



STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

Date: 02/13/2018
Time: 01:20 PM
Location: 224
Committee: Senate Education
Senate Higher Education

Department: Education

Person Testifying: Dr. Christina M. Kishimoto, Superintendent of Education

Title of Bill: SB 2507 RELATING TO EDUCATION.

Purpose of Bill: Requires the Department of Education to: (1) develop and implement a statewide computer science curricula plan for public schools; and (2) permit students to fulfill some graduation requirements through computer science coursework. Appropriates funds to the Department of Education. Requires the University of Hawaii to permit applicants to fulfill certain admission requirements through computer science coursework.

Department's Position:

The Department of Education supports the intent of SB 2507.

Currently, the Department is developing a multi-year comprehensive computer science plan. This plan will identify K-12 curriculum, software, and technologies.

To ensure equitable and expanded access to computer science learning opportunities for K-12 students by 2022, the Department is addressing the following eight deliverables:

- 1) Adoption of Computer Science Standards aligned to national efforts,
- 2) Development of single courses and pathway courses for maximum student access,
- 3) Identification of standards-based curricular resources,
- 4) Quality K-12 professional development in computer science including fellowships and externships for teachers,
- 5) A schedule of academic competitions in partnership with business, industry and government,
- 6) Expansion of regional and school-based student demonstrations,
- 7) Increased partnerships for access to meaningful internship and apprentice models, and
- 8) Improved career counseling and information sharing around current and emerging computer science related work and study opportunities in Hawaii.

Respectfully, the Department offers comment on the following proposals in this measure:

Computer Science Standards (page 4, lines 6-11): The Department is in the process of gathering

feedback from stakeholders to adopt K-12 Computer Science Standards aligned to national efforts.

State Leadership (page 4, lines 12-13): A state leadership team has been established to lead Computer Science (CS) efforts.

Teacher Certification (page 4, lines 14-15): The multi-year plan includes action items to clearly identify the teacher certification process.

High School Course Offerings (page 3, lines 5-8 and page 4, lines 16-18): The Department currently offers Computer Science courses at 21 high schools. If a CS course is not offered by a high school, online options are available for students. Additionally, students are able to earn a fourth Math or Science credit by satisfactorily completing a CS course and Algebra II. With these credits, students are eligible to earn an Academic Honors and/or STEM Honors designation.

Contracts for Professional Development (page 6, lines 1-21 and page 7, lines 1-11): The Department shall follow all procurement guidelines if professional development services are rendered from external agencies such as institutes of higher education and nationally recognized providers.

The Department defers comment to the University of Hawaii for admission requirements related to computer science coursework.

Thank you for this opportunity to provide testimony on SB 2507.

The Hawaii State Department of Education seeks to advance the goals of the Strategic Plan which is focused on student success, staff success, and successful systems of support. This is achieved through targeted work around three impact strategies: school design, student voice, and teacher collaboration. Detailed information is available at www.hawaiipublicschools.org.



UNIVERSITY OF HAWAII SYSTEM

Legislative Testimony

Testimony Presented Before the
Senate Committees on Education and Higher Education
February 13, 2018 at 1:20 p.m.

By
Donald O. Straney
Vice President for Academic Planning and Policy
University of Hawai'i System

SB 2507 – RELATING TO EDUCATION

Chairs Kidani and Kahele, Vice Chair Kim, and members of the committees:

Thank you for the opportunity to comment on SB 2507 that requires the Hawai'i Department of Education to develop and implement a statewide computer science curricula plan for public schools and permits students to fulfill some graduation requirements through computer science coursework. SB 2507 requires the University of Hawai'i to permit applicants to fulfill certain admission requirements through computer science coursework.

The University of Hawai'i (UH) appreciates the efforts of the legislature to boost job growth and innovation in Hawai'i through the development of computer science education. UH defers to the Department of Education in matters of curricula planning for public schools, and offers these comments, pertaining only to Section 3 of SB 2507 (pages 7-8) which would amend Chapter 304A of the Hawai'i Revised Statutes by adding language on admission requirements to any University campus in 2022 or thereafter.

Specifically, this section states that the University of Hawai'i shall permit any applicant for admission to fulfill: a) one high school mathematics unit requirement by demonstrating that the applicant satisfactorily earned one computer science unit provided that the student also has fulfilled second-year algebra requirements; and b) one high school science unit requirement by demonstrating that the applicant satisfactorily earned one computer science unit, provided that the same computer science unit shall not fulfill more than one unit requirement.

While UH generally recognizes the need for strong science curricula, it is unclear that any change is needed to the admissions requirements at UH, as stated in SB 2507, to support computer science. The admissions eligibility at the UH community colleges are to be 18 years of age or older and to have earned a high school diploma, GED, or equivalent. At UH four-year campuses, students seeking admissions could use a computer science course as one or more electives.

The UH does not support substituting computer science courses for the foundational science courses such as biology, chemistry, and physics, or math courses. Instead, UH encourages high school students to supplement this foundation with computer science courses, particularly students intending to go into the STEM fields, including information and communications technology (ICT).

Thank you very much for the opportunity to provide comments on SB 2507.

SB-2507

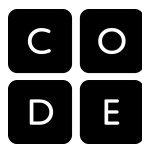
Submitted on: 2/6/2018 2:10:25 PM

Testimony for EDU on 2/13/2018 1:20:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Jacqui Hoover	Hawaii Island Economic Development Board	Support	No

Comments:

In addition to the importance of computer science skills in an increasingly competitive global economy, computer science teaches problem solving which is a critical life skill. As the workplace and life overall allow for more automation and dependence on technology itself, the importance of cognitive thinking becomes paramount, and computer science is one vehicle to provide students with such skill.



February 12, 2018

Re: SB 2507, Strongly Support

Dear Committee Members,

Code.org and Women in Technology (Maui Economic Development Board) strongly support SB 2507. This bill allocates funding for computer science professional development for teachers, which is critical to ensuring that the state's schools have the capacity to offer courses in this subject. Further, the bill requests that the Department of Education develop a statewide strategic plan for expanding computer science education, and that the University of Hawaii allow a student to fulfill an entrance requirement in mathematics or science with a computer science credit. The Department of Education has already established a team that is working to create opportunities for every K-12 student by 2022. Based on success in other states, we believe that this work, combined with the funding in the bill, will have immediate impact on access to high-quality computer science education.

Computing is a foundational skill for K-12 students. It develops students' computational and critical thinking skills and teaches them how to create—not just use—new technologies. Computer science is driving job growth and innovation in Hawaii and throughout the United States. More than half of projected jobs in STEM fields are in computing occupations, and computer science is one of the most in-demand degrees for new college graduates. According to the Conference Board, there are over 1,400 open computing jobs in the State of Hawaii, with an average salary of \$80,734. The policies encouraged by this bill would better prepare Hawaii's students for high paying, in-demand careers.

Further, only 16 schools in Hawaii (that's only 19% of Hawaii schools with AP programs) even offer an AP Computer Science course. Out of 290 exams taken in AP Computer Science last year, only 32% of those were taken by female students, 43 exams were taken by Hispanic or Latino students, 1 exam was taken by a Black student, and 12 exams were taken by Native Hawaiian or Pacific Islander students. We know that students who have access to these courses early on are more likely to choose to take the subject later on. And we also know that students who live in rural or urban areas are less likely to have access to computer science courses. No teachers graduated from a university in Hawaii last year prepared to teach computer science. This is why immediate dedicated funding for preparing existing teachers to offer these courses is critical. Our calculations estimate \$800,000 is needed to prepare one teacher in each school in the state (with the assumption that 25% of schools already have a teacher); we recommend \$500,000 in funding for this year to make a strong step towards this goal.

Thank you for your efforts in providing young people in Hawaii the education they need to be successful upon leaving the K-12 system. Code.org and Women in Technology support SB 2507, which will position Hawaii as a national leader in K-12 computer science education.

If you have any questions, please contact Katie Hendrickson at Katie@code.org, Cameron Wilson at Cameron@code.org, or Isla Young at (808) 875-2307. Thank you for your consideration of this matter.

Sincerely,



Cameron Wilson
VP for Government Affairs
Code.org
www.code.org



Isla Young
Director K12-STEM Education
Women in Technology, MEDB
Kihei, Hawaii

www.medb.org
www.womenintechnology.com
www.stemworkshawaii.com



February 12, 2018

Senator Michelle N. Kidani, Chair
Committee on Education

Senator Kaiali'i Kahele, Chair
Committee on Higher Education

Re: Senate Bill 2507 Relating to Education
Hearing: Tuesday, February 13, 2018 at 1:20 p.m.
Conference Room: 224

Dear Chair Kidani, Chair Kahele, and Members of the Senate Committees on Education and Higher Education:

On behalf of Microsoft Corporation, I am writing in strong support for SB 2507, which if enacted, would greatly expand computer science education throughout the State and better equip Hawaii's students with the computing skills needed to thrive in the 21st century economy.

