

# HOUSE BILL REPORT

## HB 1872

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### As Reported by House Committee On: Education

**Title:** An act relating to establishing a comprehensive initiative to increase learning opportunities and improve educational outcomes in science, technology, engineering, and mathematics through multiple strategies and statewide partnerships.

**Brief Description:** Establishing a comprehensive initiative to increase learning opportunities and improve educational outcomes in science, technology, engineering, and mathematics through multiple strategies and statewide partnerships.

**Sponsors:** Representatives Maxwell, Dahlquist, Lytton, Sullivan, McCoy, Upthegrove, Bergquist, Seaquist, Morrell, Wylie, Goodman, Ryu, Tarleton, Tharinger, Springer, Stonier, Jinkins, Orwall, Pollet, Fey, Hansen, Liias and Freeman; by request of Governor Inslee.

#### **Brief History:**

##### **Committee Activity:**

Education: 2/20/13, 2/22/13 [DPS].

#### **Brief Summary of Substitute Bill**

- Defines Science, Technology, Engineering, and Mathematics (STEM) Literacy.
- Establishes a STEM Education Innovation Alliance to advise the Governor, create a STEM Framework for Action and Accountability (Framework), and develop a STEM Report Card.
- Directs the Office of Financial Management to contract with a nonprofit organization to develop evidence-based approaches for increasing learning opportunities in the STEM, if funds are appropriated.
- Directs the Office of the Superintendent of Public Instruction to disseminate resources to increase interdisciplinary instruction and project-based learning.
- Requires the Washington Student Achievement Council and the Quality Education Council to align their strategic plans with the Framework.
- Authorizes adoption of a third credit of science for high school graduation, starting with the graduating class of 2018.

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*This analysis was prepared by non-partisan legislative staff for the use of legislative members in their deliberations. This analysis is not a part of the legislation nor does it constitute a statement of legislative intent.*

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## HOUSE COMMITTEE ON EDUCATION

**Majority Report:** The substitute bill be substituted therefor and the substitute bill do pass. Signed by 18 members: Representatives Santos, Chair; Stonier, Vice Chair; Dahlquist, Ranking Minority Member; Magendanz, Assistant Ranking Minority Member; Bergquist, Fagan, Haigh, Hawkins, Hunt, Klippert, Lytton, Maxwell, McCoy, Orwall, Parker, Pollet, Seaquist and Warnick.

**Minority Report:** Do not pass. Signed by 3 members: Representatives Hargrove, Hayes and Pike.

**Staff:** Barbara McLain (786-7383).

### **Background:**

In 2010 the Legislature directed the Office of the Superintendent of Public Instruction (OSPI) to convene a working group to develop a comprehensive plan to establish educational pathways from elementary education through postsecondary education and careers in Science, Technology, Engineering, and Mathematics (STEM). The plan defined STEM Literacy and made a number of recommendations regarding recruiting and retaining STEM educators; creating STEM pathways to boost student success; and using STEM education to close the opportunity gap and prepare students for career and college.

Examples of other STEM K-12 education initiatives currently supported by the state include:

- designation of a statewide STEM director within the OSPI;
- provision of funds to support career and technical education in the STEM and professional development for teachers to implement STEM curricula;
- designation of STEM lighthouse schools to serve as examples of innovation and best practices;
- support for a Mathematics, Engineering, and Science Achievement (MESA) program run through state colleges and universities to encourage students in under-represented groups to gain skills and explore careers in the STEM; and
- grants for high schools to implement advanced STEM curricula, such as Project Lead-the-Way.

Washington STEM is a nonprofit organization established in 2011 with the objective of identifying and supporting innovations in STEM education across the state. Since its inception, Washington STEM has invested in a variety of initiatives including support for regional networks of education institutions and community organizations to advance STEM education that is aligned with local economic development; entrepreneur awards to help educators test new ideas and innovations; and portfolio awards that support multi-year STEM education projects.

One of the responsibilities of the Washington Student Achievement Council (WSAC) is to propose educational attainment goals and priorities through a ten-year Roadmap. Strategies to be included in the Roadmap are outlined in statute. The first Roadmap is due December 1, 2013.

