Support K-12 Computer Science Education in Utah

Computer science drives job growth and innovation throughout our economy and society. Computing occupations are the **number 1 source of all new wages in the U.S.** and make up over half of all projected new jobs in STEM fields, making Computer Science one of the most in-demand college degrees. And computing is used all around us and in virtually every field. It's foundational knowledge that all students need. But computer science is marginalized throughout education. Only 57.5% of U.S. high schools teach any computer science courses and only 4% of bachelor's degrees are in Computer Science. We need to improve access for all students, including groups who have traditionally been underrepresented.

93% of parents want their child's school to teach computer science, but only **53% of high schools** offer it.

More than **70% of superintendents and principals** say offering computer science is just as important as offering subjects like English, math, history, and science.

50% of Americans rank computer science as one of the two most important subjects of study after reading and writing.

Students who learn computer science in high school are **six times** more likely to major in it, and **women are ten times more likely**.

Black students are **more interested** in CS and **more confident** in their abilities than white students but are less likely to enroll in a class.

Yet, there were only 4,310 graduates in computer science in 2020 and only 77% of all public high schools teach a foundational computer science course.

Computer science in Utah

- Only **641 exams were taken in AP Computer Science by high school students in** Utah in 2020 (232 took AP CS A and 409 took AP CSP).
- Only 24% were taken by female students (17% for AP CS A and 29% for AP CSP); only 50 exams were taken by Hispanic/Latino/Latina students (19 took AP CS A and 31 took AP CSP); only 7 exams were taken by Black/African American students (3 took AP CS A and 4 took AP CSP); only 3 exams were taken by Native American/Alaskan students (0 took AP CS A and 3 took AP CSP); only 2 exams were taken by Native Hawaiian/Pacific Islander students (0 took AP CS A and 2 took AP CSP).
- Only **40 schools** in UT (20% of UT schools with AP programs) offered an AP Computer Science course in 2019-2020 (11% offered AP CS A and 14% offered AP CSP), which is 7 more than the previous year. There are fewer AP exams taken in computer science than in any other STEM subject area.
- Teacher preparation programs in Utah only graduated 6 new teachers prepared to teach computer science in 2018.
- According to a representative survey from Google/Gallup, school administrators in UT support expanding computer science education opportunities: 65% of principals surveyed think CS is just as or more important than required core classes.

What can you do to support K-12 CS education in Utah?

- Send a letter to your school/district asking them to expand computer science offerings at every grade level: %a{href:"https://code.org/promote/letter"} www.code.org/promote/letter
- Find out if your school teaches computer science or submit information about your school's offerings at **www.code.org/yourschool**.
- Visit **www.code.org/educate/3rdparty** to find out about courses and curriculum from a variety of providers, including Code.org.

Code.org's impact in Utah

- In Utah, Code.org's curriculum is used in
  - 32% of elementary schools

- 36% of middle schools
      - 34% of high schools
  - There are 12,633 teacher accounts and 862,781 student accounts on Code.org in Utah.
  - Of students in Utah using Code.org curriculum last school year,
      - 16% attend high needs schools
      - 25% are in rural schools
      - 43% are female students
      - 3% are Black/African American students
      - 14% are Hispanic/Latino/Latina students
      - 1% are Native American/Alaskan students
      - 2% are Native Hawaiian/Pacific Islander students
      - 65% are white students
      - 2% are Asian students
      - 4% are students who identify as two or more races
  - Code.org, its regional partner(s) mindSpark Learning, and 7 facilitators have provided professional learning in Utah for
      - 1,180 teachers in CS Fundamentals (K-5)
      - 160 teachers in Exploring Computer Science or Computer Science Discoveries
      - 119 teachers in Computer Science Principles

What can your state do to improve computer science education?

States and local school districts need to adopt a broad policy framework to provide all students with access to computer science. The following ten recommendations are a menu of best practices that states can choose from to support and expand computer science. Not all states will be in a position to adopt all of the policies. Read more about these 10 policy ideas at **https://advocacy.code.org/2023_making_cs_foundational.pdf** and see our rubric for describing state policies at **http://bit.ly/9policiesrubric**.