SB 2507 would make key improvements, including the development and implementation of statewide K-12 computer science curricula, permitting computer science courses to meet certain math and/or science graduation requirements, requiring the University of Hawaii to permit applicants to fulfill certain admission requirements through the completion of computer science coursework and by establishing a timeline to ensure that every public high school in the state offer at least one computer science course by the 2021-2022 school year. These changes will position the State to better prepare and strengthen the pipeline into many STEM and computing fields.

The importance of computer science to the economy of Hawaii and the United States cannot be overstated. Computing occupations are the number 1 source of all new wages across the country and make up more than two-thirds of all projected new jobs in the STEM fields. According to Code.org, there were 1,403 open computing jobs in the state of Hawaii, more than 4 times the average demand rate across the state, yet only 16 schools throughout the state offered an AP Computer Science course in the 2016-2017 school year. This bill will improve Hawaii students' ability to obtain the skills to flourish now and in the future.

Again, Microsoft is pleased to strongly support SB 2507 as it moves forward in the legislative process.

Sincerely,

Jonathan Noble
Director, Government Affairs
Microsoft Corporation

Allyson Knox
Director, Education Policy
Microsoft Corporation



david.miyashiro@hawaiikidscan.org
hawaiikidscan.org

David Miyashiro
Executive Director

February 13, 2018

Committee on Education
Senator Michelle N. Kidani, Chair
Senator Kaiali'i Kahele, Vice Chair

Committee on Higher Education
Senator Kaiali'i Kahele, Chair
Senator Donna Mercado Kim, Vice Chair

State Capitol
415 South Beretania Street
Honolulu, HI 96813

Aloha Chairs, Vice Chairs and Members of the Committees,

HawaiiKidsCAN supports SB 2507, which requires the Department of Education to: (1) develop and implement a statewide computer science curricula plan for public schools; and (2) permit students to fulfill some graduation requirements through computer science coursework. The bill also appropriates funds to the Department of Education; and requires the University of Hawaii to permit applicants to fulfill certain admission requirements through computer science coursework.

Founded in 2017, HawaiiKidsCAN is a nonprofit organization committed to ensuring that Hawaii has an excellent and equitable education system that reflects the true voices of our communities and, in turn, has a transformational impact on our children and our state. HawaiiKidsCAN is a branch of 50CAN: The 50-State Campaign for Achievement Now.

HawaiiKidsCAN is supporting SB 2507 to advance the momentum for greater equity and access to computer science (CS) learning opportunities.

- To help meet the increasing demand for K-12 CS teachers, Hawaii should enable all high schools to offer computer science professional development to teachers. This is a critical step toward increasing K-12 CS capacity while preservice CS preparation programs are being developed for future educators.
- CS and other science, technology, engineering and math (STEM) knowledge will become increasingly important as our diverse economy evolves. Between 2017 and 2027, STEM-related occupations are projected to grow by 8 percent in Hawaii, compared with just 4

percent for all other occupations.¹ In particular, some of Hawaii's fastest growing occupations between 2014 and 2024 will require CS experience, including web development (26 percent growth), computer systems analysis (20 percent growth) and software development (18 percent growth).² These and other Hawaii STEM jobs carry a median hourly wage of \$40.45, well over double the median hourly wage for all other jobs of \$19.64.³

- Of the 14 public schools offering AP Computer Science courses, four received Title 1 funding in 2017-18, suggesting a shortage of courses available to low-income students.⁴ Increasing access to these courses, especially for underrepresented communities, will provide students with additional opportunities to discover the CS field and help eliminate the gender- and ethnicity-based inequities seen in the CS workforce.
- Of the 290 AP CS test takers in 2017, only 32 percent were female, highlighting the gender inequity in K-12 CS classes. Though this is a 70 percent increase from 2016 and a whopping 557 percent increase from 2007, female participation on AP CS exams still pales in comparison to male participation.⁵ Early exposure to CS can have a significant impact on eliminating the gender gap in the CS labor force. After participating in a hands-on introduction to coding through an *Hour of Code* event, female students are 10 percent more likely to say they like CS.⁶ Encouraging women to enroll in AP CS courses in high school can increase the likelihood that they will go on to major in CS in college.⁷

The world around us is changing. We must embrace the challenge of providing our children with an education that keeps up with the world.