The Quality Education Council (QEC) is charged with recommending and informing the ongoing implementation of the program of Basic Education to be delivered by the public schools. The QEC also must identify measurable ten-year goals and priorities for the education system.

The State Board of Education (SBE) has recommended that minimum state high school graduation requirements include three credits of science, rather than two credits. Under current law, any change in graduation requirements determined to have a fiscal impact on school districts must first be authorized and funded by the Legislature.

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### **Summary of Substitute Bill:**

#### *STEM Literacy.*

A definition of STEM Literacy is adopted: the ability to identify, apply, and integrate concepts from science, technology, engineering, and mathematics to understand complex problems and to innovate to solve them. Four components of STEM Literacy are also described: scientific, technological, engineering, and mathematical literacy.

#### *STEM Education Innovation Alliance.*

A STEM Education Innovation Alliance (Alliance) is established to advise the Governor and provide vision and guidance in support of STEM education initiatives from early learning through postsecondary education. The Governor's Office, in consultation with the Superintendent of Public Instruction, must invite representatives of businesses, education institutions, and organizations with expertise in STEM education to participate. The Governor's Office, the OSPI, and other state education agencies are also represented.

The first task of the Alliance is to combine previous STEM education strategic plans into a comprehensive STEM Framework for Action and Accountability (Framework). The Framework must use selected measures that are meaningful indicators of progress in increasing STEM learning opportunities and achieving longer-term outcomes in the STEM.

#### *STEM Benchmark Report Card.*

The Alliance must also develop a STEM Benchmark Report Card (Report Card) based on the Framework. The purpose of the Report Card is to monitor progress in aligning strategic plans and activities in order to prepare students for STEM-related jobs and careers, with the longer-term goal of improving educational, workforce, and economic outcomes. The Report Card must be posted online and contain the following:

- the most recent data for the measures and indicators of the Framework;
- information from state education agencies on how activities and resources are aligned with the Framework; and
- data regarding STEM job openings.

The Education Data Center in the Office of Financial Management (OFM) coordinates data collection and analysis to support the Report Card. State education agencies must annually report on how their policies, activities, and expenditures align with and support the

Framework. The Employment Security Department must create an annual report on current and projected job openings in STEM fields for the Report Card.

The first Report Card must be published by January 10, 2014, to be updated annually thereafter.

*Statewide STEM Organization.*

To the extent funds are appropriated for this purpose, the OFM must contract with a statewide nonprofit organization with expertise in promoting and supporting STEM education from early learning through postsecondary education. The purpose of the contract is to identify, test, and develop evidence-based approaches for increasing STEM learning opportunities and improving outcomes that are aligned with the Framework.

The activities conducted under the contract are negotiated between the Governor's Office, the OFM, and the selected organization, and include:

- a communications campaign about the importance of STEM Literacy and the opportunities presented by STEM education and careers;
- expansion of regional STEM networks;
- competitive grants to support innovative practices in STEM education, including models of interdisciplinary instruction and project-based learning;
- professional development opportunities, including technology-enabled learning systems to support state learning standards; and
- opportunities to extend the STEM into early learning.

*Other Initiatives.*

The OSPI, in consultation with the Alliance, must identify and disseminate resources and materials to elementary, middle, and high schools to encourage interdisciplinary instruction and project-based learning in the STEM.

The WSAC must consult with the Alliance in order to align the Roadmap with the Framework and must include strategies in the Roadmap to strengthen the education pipeline and degree production in STEM fields. The QEC must include strategies to increase STEM learning opportunities in the goals and priorities for the education system.

The SBE must adopt rules to increase the number of science credits for graduation from two to three, starting with the graduating class of 2018. Funds must be appropriated from the operating budget beginning in the 2014-15 school year for additional operating costs such as laboratory equipment, technology, and textbooks associated with the additional courses. Funds must also be appropriated in the capital budget to provide supplemental allocations for modernization and new construction of science laboratory facilities.

Funds must be appropriated each school year to provide 20 grants of \$5,000 each to support student participation in team-based STEM activities involving robotics and engineering competitions. The OSPI must allocate the funds to elementary, middle, and high schools using a lottery system.

The provisions of the bill, as well as laws pertaining to STEM lighthouse schools, the STEM director in the OSPI, the MESA program, and grants for STEM curricula, are all placed in a new RCW Chapter.

