual development for first grade. Additionally, the raised fist can also resemble solidarity depending on perspective. The listed examples outside of the raised fist are sufficient.

Civics:

The first grade civic standard 2.b is of the same concern as the history standard I previously addressed. Removing the national anthem and replacing it with raised fist is a concern. I hate to think that the political firestorm over the anthem would push us to remove focusing on the civic symbol it represents. We still need to share with students what the anthem has represented over time in a safe manner that helps students understand how and why different groups view it through unique perspectives.

The Kindergarten civics standard 1.a example of protest as an example of civic participation is not grade level appropriate. This needs to be removed and leave the list as is or replace it with sharing of ideas. Students are

not able to successfully understand appropriate ways to protest until the 3rd-4th grade.

Greeley-Evans Weld County School District 6

Subject:

12 questions for your consideration

Begin forwarded message:

From:**Date:** December 14, 2017 at 5:31:46 PM MST**To:****Subject: Re: 12 questions for your consideration**

Dear State Board of Science Education Member,
Twelve questions for your consideration:

These first two questions are because of a situation concerning a hearing that is currently taking place in California between a student, his attorney, and a district school board.

(1) Is not allowing God or creation to be discussed in a public-school classroom a violation of a student's Constitutional Free Speech rights? Why or why not?

(2) If a science teacher takes an "anti" approach to the supernatural in the classroom, are they in effect promoting atheism? Why or why not?

(3) Should the theory of evolution still be subject to the scientific method of falsification; or should scientists only look for evidence to support it? Which approach is more consistent with the scientific method of falsification?

(4) Can a person believe in "science" without being an atheist? Please explain your answer.

(5) If evolution has been going on for 600 million years, should we expect to observe millions of life forms in all different stages of transition from one distinct life form into a completely different life form today? Why or why not should that be considered an appropriate prediction?

(6) In two parts: Can we prove that a Supreme Being did not bring the universe into existence out of a state of nothingness; and would this be consistent with the Law of Inertia? Why or why not?

(7) Does a universe coming into existence out of a state of nothingness through natural processes violate the First Law of Thermodynamics? Why or why not?

(8) Should missing rock layers, reversed rock layers, polystrate fossils, and out-of-place artifacts be considered in testing uniformitarianism? Why or why not?

(9) Since the hind-limb bones in whales and the human tail-bone have been proven to have muscle groups attached to them and serve a very necessary purpose, should they be removed from the textbooks as examples of vestigial organs? Why or why not?

(10) In two parts: Since we know what an eye is, what it does, and how we treat it for disease; why is it necessary to make how we got an eye and why we have one, a part of the scientific discussion? Would that not be better suited to a philosophy class regarding philosophical worldviews and origins?

4 Quotes regarding DNA and Information:

1. Bill Gates, Chairman, Microsoft: "Human DNA is like a computer program but far, far more advanced than any software we have ever created." *The Road Ahead*, p.228

2. Carl Sagan, Cornell: "The information content of a simple cell has been estimated as around 10^{12} bits, comparable to about a hundred million pages of the *Encyclopaedia Britannica*." *Life*, Vol.10, p.894.

3. Charles B. Thaxton, PhD in Chemistry and Postdoctoral Fellow at Harvard University: "After all, DNA information is not just analogous to

a message sequence such as Morse code, it is such a message sequence."

4. Dr. Werner Gitt, Professor of Physics and Technology said: "There is no known law of nature, no known process and no known sequence of events which can cause information to originate by itself in matter." In *In the Beginning Was Information*, 1997, p. 107.

(11) Since DNA is not merely a molecule with a pattern; but it is a code, a language, and an information storage mechanism; do we know of any such codes or information storage systems that were not the product of a conscious mind?

(12) In your opinion, would these first 11 questions be appropriate for a discussion in a science classroom? Why or why not.

