AMENDED IN ASSEMBLY JUNE 22, 2010

SENATE BILL No. 1444

Introduced by Senator Hancock

February 19, 2010

An act to add Section 51207 to the Education Code, relating to pupil instruction.

LEGISLATIVE COUNSEL'S DIGEST

SB 1444, as amended, Hancock. Pupil instruction: science, technology, engineering, and mathematics education.

Existing law requires the adopted course of study for grades 1 to 6, inclusive, and for grades 7 to 12, inclusive, to offer courses in specified areas of study, including mathematics and science.

This bill would ~~define~~ *set forth various findings and declarations of the Legislature relating to* science, technology, engineering, and mathematics (STEM) education. *The bill would define STEM education* as courses or a sequence of courses that prepare pupils for occupations and careers that require technically sophisticated skills, including the application of mathematical and scientific skills and concepts, as specified, *and would express the Legislature's intent that the Superintendent of Public Instruction allocate funds designated for STEM education consistent with the definitions set forth in the bill.*

Vote: majority. Appropriation: no. Fiscal committee: no. State-mandated local program: no.

The people of the State of California do enact as follows:

SECTION 1. (a) The Legislature finds and declares all of the following:

(1) The elements of science, technology, engineering and mathematics (STEM) are critical parts of the United States of America's key economic sectors, including biotechnology, health care, energy, infrastructure, and national security, and growth in these areas is fundamental to the nation's and California's economic and social well-being

(2) During the next decade, demand for scientists and engineers in the United States is expected to increase at four times the rate for all other occupations.

(3) The Labor and Workforce Development Agency (LWDA) projects that, unless California takes action now, we face a shortfall of almost 40,000 engineers by 2014. The LWDA forecasts that California will need approximately 20,000 to 24,000 additional engineers educated in California to begin meeting the growing engineering needs of both the private and public sectors over the next decade.

(4) Two major factors impede STEM growth. First, the pending retirement of the baby boomer generation will significantly affect the STEM labor force. Twenty-six percent of people with science and engineering degrees currently working are 50 years of age or older. Second, too few students are choosing to pursue STEM careers. From 1985 to 2005, inclusive, the number of bachelor's degrees earned in engineering fell from 77,572 to 66,133, and the number of associate degrees in engineering technology fell from 53,700 to 28,800.

(5) The Center for the Future of Teaching and Learning has found that among novice teachers overall, 24% are under prepared, and in STEM disciplines, the proportions are much higher: 39% of high school mathematics teachers, 38% of high school science teachers, 31% of middle school mathematics teachers, and 33% of middle school science teachers are under prepared. In California, 12% of mathematics teachers, 18% of physical science teachers, and 11% of life science teachers are considered out-of-field teachers. One-third of middle school algebra teachers do not hold a mathematics authorization.

(6) In order to address the need for a workforce with STEM skills, the Legislature finds it necessary to provide opportunities for high school students to acquire science, math, technology, and engineering knowledge skills through STEM focused academic and career courses.

(b) It is the intent of the Legislature that the Superintendent of Public Instruction allocate funds designated for STEM education, including state, federal or private funds, consistent with the definitions set forth in the provisions of this bill.

~~SECTION 1.~~

SEC. 2. Section 51207 is added to the Education Code, to read:

51207. (a) *STEM education is science, technology, engineering, and mathematics, and the integration of those four disciplines into comprehensive and real-world approaches to teaching and learning.*

(b) STEM education embodies the intersection of science, mathematics, technology, and individuals' understandings of design principles and systems thinking commonly employed by engineers to develop solutions to problems.

(c) Science, technology, engineering, and mathematics (STEM) education means courses or a sequence of courses that prepare pupils for occupations and careers that require technically sophisticated skills, including the application of mathematical and scientific skills and concepts.

(d) STEM education for grades 1 to 12, inclusive, may include, but is not limited to, instruction as follows:

~~(b)~~

(1) In grades 1 to 6, inclusive, STEM education includes foundational courses in mathematics, science, and technology that lead to success in challenging and applied courses in grades 7 to 12, inclusive. It is in grades 1 to 6, inclusive, that awareness of STEM careers and occupations *in fields related to science, technology, engineering, and mathematics* begins.

~~(c)~~

(2) In grades 7 to 12, inclusive, STEM education includes rigorous and challenging courses that include the application of science, mathematics, *engineering,* and technology. In grades 7 and 8, awareness of STEM careers and occupations continues, and career exploration begins. In high school, STEM education includes courses and pathways for pupils to explore and prepare for careers and occupations in STEM fields.

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