



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

Date: 03/12/2018
Time: 02:45 PM
Location: 229
Committee: Senate Education

Department: Education

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

Title of Bill: HB 2607, HD1 RELATING TO EDUCATION.

Purpose of Bill: Requires the Department of Education (DOE) to develop and implement a statewide computer science curricula plan for public school students in K-12 and ensure each public high school offers at least one computer science course each school year. Authorizes DOE to contract for computer science teacher development programs. Appropriates funds. (HB2607 HD1)

Department's Position:

The Department of Education supports the intent of HB 2607 HD1.

Currently, the Department is developing a multi-year comprehensive action 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:

High School Course Offerings (page 3, lines 16-20 and page 4, lines 1-3): 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 via the Department's E-School program.

Contracts for Professional Development (page 4, lines 4-20 and page 5, lines 1-15): 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.

Thank you for this opportunity to provide testimony on HB 2607 HD1.

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.



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David Miyashiro
Executive Director

March 12, 2018

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

State Capitol
415 South Beretania Street
Honolulu, HI 96813

Aloha Chair Kidani, Vice Chair Kahele and Members of the Committee,

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 HB 2607 HD 1 to advance the momentum for greater equity and access to computer science (CS) learning opportunities.

Our changing economy

- 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 In 2016, these and other computer and mathematical occupations carried a median hourly wage of \$35.87 in Hawaii, nearly double the median hourly wage of \$19.24 for all jobs that year.³

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 "Occupational Employment and Wage Data - State of Hawaii 2016." August, 2017. *Hawaii Workforce Infonet*. https://www.hiwi.org/admin/gsipub/htmlarea/uploads/OES_2016_publication.pdf

- These new skills are becoming increasingly important as our economy changes, with reports suggesting that automation may eliminate a third of our nation’s jobs by 2030.⁴ An initial investment in our students in these skills will be more than paid back as students become our workforce of tomorrow, ensuring that Hawaii is poised to not only survive this changing global economy, but thrive.

Our students need more access to CS 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. An initial allocation of \$500,000 would enable each public school to train at least 1 existing teacher in computer science, creating the foundation for a robust computer science learning environment in Hawaii. This initial state investment in computer science could also be leveraged into public-private partnerships to further expand training access to additional teachers or around new innovations.
- 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.⁵ 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.
- In addition to technical knowledge, the skills taught in CS courses can help students across a range of other school subjects, including math, science and the humanities.⁶ As we look to close our persistent achievement gaps across our schools, we must continue to explore rigorous and relevant learning experiences for our diverse students.

Closing gender gaps

- Of the 290 AP CS test takers in Hawaii 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.⁷ Early exposure to CS can have a significant impact on eliminating the gender gap in the CS labor force. After participating

⁴ “Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation.” Manyika, J. et al. *McKinsey Global Institute*. December 2017. <https://goo.gl/GLShNP>

⁵ “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>

⁶ “Trends in the State of Computer Science in U.S. K-12 Schools”. Google Inc. & Gallup Inc. 2016. <http://goo.gl/j291Eo>

⁷ “AP Program Participation and Performance State Report 2017.” *CollegeBoard*. <https://research.collegeboard.org/programs/ap/data/participation/ap-2017>

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.⁸ 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.⁹ Nationally, high school students who take AP CS are twice as likely to try computer science in college and 6 times more likely to major in CS than those who take non-AP CS in high school. Women who learn CS in high school are 10 times more likely to study it in college.¹⁰

- Data shows that women constitute just 26 percent of employees in computing jobs, and just 30, 15 and 10 percent of tech roles in major companies Google, Facebook and Twitter, respectively.¹¹ These numbers are especially troubling when we consider the value of diverse workplaces, from greater innovation¹² to more startup success.¹³ Closing these gaps at the K-12 level is essential if we are to prevent them from occurring at the office.

The world around us is changing. We must embrace the challenge of providing our children with an education that keeps up with the world. For more data on the importance of CS education in Hawaii, please see HawaiiKidsCAN's *State of Computer Science Education 2018* report at <https://tinyurl.com/StateofCS>.

Mahalo,

David Miyashiro
Founding Executive Director
HawaiiKidsCAN

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"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

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"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>

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"Anybody Can Learn." Code.org. <http://blog.code.org/post/143007230537/computer-science-the-impact-of-k-12-on-university>

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"The Stats On Women In Tech Are Actually Getting Worse." Peck, E. *Huffington Post*. December 6, 2017. https://www.huffingtonpost.com/2015/03/27/women-in-tech_n_6955940.html

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"Diversity in Business Really Does Boost Innovation, According to a New Study." *FastCompany.com*. January 12, 2018. <https://goo.gl/V2Ba2f>

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"Data Doesn't Lie: Tech Firms Need to Hire More Women to Succeed." Lacy, S. *Wired.co.uk*. December 27, 2017. <http://www.wired.co.uk/article/sarah-lacy-gender-bias-silicon-valley>



March 9, 2018

Senator Michelle N. Kidani, Chair
Committee on Education

Re: House Bill 2607, HD1 Relating to Education
Hearing: Monday, March 12, 2018 at 2:45 p.m.
Conference Room: 229

Dear Chair Kidani and Members of the Senate Committee on Education:

On behalf of Microsoft Corporation, I am writing in strong support for HB 2607, HD1, 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.

HB 2607, HD1 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.

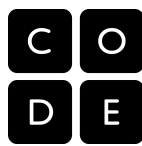
The importance of computer science to the economy of Hawaii and the United States cannot be overstated. Computing occupations are the number 1 source of all new wages across the country and make up more than two-thirds of all projected new jobs in the STEM fields. According to Code.org, there were 1,403 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 HB 2607, HD1 as it moves forward in the legislative process.

Sincerely,

Jonathan Noble
Director, Government Affairs
Microsoft Corporation

Allyson Knox
Director, Education Policy
Microsoft Corporation



March 12, 2018

Re: HB 2607, HD 1; Strongly Support

Dear Committee Members,

Code.org and Women in Technology (Maui Economic Development Board) strongly support HB 2607, HD 1, and recommend funding it at \$500K this year. 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 develops a statewide computer science curricula plan and ensure that each public high school offers at least one computer science course in 2021-2022. 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 HB 2607, HD 1, 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

HB-2607-HD-1

Submitted on: 3/9/2018 11:59:23 PM

Testimony for EDU on 3/12/2018 2:45:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Circe Carr	Individual	Support	No

Comments:

HB-2607-HD-1

Submitted on: 3/10/2018 7:36:55 AM

Testimony for EDU on 3/12/2018 2:45:00 PM

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

Comments:

HB-2607-HD-1

Submitted on: 3/11/2018 2:43:46 PM

Testimony for EDU on 3/12/2018 2:45:00 PM

Submitted By	Organization	Testifier Position	Present at Hearing
Melodie Aduja	Testifying for OCC Legislative Priorities Committee, Democratic Party of Hawai'i	Support	No

Comments: