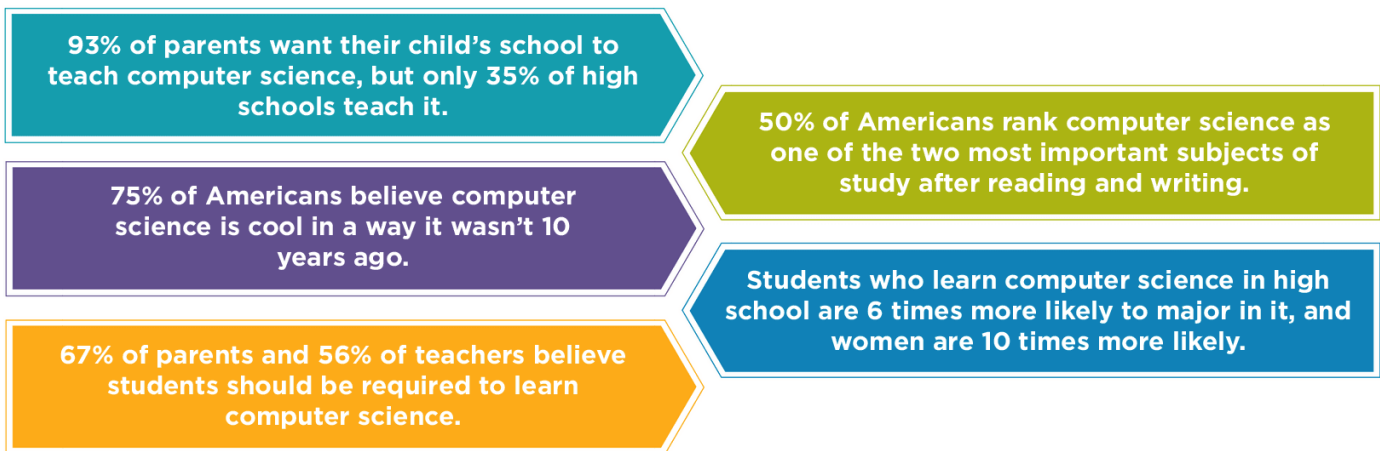
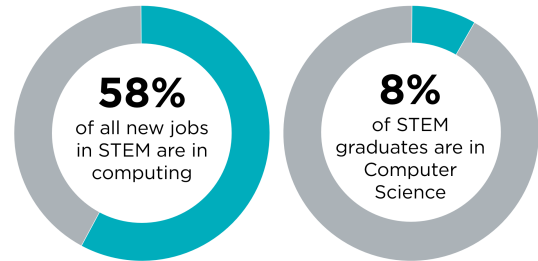


# Support K-12 Computer Science Education in Maine

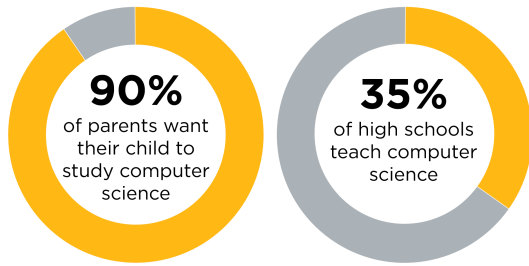
Computer science drives job growth and innovation throughout our economy and society. Computing occupations are the **number 1 source of all new wages in the U.S.** and make up over half of all projected new jobs in STEM fields, making Computer Science one of the most in-demand college degrees. And computing 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 8% of STEM graduates study it. We need to improve access for all students, including groups who have traditionally been underrepresented.



## Computer science in Maine

- Maine currently has **1,079 open computing jobs** (3.1 times the average demand rate in Maine).
- The average salary for a computing occupation in ME is **\$79,127**, which is significantly higher than the average salary in the state (\$45,300). The existing open jobs alone represent a **\$85,377,720 opportunity** in terms of annual salaries.
- Maine had only **112 computer science graduates** in 2015; only **16%** were female.
- Only **246 exams were taken in AP Computer Science by high school students in Maine** in 2017 (151 took AP CS A and 95 took AP CSP).
- Only 20% were female (17% for AP CS A and 24% for AP CSP); only 8 exams were taken by Hispanic or Latino students (6 took AP CS A and 2 took AP CSP); only 4 exams were taken by Black students (4 took AP CS A and 0 took AP CSP); only 1 exam was taken by American Indian or Alaska Native students (0 took AP CS A and 1 took AP CSP); no exams were taken by Native Hawaiian or Pacific Islander students.
- Only **23 schools** in ME (16% of ME schools with AP programs) offered an AP Computer Science course in 2016-2017 (13% offered AP CS A and 6% offered AP CSP). There are fewer AP exams taken in computer science than in any other STEM subject area.
- Universities in Maine 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 ME support expanding computer science education opportunities: 73% of principals surveyed think CS is just as or more important

than required core classes. And their biggest barrier to offering computer science is the lack of funds for hiring and training teachers.



## What can you do to improve K-12 CS education?

1. Call on your school to expand computer science offerings at every grade level.
2. Ask your local school district to allow computer science courses to satisfy a core math or science requirement.
3. Visit [www.code.org/educate/3rdparty](http://www.code.org/educate/3rdparty) to find out about courses and curriculum from a variety of third parties, including Code.org.
4. Visit [www.code.org/promote/ME](http://www.code.org/promote/ME) to learn more about supporting computer science in your state.
5. Sign the petition at [www.change.org/computerscience](http://www.change.org/computerscience) to join 100,000 Americans asking Congress to support computer science.

## Code.org's Impact in Maine

- In Maine, Code.org's curriculum is used in
  - 17% of elementary schools
  - 17% of middle schools
  - 13% of high schools
- There are 2,121 teacher accounts and 74,038 student accounts on Code.org in Maine.
- Of students in Maine using Code.org curriculum last school year,
  - 37% attend high needs schools
  - 60% are in rural schools
  - 46% are female students
  - 16% are underrepresented minority students (Black/African American, Hispanic/Latino, American Indian, or Hawaiian)
- Code.org, its regional partner(s) Educate Maine and Maine Mathematics & Science Alliance, and 7 facilitators have provided professional learning in Maine for
  - 294 teachers in CS Fundamentals (K-5)
  - 32 teachers in Exploring Computer Science or Computer Science Discoveries
  - 28 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](https://code.org/files/Making_CS_Fundamental.pdf) and see our rubric for describing state policies at <http://bit.ly/9policiesrubric>.

- Maine **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.
- Maine **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>.
- Maine **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.
- Maine **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.
- Maine **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.
- Maine **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.
- Maine **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.
- Maine **does not yet** allow computer science to count for a core graduation requirement. States that count computer science as a core graduation requirement see 50% more enrollment in their AP Computer Science courses and increased participation from underrepresented minorities. Find out how other states allow computer science to count towards graduation at <http://bit.ly/9policies>.
- Maine **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](https://code.org), or follow us on [Facebook](#) and [Twitter](#).

Launched in 2013, Code.org® is a non-profit 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 schools that offer computer science and parent demand, and Code.org for its own courses, professional learning programs, and participation data.