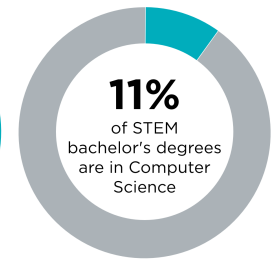
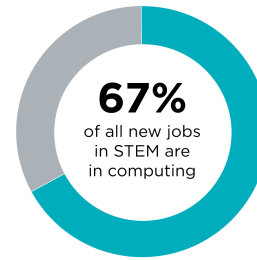


Support K-12 Computer Science Education in Missouri

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 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 45% of high schools teach it.

75% of Americans believe computer science is cool in a way it wasn't 10 years ago.

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

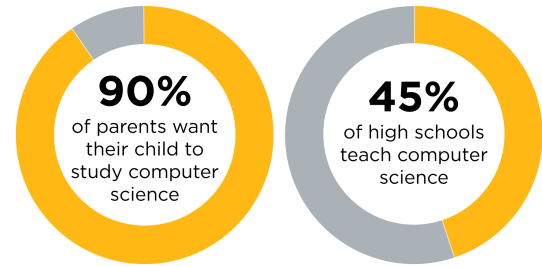
50% of Americans rank computer science as one of the two most important subjects of study after reading and writing.

Students who learn computer science in high school are 6 times more likely to major in it, and women are 10 times more likely.

Computer science in Missouri

- Missouri currently has **7,209 open computing jobs** (3.2 times the average demand rate in Missouri).
- The average salary for a computing occupation in MO is **\$81,564**, which is significantly higher than the average salary in the state (\$46,460). The existing open jobs alone represent a **\$587,996,949 opportunity** in terms of annual salaries.
- Missouri had only **1,521 bachelor's degrees in Computer Science** in 2018; only **16%** were female.
- In Missouri, only **50% of all public high schools teach a foundational computer science course.**
- Only **1,034 exams were taken in AP Computer Science by high school students in Missouri in 2019** (560 took AP CS A and 474 took AP CSP).
- Only 21% were female (19% for AP CS A and 23% for AP CSP); only 52 exams were taken by Hispanic/Latino/Latina students (27 took AP CS A and 25 took AP CSP); only 83 exams were taken by Black/African American students (32 took AP CS A and 51 took AP CSP); only 2 exams were taken by Native American/Alaskan students (1 took AP CS A and 1 took AP CSP); no exams were taken by Native Hawaiian/Pacific Islander students.
- Only **106 schools** in MO (33% of MO schools with AP programs) offered an AP Computer Science course in 2018-2019 (21% offered AP CS A and 23% offered AP CSP), which is 26 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 Missouri 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 MO support expanding computer science education opportunities: 71% 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 Missouri?



- 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
- 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.

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
 - 20% of elementary schools
 - 18% of middle schools
 - 13% of high schools
- There are 10,788 teacher accounts and 510,337 student accounts on Code.org in Missouri.
- Of students in Missouri using Code.org curriculum last school year,
 - 51% attend high needs schools
 - 44% are in rural schools
 - 43% are female students
 - 36% 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) Institute for School Partnership at Washington University in St. Louis and Science City at Union Station, and 11 facilitators have provided professional learning in Missouri for
 - 990 teachers in CS Fundamentals (K-5)
 - 79 teachers in Exploring Computer Science or Computer Science Discoveries
 - 63 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>.

State Plan - 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.

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

Funding - HB 3 (passed in special session in 2018) created a Computer Science Education Fund, and HB 2 (FY 2020) allocated \$450K to the Computer Science Education fund created by HB 3 (2018 special session). Grant awardees must describe how they will reach and support students from marginalized racial and ethnic groups underrepresented in computer science.

Certification - In Missouri, teachers can obtain a 9–12 certification through academic coursework or by passing the state content exam. Teachers can be authorized to teach computer science after completion of department-approved professional development. State funding for computer science can be used to support credentialing for teachers.

Pre-Service Programs - 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.

Dedicated State Position - 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.

Require High Schools to Offer - 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.

Count Towards Graduation - In Missouri, any computer science course that aligns to the standards and has an appropriately qualified teacher can count as a mathematics, science, or practical arts credit for graduation.

IHE Admission - 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 youth. 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.