**Substitute Bill Compared to Original Bill:**

The purpose of the Report Card is to monitor progress in aligning strategic plans and activities in order to prepare students for STEM-related jobs and careers, with the longer-term goal of improving educational, workforce, and economic outcomes. The SBE must adopt rules to increase the number of science credits. Funds must be appropriated to support operating costs associated with the additional courses, and capital funds must be appropriated for modernization and new construction of science laboratory facilities. Funds must be appropriated to provide grants to support student participation in team-based STEM activities

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**Appropriation:** None.

**Fiscal Note:** Available.

**Effective Date of Substitute Bill:** The bill takes effect 90 days after adjournment of the session in which the bill is passed.

**Staff Summary of Public Testimony:**

(In support) This is the Governor's first piece of education legislation. The STEM literacy is about living, learning, and working in the twenty-first century. This initiative will provide the vision and energy to help students be better prepared for STEM jobs now and in the future. Every county has businesses in STEM fields. The Governor's interest and leadership is appreciated.

It is important in the Governor's Working Washington plan to give students access to STEM education. Washington is first in the nation in STEM jobs, with a 24 percent increase expected over the next several years. Cleveland High School is an example of engaging, project-oriented teaching. Teachers understand what it takes to light up bright minds by engaging them in real-world application. There is incredible enthusiasm. The goal is for more students to have that experience. The first task of the Alliance is to define and align goals. It is known that recruiting and retaining STEM teachers is key. There should be public-private partnerships to leverage private money. There is a need to help teachers and principals share curriculum and experiences across the state.

It is time to redouble the efforts to focus on STEM education and degrees. It is exciting to pull together academic and career education. This recognizes that applied learning moves students toward all forms of careers. The Framework will help current schools share their work and leverage the investments and partnerships that they have created to help the rest of the state. Too often there is an imagined conflict between the liberal arts and STEM. In fact, the integration of science, social science, ethics, and public policy are at the heart of interdisciplinary instruction.

A key strategy to economic recovery in the state is talent production, and STEM education is the key to talent production. The Framework will encourage innovative, scalable, long-term strategies to get more students interested in and prepared for STEM careers. Helping principals better understand STEM instruction is a way to move these initiatives statewide.

Robotics teams are the culmination of what successful STEM education looks like. Kids of all races, incomes, and gender work together with such excitement, dedication, and engagement. The STEM curriculum helps students understand that what they are learning in the classroom can actually be useful. Students become interested in things they never thought they cared about.

Community-based organizations should be part of the Alliance. They advocate for greater opportunities for youth of color and disadvantaged youth. The next generation of Washingtonians need a coherent strategy to move the STEM economy forward. This approach will provide a much-needed tool to map strategies across the state. Voters support and understand the importance of STEM skills. School directors would like to participate in the Alliance. The Superintendent of Public Instruction believes that shining a light on STEM education will enhance student interest and understanding of math, science, and other important subjects. The Alliance will further solidify partnerships between schools and businesses.

(In support with concerns) There is strong support for STEM education. The STEM crosses all educational boundaries and pathways. It is appreciated that this bill moves STEM initiatives into a single framework to know what is working. It is good to see educators at the table and support provided for curriculum and materials. The one concern is that there are huge challenges ahead to fully fund the education. The Washington Supreme Court has been clear that these are issues to address immediately. The concern is that if focus does not stay on Basic Education, the goals of this type of initiative will not be met.

(Opposed) None.

**Persons Testifying:** (In support) Representative Maxwell, prime sponsor; Governor Jay Inslee; Lew McMurrin, Washington Technology Industry Association; Tim Knue, Washington Association for Career and Technical Education; Kim Herzog, Sammamish High School; Julie Garver and Ralph Murphy, The Evergreen State College; Egils Milbergs, Washington Economic Development Commission; Jerry Bender, Association of Washington School Principals; Peter Orth; Max Orth; Jon Madamba, Filipino Community of Seattle; Lili Gish; Caroline King, Washington STEM; Marie Sullivan, Washington State School Directors' Association; and Ken Kanikeberg, Office of the Superintendent of Public Instruction.

(In support with concerns) Lucinda Young, Washington Education Association.

**Persons Signed In To Testify But Not Testifying:** None.