Support K-12 Computer Science Education in Oregon

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 45% of U.S. high schools teach any computer science courses and only 11% 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 47% of high schools teach 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 attend a school that offers it.

In Oregon, there are currently 4,837 open computing jobs with an average salary of $89,697.

Yet, there were only 953 graduates in computer science in 2018 and only 54% of all public high schools teach a foundational course.

Computer science in Oregon

- Only 896 exams were taken in AP Computer Science by high school students in Oregon in 2020 (320 took AP CS A and 576 took AP CSP).
- Only 25% were taken by female students (26% for AP CS A and 25% for AP CSP); only 81 exams were taken by Hispanic/Latino/Latina students (21 took AP CS A and 60 took AP CSP); only 12 exams were taken by Black/African American students (1 took AP CS A and 11 took AP CSP); only 3 exams were taken by Native American/Alaskan students (2 took AP CS A and 1 took AP CSP); only 3 exams were taken by Native Hawaiian/Pacific Islander students (0 took AP CS A and 3 took AP CSP).
- Only 53 schools in OR (26% of OR schools with AP programs) offered an AP Computer Science course in 2019-2020 (12% offered AP CS A and 20% offered AP CSP), which is 11 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 Oregon did not graduate a single new teacher prepared to teach computer science in 2018.
- According to a representative survey from Google/Gallup, school administrators in OR support expanding computer science education opportunities: 57% of principals surveyed think CS is just as or more important than required core classes. And their biggest barrier to offering computer science is the lack of funds for hiring and training teachers.

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

- Send a letter:
  - To your school/district asking them to expand computer science offerings at every grade level: [www.code.org/promote/letter](http://www.code.org/promote/letter)
  - To your elected officials asking them to support computer science education policy in Oregon: [www.votervoice.net/Code/campaigns/58463/respond](http://www.votervoice.net/Code/campaigns/58463/respond)
- Find out if your school teaches computer science or submit information about your school’s offerings at [www.code.org/ yourschool](http://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 Oregon

• In Oregon, Code.org’s curriculum is used in
  • 20% of elementary schools
  • 24% of middle schools
  • 17% of high schools
• There are 8,335 teacher accounts and 349,895 student accounts on Code.org in Oregon.
• Of students in Oregon using Code.org curriculum last school year,
  • 49% attend high needs schools
  • 27% are in rural schools
  • 41% are female students
  • 32% are students from marginalized racial and ethnic groups underrepresented in computer science (Black/African American, Hispanic/Latino/Latina, Native American/Alaskan, or Native Hawaiian/Pacific Islander)
• Code.org, its regional partner(s) AVID, and 7 facilitators have provided professional learning in Oregon for
  • 788 teachers in CS Fundamentals (K-5)
  • 32 teachers in Exploring Computer Science or Computer Science Discoveries
  • 20 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 nine 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 9 policy ideas at https://code.org/files/Making_CS_Fundamental.pdf and see our rubric for describing state policies at http://bit.ly/9policiesrubric.

☐ State Plan - Oregon has not yet created a state plan for K-12 computer science. A plan that articulates the goals for computer science, strategies for accomplishing the goals, and timelines for carrying out the strategies is important for making computer science a fundamental part of a state’s education system.

☐ K-12 Standards - Oregon does not yet have rigorous computer science standards publicly available across K-12. Computer science has often been confused with broader technology education in schools. The state could strengthen its computer science programs by publicly adopting discrete standards for computer science focused on both the creation and use of software and computing technologies at all levels of K-12 education. These standards can be guided by the concepts, practices, and recommendations in the K-12 Computer Science Framework, found at http://www.k12cs.org.

☐ Funding - Oregon does not yet provide dedicated funding for rigorous computer science professional development and course support. Although funds may be available via broader programs, the state can strengthen its computer science programs by creating specific opportunities to bring computer science to school districts, such as matching fund programs.

☐ Certification - Oregon does not yet have clear certification pathways for computer science teachers. The expansion of K-12 computer science education is hampered by the lack of qualified computer science teachers. We can grow their ranks by creating clear, navigable, and rewarding professional paths for computer science teachers.

☐ Pre-Service Programs - Oregon has not yet established programs at institutions of higher education to offer computer science to preservice teachers. The computer science teacher shortage can be addressed by exposing more preservice teachers to computer science during their required coursework or by creating specific pathways for computer science teachers.

☐ Dedicated State Position - Oregon does not yet have dedicated computer science positions in state or local education agencies. Creating a statewide computer science leadership position within the state education agency can help expand state-level implementation of computer science education initiatives. Similar positions at the local level could support districts’ expansion of course offerings and professional development.

☐ Require High Schools to Offer - Oregon 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 - Oregon passed a permissive and encouraging policy to allow computer science to count as a fourth science elective for graduation, but it is a district decision.

☐ IHE Admission - Oregon 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.

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, Maggie Glennon, at maggie@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 Joanna Goode at goodej@uoregon.edu or Jill Hubbard at jill.m.hubbard@gmail.com.

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.