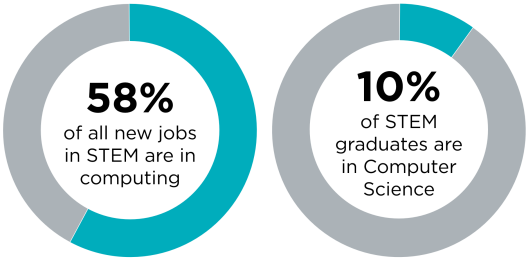
Support K-12 Computer Science Education in Iowa

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.

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

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

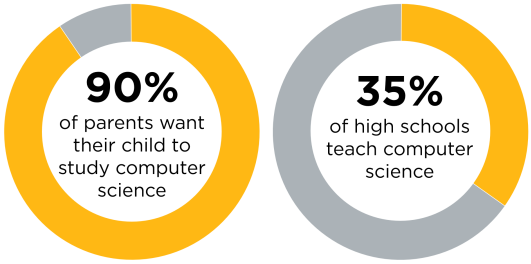
67% of parents and 56% of teachers believe students should be required to learn computer science.

Computer science in Iowa

- Iowa currently has **3,500 open computing jobs** (2.5 times the average demand rate in Iowa).
- The average salary for a computing occupation in IA is **$77,486,** which is significantly higher than the average salary in the state ($44,730). The existing open jobs alone represent a **$271,200,895 opportunity** in terms of annual salaries.
- Iowa had only **459 computer science graduates** in 2017; only **14**% were female.
- In Iowa, only **45% of all public high schools teach computer science.**
- Only **403 exams were taken in AP Computer Science by high school students in** Iowa in 2018 (230 took AP CS A and 173 took AP CSP).
- Only 19% were female (17% for AP CS A and 22% for AP CSP); only 32 exams were taken by Hispanic or Latino students (8 took AP CS A and 24 took AP CSP); only 8 exams were taken by Black students (5 took AP CS A and 3 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 **41 schools** in IA (20% of IA schools with AP programs) offered an AP Computer Science course in 2017-2018 (13% offered AP CS A and 12% offered AP CSP), which is 10 more than the previous year. There are fewer AP exams taken in computer science than in any other STEM subject area.
- Universities in Iowa 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 IA support expanding

computer science education opportunities: 67% 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 support K-12 CS education in Iowa?



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 Iowa: **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/IA** to learn more about supporting computer science in your state.

Code.org's impact in Iowa

- In Iowa, Code.org's curriculum is used in
    - 27% of elementary schools
    - 24% of middle schools
    - 16% of high schools
- There are 6,316 teacher accounts and 322,783 student accounts on Code.org in Iowa.
- Of students in Iowa using Code.org curriculum last school year,
    - 30% attend high needs schools
    - 48% are in rural schools
    - 47% are female students
    - 31% are underrepresented minority students (Black/African American, Hispanic/Latino, American Indian, or Hawaiian)
- Code.org, its regional partner(s) New Bohemian Innovation Collaborative, and 10 facilitators have provided professional learning in Iowa for
    - 1,600 teachers in CS Fundamentals (K-5)
    - 48 teachers in Exploring Computer Science or Computer Science Discoveries
    - 61 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**.

☐ Iowa **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.

☑ Iowa has established K-12 computer science standards.

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

☑ Iowa has clear certification pathways for computer science teachers.

☐ Iowa **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.

☑ Iowa has a dedicated computer science position in the state education agency.

☑ Iowa is working towards bringing computer science to all secondary schools.

☐ Iowa **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**.

☐ Iowa **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.