

CSBA Sample Board Policy

Instruction

BP 6142.93(a)

SCIENCE INSTRUCTION

Note: The following optional policy may be revised to reflect district practice and the grade levels served by the district.

Education Code 51210 and 51220 require that science instruction, including biological and physical aspects of science, be included in the course of study offered in grades 1-12. For grades 1-6, the course of study must include an emphasis on experimental inquiry and the place of humans in ecological systems. In grades 7-12, the course of study must include an emphasis on basic concepts, theories, and processes of scientific investigation; the place of humans in ecological systems; and appropriate applications of the interrelation and interdependence of the sciences. See AR 6143 - Courses of Study.

In addition, Education Code 51225.3 requires completion of two courses in science, including biological and physical sciences, to meet high school graduation requirements. See BP 6146.1 - High School Graduation Requirements.

Many districts integrate science, technology, engineering, and mathematics instruction (STEM), and sometimes art instruction (STEAM), to teach processes and concepts applied to real-world contexts. Further information about this interdisciplinary approach is available on the web sites of the California Department of Education (CDE) and U.S. Department of Education.

The Governing Board believes that science education should focus on giving students an understanding **of the biological and physical aspects of science, of key scientific concepts, and a capacity for methods of scientific inquiry and investigation—ways of thinking.** Students should become familiar with the natural world and the interrelationships **ship** of science, mathematics, **and** technology, **and engineering.** As part of **their** science instruction, students should learn how to apply scientific knowledge and **reasoning ways of thinking for individual and social purposes.**

(cf. 0440 - District Technology Plan)

(cf. 5145.8 - Refusal to Harm or Destroy Animals)

(cf. 6142.92 - Mathematics Instruction)

(cf. 6143 - Courses of Study)

(cf. 6146.1 - High School Graduation Requirements)

Philosophical and religious theories that are based, at least in part, on faith and are not subject to scientific test and refutation shall not be discussed during science instruction.

(cf. 6141.2 - Recognition of Religious Beliefs and Customs)

Note: The State Board of Education (SBE) adopted the California Next Generation Science Standards (CA-NGSS) in 2013 and the Science Framework for Public Schools in 2016. Under the CA-NGSS, the focus of instruction shifts from knowing science facts to knowing and applying science concepts. The

SBE's **NGSS Systems Implementation Plan for California** requires the CA-NGSS to be fully implemented, including updated instructional materials and science assessments, by the 2018-19 school year.

BP 6142.93(b)

SCIENCE INSTRUCTION (continued)

The district's academic standards for science instruction shall meet or exceed the California Next Generation Science Standards (CA-NGSS). The Superintendent or designee shall ensure that curricula used in district schools are aligned with these standards and the state curriculum framework.

(cf. 6011 - Academic Standards)

(cf. 6141 - Curriculum Development and Evaluation)

(cf. 6161.1 - Selection and Evaluation of Instructional Materials)

Note: The following optional paragraph may be revised to reflect district practice. Education Code 52060 requires that the district's local control and accountability plan include goals related to, among other things, student achievement (including student enrollment in a broad course of study) and the implementation of SBE-adopted academic content and performance standards.

The Superintendent or designee shall ensure that students have access to and are enrolled in a broad course of study including science courses.

(cf. 0460 - Local Control and Accountability Plan)

The Superintendent or designee shall provide certificated staff with opportunities to participate in professional development activities designed to enhance their knowledge of district-adopted academic standards, instructional strategies for teaching science, and changes in scientific theories.

(cf. 4131 - Staff Development)

(cf. 4331 - Staff Development)

Note: The following paragraphs are consistent with the State Board of Education's 1989 policy statement on the teaching of natural sciences.

As a matter of principle, science teachers are professionally bound to limit their teaching to content that meets the criteria of scientific fact, hypothesis and theory as these terms are used in natural sciences. A scientific fact is an understanding based on confirmable observations and is subject to test and rejection. A scientific hypothesis is an attempt to frame a question as a testable proposition. A scientific theory organizes and explains a range of natural phenomena on the basis of facts and hypotheses. Scientific theories are constantly subject to testing, modification and refutation as new evidence and new ideas emerge.

