



California  
Science Teachers  
Association (CSTA)

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# Assessing Student's Knowledge and Understanding of Science A CSTA Position Statement

## Introduction

"Science assessments are necessary tools for managing and evaluating efforts to ensure all students receive the science education necessary to prepare them for participation in our nation's decision-making processes and lifelong learning of science in a technology-rich workplace" (NSTA, 2001). Assessment takes on many forms and purposes -- from minute-to-minute informal classroom activities to statewide summative assessments.

## Position Statement

CSTA believes that all students should have appropriate and equitable opportunities to demonstrate understanding of the disciplinary core concepts and crosscutting concepts through the science and engineering practices, as described in the performance expectations of the California Next Generation Science Standards (CA NGSS). CSTA further believes that teachers should have access to professional learning, planning time, and resources in order to develop and use high-quality science assessments.

## Science Classroom Assessment

Classroom assessments include a range of assessment from formative, interim, formal, informal, benchmark, to end of unit<sup>1</sup>. CSTA believes that the use of these classroom assessments, when designed to collectively monitor learning on a broad scale, will help TK-12 teachers and students if they

- align with CA-NGSS performance expectations
- are developmentally appropriate;
- utilize math and literacy abilities appropriate to the student's grade level;
- promote students' self-assessment and metacognition about learning
- are composed of multiple item types and methods including performance tasks;
- promote multiple modalities
- inform teachers' instruction /differentiation

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<sup>1</sup> [Chapter 9, Assessment, 2016 California Science Framework, page 1308](#)



CSTA believes that classroom teachers need to be involved in the development and selection of assessments administered in their classrooms.

## Statewide Summative Assessment

CSTA continues to monitor the implementation of CA statewide summative science assessment<sup>2</sup>. CSTA believes a statewide summative assessment system should meet the following benchmarks.

- is informed by the extensive body of research and criteria for effective and equitable assessments regardless of local course sequences;
- will guide increasingly sophisticated, three-dimensional science teaching and learning in every California classroom from Transitional Kindergarten through high school;
- is designed to evaluate student understanding across all K-12 standards;
- has the flexibility to accommodate various course models and pathways, and if necessary, allows any high school assessment participation be "banked" for necessary reporting;
- has a library of assessment items and tasks and related instructional resources available for classroom teachers to use and model.
- aligns with the vision of the [National Research Council's Framework for K-12 Science Education, \(2012\)](#).
- provide equitable opportunities for every student to express their understanding of science and the three dimensions of NGSS

(NSTA Position statement on Assessment

<https://www.nsta.org/about/positions/assessment.aspx>)

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<sup>2</sup> California and federal law require the state to administer, at minimum, statewide summative assessments in science three times between grades 3 - 12. As of 2017, California administers these assessments in grades 5, 8, and once in grades 10-12. In order to minimize testing time, the California Department of Education was charged with developing assessments that would take no more than two hours to administer.