

# 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 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.



Yet, there were only 1,711 graduates in computer science in 2020 and only 50% of all public high schools teach a foundational computer science course.

## Computer science in Missouri

- Only **1,072 exams were taken in AP Computer Science by high school students in Missouri** in 2020 (567 took AP CS A and 505 took AP CSP).
- Only 20% were taken by female students (18% for AP CS A and 23% for AP CSP); only 35 exams were taken by Hispanic/Latino/Latina students (20 took AP CS A and 15 took AP CSP); only 61 exams were taken by Black/African American students (22 took AP CS A and 39 took AP CSP); only 7 exams were taken by Native American/Alaskan students (1 took AP CS A and 6 took AP CSP); only 1 exam was taken by Native Hawaiian/Pacific Islander students (1 took AP CS A and 0 took AP CSP).
- Only **126 schools** in MO (41% of MO schools with AP programs) offered an AP Computer Science course in 2019-2020 (28% offered AP CS A and 30% offered AP CSP), which is 20 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](https://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](https://www.code.org/yourschool).
- Visit [www.code.org/educate/3rdparty](https://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 Missouri

- In Missouri, Code.org's curriculum is used in
  - 17% of elementary schools
  - 19% of middle schools
  - 13% of high schools
- There are 14,263 teacher accounts and 757,467 student accounts on Code.org in Missouri.
- Of students in Missouri using Code.org curriculum last school year,
  - 42% attend high needs schools
  - 45% are in rural schools
  - 44% are female students
  - 19% are Black/African American students
  - 4% are Hispanic/Latino/Latina students
  - 1% are Native American/Alaskan students
  - 1% are Native Hawaiian/Pacific Islander students
  - 59% are white students
  - 3% are Asian students
  - 5% are students who identify as two or more races
- Code.org, its regional partner(s) Learning Technology Center, and 11 facilitators have provided professional learning in Missouri for
  - 1,000 teachers in CS Fundamentals (K-5)
  - 117 teachers in Exploring Computer Science or Computer Science Discoveries
  - 115 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](https://advocacy.code.org/2023_making_cs_foundational.pdf) and see our rubric for describing state policies at <http://bit.ly/9policiesrubric>.

▮ **State Plan** - Missouri SB 718 establishes the "Computer Science Education Task Force" to develop a strategic plan for expanding a statewide computer science education program.

▮ **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 2 (FY 2024, 2022, 2021, and 2020) and HB 3002 (FY 2023) allocated \$450K annually 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** - The Missouri Department of Elementary and Secondary Education has an Assistant Director for Computer Science.

▮ **Require High Schools to Offer** - SB 718 (2022) required each public high school and charter school to offer at least one computer science course in an in-person setting or as a virtual or distance course option by the 2023-34 school year.

▮ **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.

▮ **Higher Ed Admission** - Beginning July 1, 2023, computer science courses counted toward state graduation requirements shall be equivalent to one science or practical arts credit for the purpose of satisfying admission requirements at any public institution of higher education in the state.

▮ **Graduation Requirement** - Missouri **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](https://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.

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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, Anthony Owen, at [anthony.owen@code.org](mailto:anthony.owen@code.org).

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.