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Our Students. Their Moment.

New York State P-12 Science Learning Standards

Board of Regents

June 2016

New York State P-12 Science Learning Standards

In March 2016, the Board discussed:

- The process undertaken to develop the draft NYS P-12 Science Learning Standards, and
- The feedback from an online public survey posted in December 2015.

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Quantitative results:

- Collectively, 3 out of the 4 key categories – Organization of the Standards, Coherence, and Content and Rigor – on average, were rated by approximately 3/4 of the valid respondents as “adequately meet this criterion” or “meet this criterion to a great extent .”
- 15 of the 21 criteria used in the survey were rated by more than 2/3 of the valid respondents as “adequately meet this criterion” or “meet this criterion to a great extent.”

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Qualitative feedback:

- There is general support for considering the adoption of the draft NYS P-12 Science Learning Standards with pertinent guidance and relevant clarifications.
- A call to articulate a timeline to address the critical components of the Statewide Strategic Plan for Science, especially pertaining to:
 - professional development for P-16 teachers and leaders,
 - teacher certification and pre-service teacher education programs,
 - curriculum and instructional resources,
 - assessments in science,
 - fiscal support for local implementation, and
 - community awareness and support.

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Revised NYS P-12 Science Learning Standards

- A limited number of revisions were made to the draft NYSSLS.
- Much of the stakeholder feedback received related to the standards was focused on critical components of the Statewide Strategic Plan for Science:
 - Curriculum
 - Professional Development to Enhance Instruction
 - Assessment
 - Materials and Resource Support
 - Administrative and Community Support

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Architecture of the NYS P-12 Science Learning Standards

2. Structure and Properties of Matter		
<p>Students who demonstrate understanding can:</p> <p>2-PS1-2. Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.* [Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.] [Assessment Boundary: Assessment of quantitative measurements is limited to length.]</p> <p>The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i>.</p>		
<p>Science and Engineering Practices</p> <p>Analyzing and Interpreting Data</p> <p>Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p> <ul style="list-style-type: none"> Analyze data from tests of an object or tool to determine if it works as intended. (2-PS1-2) 	<p>Disciplinary Core Ideas</p> <p>PS1.A: Structure and Properties of Matter</p> <ul style="list-style-type: none"> Different properties are suited to different purposes. (2-PS1-2) 	<p>Crosscutting Concepts</p> <p>Cause and Effect</p> <ul style="list-style-type: none"> Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1-2) <p><i>Connections to Engineering, Technology, and Applications of Science</i></p> <p>Influence of Engineering, Technology, and Science on Society and the Natural World</p> <ul style="list-style-type: none"> Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. (2-PS1-2)
<p><i>Connections to other DCIs in second grade: N/A</i></p> <p><i>Articulation of DCIs across grade-levels: 5.PS1.A (2-PS1-2)</i></p> <p><i>Common Core State Standards Connections:</i></p> <p><i>ELA/Literacy—</i></p> <p>RI.2.8 Describe how reasons support specific points the author makes in a text. (2-PS1-2)</p> <p>W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). (2-PS1-2)</p> <p>W.2.8 Recall information from experiences or gather information from provided sources to answer a question. (2-PS1-2)</p> <p><i>Mathematics—</i></p> <p>MP.2 Reason abstractly and quantitatively. (2-PS1-2)</p> <p>MP.4 Model with mathematics. (2-PS1-2)</p> <p>MP.5 Use appropriate tools strategically. (2-PS1-2)</p> <p>2.MD.D.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph. (2-PS1-2)</p>		

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Architecture (cont.)

- **Title Box** – Indicates grade level for PreK-5, grade band (6-8, 9-12) for middle school and high school and Topic Area.
- **Performance Expectations Box** – Includes each Performance Expectation for that Grade level/Topic Area and Clarification Statement and/or Assessment Boundary, as appropriate.
- **Foundations Boxes** – Include pertinent Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts to further define the Performance Expectations.
- **Connections Boxes** - Include connections to other Disciplinary Core Ideas within the same grade level, articulations of Disciplinary Core Ideas across grade levels, and connections to Common Core State Standards in Mathematics and English Language Arts & Literacy.

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Local Curriculum Transition

- Coherent professional development opportunities are vital.
- Continued collaboration among science education stakeholders will ensure building awareness and capacity of teachers and leaders of science at the local, regional, and state levels.
- Continued focus of science education stakeholders on the critical components of the Statewide Strategic Plan for Science will enhance opportunities for student achievement of the new NYS P-12 Science Learning Standards.

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State Assessment Transition

- New local and state-level assessments will need to be developed to measure the learning expectations included in the new standards.
- New local and state-level assessments should focus on evaluating student achievement of three-dimensional learning – Science and Engineering Practices, Crosscutting Concepts, and Disciplinary Core Ideas.
- Proposed State Assessments:
 - Grade 5
 - Grade 8
 - High School Regents examinations in biology, chemistry, Earth and space science, and physics

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Proposed Transition Strategy

Timeframe	Task
Summer and Fall 2016	Engage relevant stakeholder groups to outline a more detailed transition strategy for the new NYS P-12 Science Learning Standards in alignment with the Statewide Strategic Plan for Science.
Fall 2016	Present NYS P-12 Science Learning Standards to Board of Regents for final adoption.
2016-2017 School Year	Collaborate with relevant stakeholder groups to build awareness of the new NYS P-12 Science Learning Standards across the state. Develop and propose assessment frameworks.

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Proposed Transition Strategy (cont.)

2017-2018 School Year	<p>Continue collaboration with relevant stakeholder groups to build awareness and build capacity around new NYS P-12 Science Learning Standards; local implementation of aligned curriculum and instruction begins.</p> <p>Assessment development tasks focus on item prototyping and some early item writing.</p>
2018-2019 School Year	<p>Continue collaboration with relevant stakeholder groups in fidelity with the Statewide Strategic Plan for Science; continue local implementation.</p> <p>Assessment development tasks focus on item writing and ancillary test development activities (e.g., rubric development, scoring guidance).</p>
2019-2020 School Year	<p>Assessment development tasks focus on final item writing for items that will populate the initial 2020-21 test, test development, and field testing grades 5 and 8. A question sampler and public information on the assessment framework would be released for grade 5 and 8 exams if those exams are administered operationally the following year.</p>

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Proposed Transition Strategy (cont.)

**2020-2021
School Year**

Re-examine the Statewide Strategic Plan for Science and revise, as appropriate.

Possible administration of a state-level grade 5 science assessment and a state-level grade 8 science assessment based on NYS P-12 Science Learning Standards. Assessment development continues for grades 5 and 8, field testing of Regents Exam items begins.

**2021-2022
School Year**

Possible administration of new science Regents Examination(s) based on NYS P-12 Science Learning Standards – Assessment development continues.

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Next Steps

- Continue to collaborate with science education stakeholders during the transition to new NYS P-12 Science Learning Standards.
- Strive to maintain fidelity with the Statewide Strategic Plan for Science throughout the transition period.
- Present the Board with the NYS P-12 Science Learning Standards for adoption this coming fall.

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Thank you!

New P-12 Science Learning Standards:

<http://www.p12.nysed.gov/ciai/mst/sci/nyssls.html>

Questions?:

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