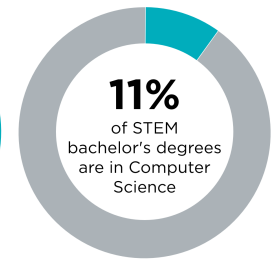
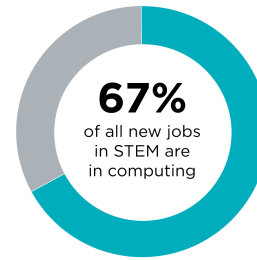


Support K-12 Computer Science Education in Minnesota

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.

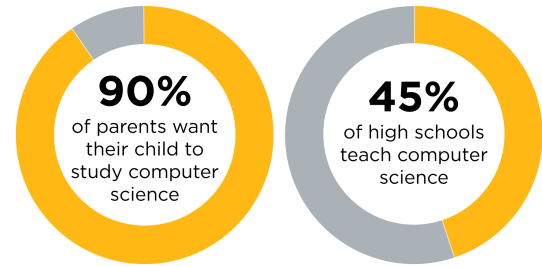
50% of Americans rank computer science as one of the two most important subjects of study after reading and writing.

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 Minnesota

- Minnesota currently has **9,236 open computing jobs** (2.9 times the average demand rate in Minnesota).
- The average salary for a computing occupation in MN is **\$92,494**, which is significantly higher than the average salary in the state (\$54,200). The existing open jobs alone represent a **\$854,272,054 opportunity** in terms of annual salaries.
- Minnesota had only **1,296 bachelor's degrees in Computer Science** in 2018; only **20%** were female.
- In Minnesota, only **19% of all public high schools teach a foundational computer science course.**
- Only **1,547 exams were taken in AP Computer Science by high school students** in Minnesota in 2019 (942 took AP CS A and 605 took AP CSP).
- Only 21% were female (18% for AP CS A and 26% for AP CSP); only 87 exams were taken by Hispanic/Latino/Latina students (29 took AP CS A and 58 took AP CSP); only 68 exams were taken by Black/African American students (29 took AP CS A and 39 took AP CSP); only 4 exams were taken by Native American/Alaskan students (2 took AP CS A and 2 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 **77 schools** in MN (25% of MN schools with AP programs) offered an AP Computer Science course in 2018-2019 (17% offered AP CS A and 13% offered AP CSP), which is 12 more than the previous year.
- Teacher preparation programs in Minnesota 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 MN support expanding computer science education opportunities: 64% 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 Minnesota?



- 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 Minnesota: 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, Amy Roberts, at amy.roberts@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 reform. 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 Jennifer Rosato at jrosato@css.edu.

Code.org's impact in Minnesota

- In Minnesota, Code.org's curriculum is used in
 - 24% of elementary schools
 - 15% of middle schools
 - 11% of high schools
- There are 11,004 teacher accounts and 565,856 student accounts on Code.org in Minnesota.
- Of students in Minnesota using Code.org curriculum last school year,
 - 22% attend high needs schools
 - 36% are in rural schools
 - 45% are female students
 - 27% 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) Twin Cities Public Television, and 6 facilitators have provided professional learning in Minnesota for
 - 1,362 teachers in CS Fundamentals (K-5)
 - 62 teachers in Exploring Computer Science or Computer Science Discoveries
 - 46 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 - Minnesota **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 - Minnesota **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 - Minnesota **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 - Minnesota **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 - Minnesota **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 Minnesota Department of Education has a STEM and Computer Science Integration Specialist.

Require High Schools to Offer - Minnesota **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 Minnesota, computer science can count as a mathematics credit for graduation if the course meets state academic standards in mathematics.

IHE Admission - Minnesota **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.