Support K-12 Computer Science Education in Arizona

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 10% of STEM graduates study it. We need to improve access for all students, including groups who have traditionally been underrepresented.

Arizona currently has 9,355 open computing jobs (2.8 times the average demand rate in Arizona). The average salary for a computing occupation in AZ is $87,658, which is significantly higher than the average salary in the state ($49,290). The existing open jobs alone represent a $820,038,768 opportunity in terms of annual salaries.

Arizona had only 814 computer science graduates in 2017; only 16% were female. Only 1,522 exams were taken in AP Computer Science by high school students in Arizona in 2019 (615 took AP CS A and 907 took AP CSP). Only 26% were female (22% for AP CS A and 28% for AP CSP); only 360 exams were taken by Hispanic or Latino students (104 took AP CS A and 256 took AP CSP); only 33 exams were taken by Black students (8 took AP CS A and 25 took AP CSP); only 6 exams were taken by American Indian or Alaska Native students (2 took AP CS A and 4 took AP CSP); only 3 exams were taken by Native Hawaiian or Pacific Islander students (1 took AP CS A and 2 took AP CSP). Only 65 schools in AZ (19% of AZ schools with AP programs) offered an AP Computer Science course in 2017-2018 (12% offered AP CS A and 15% offered AP CSP), which is 13 more than the previous year. There are fewer AP exams taken in computer science than in any other STEM subject area.

Universities in Arizona did not graduate a single new teacher prepared to teach computer science in 2017. According to a representative survey from Google/Gallup, school administrators in AZ support expanding computer science education opportunities: 63% of principals surveyed think CS is just as or more important than required core classes. And one of their biggest barriers 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 Arizona?

1. Nominate a teacher for a professional learning scholarship: [www.code.org/nominate](http://www.code.org/nominate)
2. 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 Arizona: [www.votervoice.net/Code/campaigns/58463/respond](http://www.votervoice.net/Code/campaigns/58463/respond)
3. 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).
4. Visit [www.code.org/educate/3rdparty](http://www.code.org/educate/3rdparty) to find out about courses and curriculum from a variety of providers, including Code.org.
5. Visit [www.code.org/promote/AZ](http://www.code.org/promote/AZ) to learn more about supporting computer science in your state.

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, Alexis Harrigan, at alexis@code.org.

Code.org's impact in Arizona

- In Arizona, Code.org’s curriculum is used in
  - 29% of elementary schools
  - 28% of middle schools
  - 12% of high schools
- There are 14,015 teacher accounts and 591,306 student accounts on Code.org in Arizona.
- Of students in Arizona using Code.org curriculum last school year,
  - 46% attend high needs schools
  - 15% are in rural schools
  - 43% are female students
  - 60% are underrepresented minority students (Black/African American, Hispanic/Latino, American Indian, or Hawaiian)
- Code.org, its regional partner(s) Arizona Science Center, and 5 facilitators have provided professional learning in Arizona for
  - 3,184 teachers in CS Fundamentals (K-5)
  - 155 teachers in Exploring Computer Science or Computer Science Discoveries
  - 78 teachers in Computer Science Principles

“Computer Science is a liberal art: it’s something that everybody should be exposed to and everyone should have a mastery of to some extent.”
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.

☐ Arizona 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.

☐ Arizona is in the process of developing K-12 computer science standards.

✓ Arizona has allocated funding for rigorous computer science professional development and course support.

✓ Arizona has clear certification pathways for computer science teachers.

☐ Arizona 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.

☐ Arizona 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.

☐ Arizona 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.

✓ Arizona has passed policy that is permissive and encouraging for schools to allow computer science to count for a core graduation requirement, but it is not a requirement for schools. Find out how Arizona allows computer science to count towards graduation at http://bit.ly/9policies.

☐ Arizona 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 students of color. Our vision is that every student in every school should have the opportunity to learn computer science.

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.