Support K-12 Computer Science Education in Missouri

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 35% 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.

93% of parents want their child's school to teach computer science, but only 35% of high schools teach it.

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 6 times more likely to major in it, and women are 10 times more likely.

67% of parents and 56% of teachers believe students should be required to learn computer science.

Computer science in Missouri

- Missouri currently has 8,529 open computing jobs (2.8 times the average demand rate in Missouri).
- The average salary for a computing occupation in MO is $82,368, which is significantly higher than the average salary in the state ($45,520). The existing open jobs alone represent a $702,519,231 opportunity in terms of annual salaries.
- Missouri had only 1,378 computer science graduates in 2017; only 18% were female.
- In Missouri, only 30% of all public high schools teach computer science.
- Only 803 exams were taken in AP Computer Science by high school students in Missouri in 2018 (509 took AP CS A and 294 took AP CSP).
- Only 21% were female (19% for AP CS A and 26% for AP CSP); only 32 exams were taken by Hispanic or Latino students (18 took AP CS A and 14 took AP CSP); only 38 exams were taken by Black students (19 took AP CS A and 19 took AP CSP); only 3 exams were taken by American Indian or Alaska Native students (1 took AP CS A and 2 took AP CSP); no exams were taken by Native Hawaiian or Pacific Islander students.
- Only 80 schools in MO (25% of MO schools with AP programs) offered an AP Computer Science course in 2017-2018 (17% offered AP CS A and 15% 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.
- Universities in Missouri did not graduate a single new teacher prepared to teach computer science in 2016.
- According to a representative survey from Google/Gallup, school administrators in MO support expanding
What can you do to support K-12 CS education in Missouri?

1. Nominate a teacher for a professional learning scholarship: 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
   - To your elected officials asking them to support computer science education policy in Missouri: 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.
4. Visit 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/MO 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, Katie Hendrickson, at katie@code.org.

Code.org's impact in Missouri

- In Missouri, Code.org’s curriculum is used in:
  - 17% of elementary schools
  - 13% of middle schools
  - 7% of high schools
- There are 8,974 teacher accounts and 415,430 student accounts on Code.org in Missouri.
- Of students in Missouri using Code.org curriculum last school year,
  - 45% attend high needs schools
  - 34% are in rural schools
  - 46% are female students
  - 37% are underrepresented minority students (Black/African American, Hispanic/Latino, American Indian, or Hawaiian)
- Code.org, its regional partner(s) Institute for School Partnership at Washington University in St. Louis and Science City at Union Station, and 9 facilitators have provided professional learning in Missouri for
  - 944 teachers in CS Fundamentals (K-5)
42 teachers in Exploring Computer Science or Computer Science Discoveries
31 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.”
— Steve Jobs

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.

☐ Missouri 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.

☑ Missouri has established K-12 computer science standards.

☑ Missouri has allocated funding for rigorous computer science professional development and course support.

☑ Missouri has clear certification pathways for computer science teachers.

☐ Missouri 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.

☐ Missouri 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.

☐ Missouri 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.

☑ Missouri allows computer science to count for a core graduation requirement. Find out how Missouri allows computer science to count towards graduation at http://bit.ly/9policies.

☐ Missouri 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.