Mahalo,

David Miyashiro
Founding Executive Director
HawaiiKidsCAN

¹ "ECS Vital Signs: STEM Demand Hawaii." *Education Commission of the States*. <http://vitalsigns.ecs.org/state/Hawaii/demand>

² Software development includes systems software and applications software. "Employment Projections for Industries and Occupations." August, 2016. *Hawaii Workforce Infonet*. <https://www.hiwi.org/admin/gsipub/htmlarea/uploads/Long-TermProjections-2014-2024-State.pdf>

³ "ECS Vital Signs: STEM Demand Hawaii." *Education Commission of the States*. <http://vitalsigns.ecs.org/state/Hawaii/demand>

⁴ "Title I Eligibility Data by Complex Area for School Year 2017-2018." *Hawaii State Department of Education*. <http://www.hawaiipublicschools.org/DOE/percent20Forms/Title17-18.pdf>

⁵ "AP Program Participation and Performance State Report 2017." *CollegeBoard*. <https://research.collegeboard.org/programs/ap/data/participation/ap-2017>

⁶ "The Hour of Code: Impact on Attitudes Towards and Self-Efficacy with Computer Science." Phillips, Rachel and Benjamin Brooks. January, 2017. Code.org. https://code.org/files/HourOfCodeImpactStudy_Jan2017.pdf

⁷ "AP Students in College: An Analysis of Five-Year Academic Careers" *College Board Research Report No. 2007-4*. Morgan, R. and John Kalric. <http://research.collegeboard.org/sites/default/files/publications/2012/7/researchreport-2007-4-ap-students-college-analysis-five-year-academic-careers.pdf>



SENATE COMMITTEE ON EDUCATION

Senator Michelle N. Kidani, Chair
Senator Kaiali'i Kahele, Vice Chair

COMMITTEE ON HIGHER EDUCATION

Senator Kaiali'i Kahele, Chair
Senator Donna Mercado Kim, Vice Chair

Tuesday, February 13, 2018 at 1:20PM, Conference Room 224

In consideration of
SB2507, Relating to Education

We support the Computer Science curricula plan to develop and implement a statewide program for students in K-12, permit students to fulfill some graduation requirements through computer science coursework, appropriate funds to the Department of Education and requires the University of Hawaii to permit applicants to fulfill certain admission requirements through computer science coursework.

DevLeague (<http://www.devleague.com/>) is the premier technical boot camp in the Pacific designed to provide mentorship and training to motivated individuals seeking a career change. We design our own curriculum based on relevant industry standards, teach in-demand technical skills such as JavaScript Web Engineer, Cyber Security Professional, Big Data Analyst and Enterprise Software Developer to help our adult students onboard with career starts into the software industry.

For the last 3.5 years, we have taught real-world software programming to middle and high school students. We started off with private schools such as Punahou School, Mid-Pacific Institute, Maryknoll School and Hawaii Baptist Academy where we created and honed our curriculum. Today, we are in these Hawaii DOE public schools with the following day-time, for credit courses:

School	Course	Year
Waipahu High School	Web Development I	2016-2017
	Web Development II Capstone	2017-2018
	Cybersecurity	2017-2018
Kapolei Middle School	Web Development I	2017-2018
Kapolei High School	Cybersecurity	2017-2018
Roosevelt High School	Cybersecurity	2017-2018
Hawaii Technology Academy	Game Development I	2017 Fall
	Web Development I	2018 Spring
Campbell High School	Cybersecurity	2018 Spring



The private-public partnership funding for these DOE programs are paid for by the kind donations from Public School of Hawaii Foundation, Hawaii Children's Foundation and workforce training funds provided by Department of Labor and Industrial Relations Workforce Division. These funds are designed to kick-start the DOE coding programs, establish curriculum, train teachers and build college and career pathways for students in industry-focused academy-based schools. It's a start.

In summer 2017, we held a two-week intensive educator training program where five DOE teachers learned hands-on web development so that they could design their own curriculum to take back into their classroom. The teacher from Hawaii Technology Academy then taught web development to a classroom of students and also taught two more teachers web development so they too could teach more students.

From February to May, 2018, we are currently conducting a two-month online educator training program where six DOE teachers are learning hands-on basics of bringing coding into the classroom. The educators learn computational thinking concepts, coding fundamentals, and tools allowing educators to gain understanding and build confidence. By the end of the program, educators will be able to effectively teach and implement coding into their curriculum, and equip their students with a "can do" growth mindset. We created the online educator training program to enable neighbor island participation. One participant is located in Lihue, Kauai.

The ask: \$500,000 as recommended by Code.org. The biggest constraints now are more funding for schools and educator training in computer science. Now is the time to boldly invest in computer science at the K-12 level to build upon and continue the success of what we started so that every high school has a at least one computer science program and/or courses that fulfils the computer science credit. This serves multiple purposes:

- Exposes and engages students in STEM-related courses
- Fulfill graduation requirements through computer science coursework
- Enables college-bound students to fulfill a computer science credit
- Develops foundational skills for career-pathway students into IT apprenticeships and the entry-level technical workforce

Thank you for the opportunity to offer this testimony.

