

Support K-12 Computer Science Education in Kentucky

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 706 graduates in computer science in 2020 and only 79% of all public high schools teach a foundational computer science course.

Computer science in Kentucky

- Only **1,778 exams were taken in AP Computer Science by high school students in Kentucky** in 2020 (521 took AP CS A and 1,257 took AP CSP).
- Only 30% were taken by female students (26% for AP CS A and 32% for AP CSP); only 92 exams were taken by Hispanic/Latino/Latina students (19 took AP CS A and 73 took AP CSP); only 59 exams were taken by Black/African American students (5 took AP CS A and 54 took AP CSP); only 15 exams were taken by Native American/Alaskan students (3 took AP CS A and 12 took AP CSP); no exams were taken by Native Hawaiian/Pacific Islander students.
- Only **124 schools** in KY (47% of KY schools with AP programs) offered an AP Computer Science course in 2019-2020 (23% offered AP CS A and 41% offered AP CSP), which is 7 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 Kentucky 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 KY support expanding computer science education opportunities: 61% 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 Kentucky?

- 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.
- Visit 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 Kentucky

- In Kentucky, Code.org's curriculum is used in
 - 20% of elementary schools
 - 20% of middle schools
 - 16% of high schools
- There are 8,118 teacher accounts and 569,172 student accounts on Code.org in Kentucky.
- Of students in Kentucky using Code.org curriculum last school year,
 - 62% attend high needs schools
 - 50% are in rural schools
 - 45% are female students
 - 14% are Black/African American students
 - 7% are Hispanic/Latino/Latina students
 - 0% are Native American/Alaskan students
 - 0% are Native Hawaiian/Pacific Islander students
 - 64% are white students
 - 4% are Asian students
 - 4% are students who identify as two or more races
- Code.org, its regional partner(s) Kentucky Science and Technology Corporation, and 13 facilitators have provided professional learning in Kentucky for
 - 621 teachers in CS Fundamentals (K-5)
 - 100 teachers in Exploring Computer Science or Computer Science Discoveries
 - 151 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 and see our rubric for describing state policies at <http://bit.ly/9policiesrubric>.

▣ **State Plan** - The Kentucky Department of Education developed a state plan for K–12 computer science in 2022 as required by SB 193 (2020).

▣ **K-12 Standards** - Kentucky adopted K–12 computer science standards in 2019.

▣ **Funding** - HB 2000 (FY 2020) dedicated \$800K to the CS and IT academy to address growth in computer science learning. The funding is dedicated to student exam vouchers, teacher K–12 computer science professional learning, and teacher industry certifications.

▣ **Certification** - In Kentucky, teachers with existing licensure can obtain an 8–12 endorsement in computer science.

▣ **Pre-Service Programs** - Kentucky **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 Kentucky Department of Education has a dedicated K–12 Computer Science Lead.

▣ **Require High Schools to Offer** - Kentucky **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** - Kentucky passed a permissive and encouraging policy to allow computer science to count as an elective science credit or a fourth-year mathematics credit for graduation, but it is a district decision. The course must involve computational thinking, problem-solving, computer programming, and a significant emphasis on the science and engineering practices.

▣ **Higher Ed Admission** - In Kentucky, computer science can count as a mathematics credit required for admission at institutions of higher education if the K–12 district allows the student to fulfill a mathematics graduation credit via the computer science course.

▮ **Graduation Requirement** - Kentucky **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, 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.

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, Hannah Weissman, at hannah.weissman@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.