In the Love of Science,

www.True-Science.org

Subject:

Please support improved science teaching standards in schools

From:

Sent: Wednesday, January 03, 2018 1:07 AM

To:

Subject: Please support improved science teaching standards in schools

Dear Colorado State Board of Education Members,

The education that we give our children today will shape the future of our country's communities and economy. It is in our national best interests to be able to compete in science and technology on the global stage. We can only do this if our students get a world-class science education that prepares them for college, careers, and opportunities in science-related fields.

Implementing updated science teaching standards is a crucial first step in securing our future.

We have to go even further than choosing what to teach. We have to empower our educational systems with the resources they need to teach these standards successfully.

That means we need to add time for science education in schools, beginning in kindergarten.

We also need to allocate resources to train and support all science teachers to strengthen their approach to teaching science.

Please support the children of our state and empower our country's future by supporting stronger science education in our communities.

Thank you,

Denver, CO

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January 25, 2018

Dear Ms. Gates,

We wanted to write to you regarding our appreciation for the transparency and structures with which the standards review process has been conducted. If you feel that it is appropriate, please feel free to pass our comments along to the Colorado State Board of Education as they continue their work toward approval of the revised standards.

The review process has been out-reaching and inclusive. For example, the decision to include the Colorado English Language Proficiency Standards which were not originally intended for revision showed responsiveness to input. Feedback solicited through meetings, trainings, CASE presentations, conferences, online feedback, webinars, and outreach emails have been far-reaching and thorough. The process has been transparent. Therefore, teachers were willing to give time and feedback, knowing that it was valued.

Regarding the science standards, where there is a significant shift moving toward the concepts from the Next Generation Science Standards (NGSS), we would like to offer some feedback. We appreciate the conceptual shift of moving toward NGSS, as vendors are currently aligning their materials with NGSS. This means the reading level and complexity of materials will match the grade levels at which those concepts are taught.

A consideration we discussed about the current proposal is the separation of the mathematical and engineering practices from the science Evidence Outcomes; paraphrasing and placing them in the Context and Connections section. We wonder whether these practices will be interpreted with the same importance by teachers, and connected across the disciplines. Additionally, we hope that the final version will have the cross-references to NGSS built into the standards at the Evidence Outcome level.

While we know that the NGSS alignment will have impacts on teacher time, planning, and professional development, we believe that the benefits of aligning to NGSS content, resources, and rigor outweigh those inconveniences.

Thank you for the involvement of stakeholders throughout this entire process. We appreciate CDE's considerable time and investment in the students of Colorado.

The Summit School District curriculum team

Antonio, Ariana

From: Cordial, Elizabeth
Sent: Monday, February 12, 2018 12:36 PM
To: Colzman, Melissa; Cobb, Floyd; Bruno, Joanna; Gates, Karol
Cc: Antonio, Ariana
Subject: FW: Adopt the New Science Standards!

Categories: Action Required, Standards Revision

Here are the other comments we received for Angelika re: Science Standards. I'll send this and the other email Joanna also received to Angelika.

Thank you,
~Bizy

Elizabeth (Bizy) Cordial
Director of State Board Relations
State Board of Education



P 303.866.6809
201 East Colfax Avenue, Room 500, Denver, CO 80203
Cordial_E@cde.state.co.us | www.cde.state.co.us



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From: Chris DiGiano [<mailto:digi@computer.org>]
Sent: Sunday, February 11, 2018 8:44 PM
To: Colorado State Board of Education Relations
Subject: Adopt the New Science Standards!

To my Boulder rep, Angelika Schroeder,

Ms. Schroeder, please consider strongly that CO adopt the new science standards based on *A Framework for K-12 Science Education*. I believe these "3D" standards will allow our state to educate children who are prepared for the 21st century workplace.

As a former learning technologist and now a senior software at Google Boulder I know that the integrated nature of the new standards are just what are needed to help CO be competitive in science and engineering.

Finally, I appeal to you as a father of two daughters in middle and high school (Southern Hills and Fairview), asking you settle for nothing less than the best we can offer our children.