Mahalo!

Russel Cheng
Co-founder, Director

SB-2507

Submitted on: 2/7/2018 10:15:15 PM

Testimony for EDU on 2/13/2018 1:20:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Rachel L. Kailianu	Ho`omana Pono, LLC	Support	Yes

Comments:

SB-2507

Submitted on: 2/12/2018 12:55:30 PM

Testimony for EDU on 2/13/2018 1:20:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Melodie Aduja	Testifying on behalf of OCC Legislative Priorities Committee	Support	No

Comments:

SB-2507

Submitted on: 2/7/2018 9:46:11 PM

Testimony for EDU on 2/13/2018 1:20:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Kaulana Dameg		Support	No

Comments:

SB-2507

Submitted on: 2/12/2018 9:58:17 AM

Testimony for EDU on 2/13/2018 1:20:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Jeselle Guillermo	Testifying on behalf of Student at W.R. Farrington High School	Support	No

Comments:

I am a student and I attend Farrington High School. I had been coding for six months with an outside organization. I am in eleventh grade and coding has really spark my interest. However, I am only able to learn about it twice a week out of school. It would be better if computer science was a class was offered in school because more people would be able to attend and wouldn't have to travel far to do so. Computer science is a course that I was not exposed to in previous years and if I were exposed to it earlier I would be more proficient in it and given more of an opportunity to work in STEM jobs or careers. I hope that the future generations will get the chance to learn and exceed in computer science.

SB-2507

Submitted on: 2/12/2018 10:35:24 AM

Testimony for EDU on 2/13/2018 1:20:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Sumil Thapa	Individual	Support	No

Comments:

As a born and raised local resident of Hawaii who is working in the technology and innovation sector and who is invested in fostering a community that supports empowering Hawaii's youth with critical thinking skills through computer science, I would like to state my support for bills that aim to improve Hawaii's education in STEM fields. I believe that Hawaii is well situated to become a center for innovation as a technology validation hub. Whether in the area of renewable energy, agriculture, information system, or others, Hawaii can play a strong role that both boosts our State's economy and create meaningful progress for the country. Critical to achieving this is fostering a local community of technically minded innovators and fostering that mindset amongst our students as they go through schooling and figure out what they want to do with their life. Our students should have the opportunity to learn about the technologies that are affecting every part of our lives. They also should be empowered with the knowledge and skills needed to pursue and create the technology innovations that will lead us into the future. This bill furthers and support efforts within the State to make sure that Hawaii isn't left behind, but rather at the forefront of computer science and technology development.

February 12, 2018

Senate Committee on Education
Senator Michelle N. Kidani, Chair
Senator Kaiali`i Kahele, Vice Chair

Senate Committee on Higher Education
Senator Kaiali`i Kahele, Chair
Senator Donna Mercado Kim, Vice Chair

State Capitol
415 South Beretania Street
Honolulu, HI 96813

Aloha Chairs Kidani, Kahele and Vice Chair Kim,

My name is Aisha Heredia, I live in Manoa and I am a former science and technology researcher and educator. I currently work for HawaiiKidsCAN and am proud to support SB2507 to increase access to computer science learning opportunities in public schools.

The jobs of today are highly tech-based, and often working in virtual project teams with design-centered focuses. Computer science (CS) occupations are the primary source of all new wages¹ in the U.S. Yet, here in Hawai`i, there are not enough skilled workers to fill the currently available CS positions. Often Hawai`i companies have to recruit skilled workers from other states and countries. There is also a known gender gap in CS fields where women, especially women of color, are underrepresented. Research shows^{2&3} that something as simple as early exposure, starting in middle school, to CS can have a significant impact on eliminating the gender gap in students who go into the CS labor force.

I support SB2507 because we need Hawai`i Title 1 schools to offer high-quality CS opportunities, and funding for high quality teacher professional development in CS project-based learning. This will allow girls and students of color to meaningfully engage in CS, and increase the future of Hawaii's STEM labor force. Our future depends on educational shifts of today, SB2507 will support a brighter economic future for everyone.

Mahalo,
Aisha Heredia
Former Tech Educator, now Community Outreach for HawaiiKidsCAN
Honolulu, HI

¹ Computing occupations are now the #1 source of new waves in America, by Code.org, <https://blog.code.org/post/144206906013/computing-occupations-are-now-the-1-source-of-new>

² The State of K12-Computer Science, found on Code.Org, <https://code.org/about/2016>

³ Engaging Youth with STEM Professionals research, <https://projects.ncsu.edu/meridian/winter2010/koch/print.html>