 State Plan - Utah adopted the Utah Computer Science Education Master Plan in 2019. The plan includes a section on diversity with goals and recommendations to expand access to rural, low-income, and female students. The Community Foundation of Utah and the Silicon Slopes community created the Silicon Slopes Computer Science Fund to invest in computer science education initiatives outlined in the state plan.

 K-12 Standards - Utah adopted K–5 computer science standards in September 2019 and 6–12 standards in May 2020. Standards within each grade band address concepts of equity, such as bias, accessible technology, and inclusivity.

 Funding - SB 2 (FY 2023) allocated $8M for Computer Science Initiatives. HB 2 (FY 2022) allocated $5M for Computer Science Initiatives. HB 227 (FY 2020) allocated $3.15M for the Computer Science for Utah Grant Program. Applicants must describe how they will increase the number of female and traditionally underserved students, ensure content is accessible to all students, and strategies for increasing diversity in K–12 computer science. SB 190 (FY 2018 and 2019) allocated $1.2M annually for the Computing Partnerships Grants program. SB 93 (FY 2017) allocated $400K for computer science.

 Certification - In Utah, teachers with existing secondary or CTE licensure can obtain up to six course-specific 6–12 endorsements. Each endorsement requires a combination of experience or coursework, exams, professional development, and more.

 Pre-Service Programs - The Utah State Board of Education has approved teacher preparation programs leading to certification in computer science and lists these programs publicly.

 Dedicated State Position - The Utah State Board of Education has a Computer Science State Specialist.

 Require High Schools to Offer - Utah **does not yet** require that all secondary schools offer computer science. The state can support the expansion of computer science courses by adopting policies that require schools to offer a computer science course based on rigorous standards, with appropriate implementation timelines and allowing for remote and/or in-person courses.

 Count Towards Graduation - In Utah, a computer programming course can replace the third mathematics credit (Secondary III) by request from a parent, or it can count as a science credit. AP Computer Science, Computer Science Principles, and Computer Programming II are approved to count as a science graduation credit. All students must take a course in Digital Studies, and four of the six courses that can fulfill the requirement are computer science.

 IHE Admission - Utah **does not yet** allow computer science to count as a core admission requirement at institutions of higher education. Admission policies that do not include rigorous computer science courses as meeting a core entrance requirement, such as in mathematics or science, discourage

students from taking such courses in secondary education. State leaders can work with institutions of higher education to ensure credit and articulation policies align with secondary school graduation requirements.

 Graduation Requirement - Utah **does not yet** require students to take computer science to earn a high school diploma. Graduation requirements ensure that all students get exposure to computer science.

Follow us!

Join our efforts to give every student in every school the opportunity to learn computer science. Learn more at **code.org**, or follow us on **Facebook** and **Twitter**.

Launched in 2013, Code.org® is a nonprofit dedicated to expanding access to computer science, and increasing participation by women and underrepresented youth. Our vision is that every student in every school should have the opportunity to learn computer science.

Who can you connect with locally to talk about K-12 CS education policy?

- You can reach Code.org's policy contact for your state, Amber Mariano Davis, at amber@code.org.
- The Expanding Computing Education Pathways (ECEP) Alliance (**www.ecepalliance.org**), an NSF funded Broadening Participation in Computing Alliance, seeks to increase the number and diversity of students in computing and computing-intensive degrees by promoting state-level computer science education. ECEP supports 22 states and the territory of Puerto Rico to develop effective and replicable interventions to broaden participation in computing and to create state-level infrastructure to foster equitable computing education policies. You can reach your ECEP point of contact Helen Hu at hhu@westminstercollege.edu.

Data is from the Conference Board for job demand, the Bureau of Labor Statistics for state salary and national job projections data, the College Board for AP exam data, the National Center for Education Statistics for university graduate data, the Gallup and Google research study Education Trends in the State of Computer Science in U.S. K-12 Schools for parent demand, the 2018 Computer Science Access Report for schools that offer computer science, and Code.org for its own courses, professional learning programs, and participation data.