~~Philosophical and religious theories are based, at least in part, on faith and are not subject to scientific test and refutation. Such beliefs shall not be discussed in science classes, but may be addressed in the social science and language arts curricula.~~

~~(cf. 6141.2 - Recognition of Religious Beliefs and Customs)~~

~~(cf. 6142.91 - Reading/Language Arts Instruction)~~

BP 6142.93(c)

SCIENCE INSTRUCTION (continued)

Note: The following paragraph is for use by districts that offer science laboratory classes and may be modified to reflect district practice. For further information about safety practices in school science laboratories, see the CDE's comprehensive Science Safety Handbook for California Public Schools.

Pursuant to 8 CCR 5191, whenever a school laboratory uses hazardous chemicals, it is required to have a written chemical hygiene plan to protect employees. See BP/AR 3514.1 - Hazardous Substances. In addition, Education Code 49340-49341 encourage educational efforts to increase student and staff awareness dealing with hazardous materials in school laboratories in order to minimize injuries, loss of property, and classroom disruptions.

The Superintendent or designee shall develop and implement appropriate safety measures for science laboratory classes, including, but not limited to, staff and student safety training, use of eye safety devices, hearing protection, first aid procedures, regular equipment maintenance, safe use of heat sources, safe use and disposal of hazardous chemicals, proper ventilation, prevention of exposure to bloodborne pathogens from sharp instruments, fire prevention and control, an emergency response plan, and evacuation procedures. Parents/guardians shall be informed of the types of science laboratory activities that will be conducted

(cf. 3514.1 - Hazardous Substances)

(cf. 4119.42/4219.42/4319.42 - Exposure Control Plan for Bloodborne Pathogens)

(cf. 4157/4257/4357- Employee Safety)

(cf. 5142 - Safety)

Note: The following optional paragraph should be revised to reflect measures that will be used to evaluate program effectiveness as agreed upon by the Board and Superintendent or designee.

Pursuant to Education Code 60640, the California Assessment of Student Performance and Progress includes administration of science assessments at grades 5, 8, and 10. The California Standards Tests are to be used for this purpose until a science assessment that is aligned with the CA-NGSS is adopted. Students with disabilities who are unable to participate in the science assessments, even with allowable testing variations and resources, must be administered either the California Modified Assessment or California Alternate Performance Assessment in accordance with their individualized education program. See AR 6162.51 - State Academic Achievement Tests.

The Superintendent or designee shall regularly report to the Board regarding the implementation and effectiveness of the science curriculum at each grade level. At a

minimum, each report shall address the extent to which the program is aligned with the CA-NGSS, any applicable student assessment results, and feedback from students, parents/guardians, and staff regarding the program.

(cf. 0500 - Accountability)

(cf. 6162.51 - State Academic Achievement Tests)

Legal Reference: (see next page)

BP 6142.93(d)

SCIENCE INSTRUCTION (continued)

Legal Reference:

EDUCATION CODE

8774 Residential outdoor science program

32030-32034 Eye safety

32255-32255.6 Student's right to refrain from harmful or destructive use of animals

33475-33475.5 Model curriculum on stem cell science

49340-49341 Hazardous substances education

51210 Areas of study, grades 1 through 6

51210.3 Elementary science coach

51220 Areas of study, grades 7 through 12

51225.3 High school graduation

52060-52077 Local control and accountability plan

60640-60649 California Assessment of Student Performance and Progress

CODE OF REGULATION, TITLE 5

14030 Science laboratories, design specifications

CODE OF REGULATIONS, TITLE 8

5191 Occupational exposure to hazardous chemicals in laboratories; chemical hygiene plan

Management Resources:

CSBA PUBLICATIONS

Supporting Implementation of the California Next Generation Science Standards (CA-NGSS), Governance Brief, November 2016

~~CDE~~ CALIFORNIA DEPARTMENT OF EDUCATION PUBLICATIONS

Science Framework for California Public Schools: Kindergarten Through Grade Twelve, 1990 2016

Next Generation Science Standards Systems Implementation Plan for California, 2014

California Next Generation Science Standards, 2013

Science Safety Handbook for California Public Schools, 2012

SBE POLICIES

Policy Statement on the Teaching of Natural Sciences, January 13, 1989

WEB SITES

CSBA: <http://www.csba.org>

California Alliance for Next Generation Science Standards: <http://cdefoundation.org/stem/ca4ngss>

California Department of Education: <http://www.cde.ca.gov>

California Science Teachers Association: <http://www.cascience.org>

U.S. Department of Education, STEM Education: <http://www.ed.gov/stem>

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Policy Reference UPDATE Service

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