Respectfully,

Chris DiGiano

Antonio, Ariana

From: Colorado State Board of Education Relations
Sent: Tuesday, February 20, 2018 6:00 PM
To: Colsman, Melissa; Cobb, Floyd; Bruno, Joanna; Gates, Karol
Cc: Antonio, Ariana; Cordial, Elizabeth
Subject: FW: Comments on science standards update

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Action Required, Standards Revision

Hi All,

Please see the comments received regarding science standards. I will forward this to Angelika tomorrow. Wanted you to also have for your records.

Thank you,
~Bizy

-----Original Message-----

From: Sue Nagle [mailto:suepnagle@gmail.com]
Sent: Wednesday, February 14, 2018 9:11 PM
To: Colorado State Board of Education Relations
Subject: Comments on science standards update

Dear Dr. Angelika Schroeder,

I'm writing to you as my representative on the state science standards board, as your constituent, neighbor and parent of two of your customers in the BVSD system you help regulate. I am also a Christian, engineer and business woman.

I am writing to ask your support for the resolution to include climate science and evolution in science standards, as based on the National Research Council's Framework for K-12 Science Education. My 3 degrees from MIT have led to a lucrative and successful career in the sciences. I would like all of the youth of Colorado to access these types of opportunities, and as you know a rigorous, fact-based education in the sciences is a prerequisite. An incomplete education would reduce opportunities for our youth and diminish their career potential.

Please support this measure, and do not allow a strident and vocal minority impinge on the rights of our Colorado youth to receive a proper science education.

Please feel free to contact me with any questions.

Thank You.

Sue Nagle
Suepnagle@gmail.com
Cell: +1 303 819 7674
Profile: www.linkedin.com/in/*suenagle* <<http://www.linkedin.com/in/suenagle>>

Sara Maestas
PO box DD
Cortez, CO 81321

1/26/18

Katy Anthes, Ph.D.
Commissioner of Education
201 East Colfax Ave.
Denver, CO 80203

Dear Katy Anthes,

My name is Cerra Maestas and I am currently a student of a charter highschool found in the Southwest corner of Colorado, SWOS (Southwest Open School). In the last few weeks I have been studying the concept of Climate Change as well as the causes and the effects. Throughout my research I have learned of the degree at which the climate is changing and the documented evidence has shown numerous reasons to be increasingly concerned. It has come to my attention that many of our local, state and federal officials are not actively attempting to mitigate the circumstances and or not sufficiently educated in the need to fight against the warming temperatures.

There are countless reasons why Colorado specifically should be paying attention to the changing climate. The state of Colorado is not only home to some of the most copious forests but it is additionally home to substantial mountain ranges. With the warming climate comes dryer forests which can only lead to devastating forest fires that ravish through communities and demolish established ecosystems of local wildlife. Furthermore, Colorado is the home of globally popular ski resorts that allow snow enthusiasts to indulge in vigorous snow sports. When winter comes around, snow drapes the mountains and come spring time the snow melts, sending necessary water through our rivers and into our dryer neighboring states. I believe that Colorado

particularly should be focusing on the gravity of the climate changing and how it will affect many of our natural resources.

In the process of researching global warming I have also taken it upon myself to look into Colorado's Academic Standards. Focusing solely on the Science department I've discovered that while we are expected to understand graphs, atoms, chemical equations and the sequence at which the stars are arranged, we are not expected to understand or even be aware of science based events that legitimately impact our lives, such as Global Warming. It is to my understanding that nowhere in Colorado's Academic Standards are teachers required to teach such life changing affairs. As I stated above I believe that many of our public officials are dangerously uneducated in the gravity of the situation. Likewise, I feel that many of our public educators are equally ignorant in the circumstances and thus I conclude that the Board of Education should consider integrating climate change into our education curriculum so that my generation and generations after me can understand and be adequately aware of the future of our planet.