

# 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 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 844 graduates in computer science in 2020 and only 83% of all public high schools teach a foundational computer science course.

## Computer science in Iowa

- Only **593 exams were taken in AP Computer Science by high school students in Iowa** in 2020 (286 took AP CS A and 307 took AP CSP).
- Only 20% were taken by female students (19% for AP CS A and 21% for AP CSP); only 44 exams were taken by Hispanic/Latino/Latina students (14 took AP CS A and 30 took AP CSP); only 18 exams were taken by Black/African American students (7 took AP CS A and 11 took AP CSP); only 2 exams were taken by Native American/Alaskan students (0 took AP CS A and 2 took AP CSP); no exams were taken by Native Hawaiian/Pacific Islander students.
- Only **59 schools in IA** (27% of IA schools with AP programs) offered an AP Computer Science course in 2019-2020 (15% offered AP CS A and 19% offered AP CSP), which is 6 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 Iowa 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 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?

- 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](http://www.code.org/yourschool).
- Visit [www.code.org/educate/3rdparty](http://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 Iowa

- In Iowa, Code.org's curriculum is used in

- 39% of elementary schools
  - 44% of middle schools
  - 43% of high schools
- There are 11,428 teacher accounts and 594,955 student accounts on Code.org in Iowa.
- Of students in Iowa using Code.org curriculum last school year,
  - 31% attend high needs schools
  - 61% are in rural schools
  - 46% are female students
  - 8% are Black/African American students
  - 7% are Hispanic/Latino/Latina students
  - 1% are Native American/Alaskan students
  - 1% are Native Hawaiian/Pacific Islander students
  - 69% are white students
  - 4% are Asian students
  - 4% are students who identify as two or more races
- Code.org, its regional partner(s) New Bohemian Innovation Collaborative (NewBoCo), and 14 facilitators have provided professional learning in Iowa for
  - 2,363 teachers in CS Fundamentals (K-5)
  - 201 teachers in Exploring Computer Science or Computer Science Discoveries
  - 209 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** - The Iowa Department of Education developed a state plan for expanding access to computer science in 2022.

▮ **K-12 Standards** - Iowa adopted the CSTA K–12 Computer Science Standards in 2018. Standards within each grade band address concepts of equity, such as bias, accessible technology, and inclusivity.

▮ **Funding** - SF 560 (FY 2024), HF 2575 (FY 2023), HF 868 (FY 2022), HF 2643 (FY 2021), HF 758 (FY 2020) and HF 642 (FY 2019) allocated \$500K annually for computer science professional development. Another \$500K was added to the fund in FY 2019. The grant rubric prioritizes targeted efforts to increase computer science participation by underrepresented groups (including female students, economically disadvantaged students, and students who are Black/African American, Hispanic/Latino/Latina, American Indian/Alaskan, or Native Hawaiian/Pacific Islander).

▮ **Certification** - In Iowa, teachers with existing licensure can obtain a 5–12 or K–8 endorsement by completing a state-approved program or academic coursework in both content and methods. The state waived these requirements in 2018 for teachers who could demonstrate content knowledge and successful teaching experience.

▮ **Pre-Service Programs** - 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.

▮ **Dedicated State Position** - The Iowa Department of Education has a Computer Science Education Program Consultant.

▮ **Require High Schools to Offer** - HF 2629 (2020) required all high schools to offer computer science by July 1, 2022, and required all elementary and middle schools to offer computer science in at least one grade level by July 1, 2023.

▮ **Count Towards Graduation** - Iowa passed a permissive and encouraging policy to allow computer science to count as a mathematics credit for graduation, but it is a district decision.

▮ **Higher Ed Admission** - Computer science can count towards a core subject area credit required for admission at institutions of higher education in Iowa.

▮ **Graduation Requirement** - Iowa **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, Julia Wynn, at [julia.wynn@code.org](mailto:julia.wynn@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.