



## CALIFORNIA'S ADVOCATE FOR HIGH QUALITY SCIENCE EDUCATION

California  
Science Teachers  
Association (CSTA)

950 Glenn Drive, Suite 150  
Folsom, CA 95630  
916-979-7004

[csta@casience.org](mailto:csta@casience.org)  
[casience.org](http://casience.org)  
[classroomscience.org](http://classroomscience.org)

August 28, 2015

Michael W. Kirst  
President  
California State Board of Education  
1430 N Street  
Sacramento, CA 95814

RE: Item 2: California Assessment of Student Performance and Progress: Superintendent Recommendations for the Elementary and Secondary Education Act Required California Next Generation Science Standards Assessments.

Dear President Kirst and Esteemed State Board Members:

The California Science Teachers Association (CSTA), with a membership of over 3,000 science educators, offers the following recommendations for California Next Generation Science Standards (CA NGSS) assessment to comply with state and federal ESEA requirements:

**The proposed 5th grade CA NGSS aligned, three-dimensional assessments should assess Performance Expectations (P.E.s) from grades K – 5, across the domains of life science, earth/space science, physical science and engineering, technology and applications of science.** The CA-NGSS were developed with a learning progression in mind. Students cannot fully meet performance expectations in higher grades without instruction and learning in earlier grades. As flawed as it may be, assessment drives instruction and a comprehensive K-5 assessment will help to ensure that all students achieve all standards.

**The proposed 8th grade CA NGSS aligned, three-dimensional assessments should assess P.E.s from grades 6 – 8, across the domains of life science, earth/space science, physical science and engineering, technology and applications of science.** California LEA's have the option of arranging the middle school P.E.s in more than one arrangement. As such it is essential that the test assess students in all domains and in all dimensions of NGSS in grades 6-8. Such an assessment would be relevant regardless of the curricular arrangement of the performance expectations.

**The proposed high school assessments should assess the high school P.E.s, across the domains of life science, earth/space science, physical science, and engineering design and allow for flexibility to accommodate for various course models and pathways available to students.** Further, we propose that the high school assessment participation be "banked" for reporting as this makes for a sound practice to comply with ESEA.

**CSTA recommends that the State Board of Education adopt the following recommendation as an alternate to the one proposed by CDE in Recommendation Two:**

The CA NGSS assessments for high school (including the CA NGSS alternate assessment for students with significant cognitive disabilities) shall be administered to a student after successful completion of the LEA's high school science graduation requirements. This assessment shall assess the three dimensions of the CA-NGSS and high school performance expectations from



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each of the four disciplines: Earth, Life, and Physical sciences and Engineering Design. In doing so, the assessment shall allow the student to demonstrate understanding of the disciplinary core ideas and their interdependencies, the crosscutting concepts, and the scientific and engineering practices. The assessment shall be designed to include both computer-based assessment items as well as hands-on and/or computer-based performance tasks. The student scores will be reported at the time of the test.

- This recommendation complies with federal requirements for assessing science at least once in grades 10 – 12 while more closely conforming with the July 2014 stakeholder recommendations to assess P.E.s from all disciplines at the high school level.
- This recommendation will serve to increase opportunity to access a variety of science courses and course sequences as LEAs will look to increase and/or broaden their offerings in order to adequately prepare its students for the statewide science assessment and graduation. By allowing for test administration when the student has completed course work, this allows for LEA flexibility to administer the assessment when the student is prepared. This will ultimately lead to a college and career ready graduate who will be better prepared to be an active citizen and fulfill California's current and future workforce needs.
- This recommendation more closely supports the full implementation of the CA-NGSS, the NRC *Framework for K-12 Science Education*, the CA-NGSS appendices, the high school models in the draft *California Science Framework for California Public Schools: Kindergarten Through Grade Twelve* (2016), the NRC *Guide to Implementing the Next Generation Science Standards*, and the NRC's *Developing Assessments for the Next Generation Science Standards*. By assessing across all four disciplines, we will therefore allow for assessment of the crosscutting concepts and the science and engineering practices along with the disciplinary core ideas, which cannot be accomplished by assessing within a single discipline alone (as proposed by CDE).

CSTA and its members have spent untold volunteer hours in service to the state around NGSS for the past several years. We actively participated on state review teams, the Science Expert Panel, the State NGSS Implementation Team, and in the ETS/CDE Assessment Stakeholder meetings. I served, along with ten other CSTA members, on the science Curriculum Framework Criteria and Guidelines Committee and I have been part of the leadership team for developing and delivering the NGSS Statewide Rollout workshops. Throughout all that work the message has been clear – three dimensional learning, all standards for all students, NGSS is to ensure that all students are college and career ready. A grade 3-5, a primarily physical science 8<sup>th</sup> grade, and a biology-only high school ESEA assessments will narrow the curriculum and make it much more difficult for schools to make the needed changes to ensure that all students leave high school ready for what lies ahead. As stated in the CDE's own rationale "whether intended or not, what is tested deeply impacts what is taught and how it is taught in the classroom." (p. 9 of attachment 1) Testing only biological sciences in high school will place an over-emphasis on a single discipline and perhaps derail full implementation of NGSS across the disciplines.

In 2013, the state adopted the CA-NGSS and appendices, which together lay the groundwork for a high quality science education with the vision of "all standards, all students." This is not merely a catch-phrase, rather a guiding vision for equitable, high quality science education for all of



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California's students to prepare them for college and career. From page 27 of the NRC's *Developing Assessments for the Next Generation Science Standards*: "The concept of equity is integral to the [NRC's science] framework's definition of excellence. The framework's goals are explicitly intended for all students, and it emphasizes that learners from diverse backgrounds can indeed engage in and learn complex subject matter. The Next Generation Science Standards (NGSS) also highlight issues related to equity and diversity and offer specific guidance for fostering science learning for diverse groups (see NGSS Lead States, 2013, Appendix D). It notes important challenges: students' opportunities to learn are rarely equitable, and the changes to curriculum and instruction called for may take longest to reach the students already at the greatest disadvantage in science education.

Testing only biological sciences in high school, and majority physical sciences in 8<sup>th</sup> grade will not serve to assess a student's deeper level of understanding of science, as it will not assess a student's understanding of the interdisciplinary nature of NGSS practices and crosscutting concepts. From page 37 of the NRC's *Developing Assessments for the Next Generation Science Standards*: "coherence in science education lies in the connections among the disciplinary core ideas, such as using understandings about chemical interactions from physical science to explain phenomena in biological contexts."

At present, the only funding available to develop science assessments is that designated for ESEA-required science assessments. While CSTA will support efforts to appropriate funds for developing additional CA-NGSS-aligned assessments as may be proposed by CDE in early 2016, we recognize that until such funds are available, the ESEA-required assessment will stand alone, and therefore should be as closely reflective of our CA-NGSS priorities as is possible, to serve our broader purposes of supporting NGSS-based science teaching and learning.

Please consider CSTA's alternative to a biological sciences-only ESEA exam for high school along with CSTA's additional recommendations for testing in 5<sup>th</sup> and 8<sup>th</sup> grade.

Sincerely,

A handwritten signature in cursive script that reads "Lisa Hegdahl".

Lisa Hegdahl  
President