

Support K-12 Computer Science Education in Tennessee

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.



In Tennessee, there are currently 8,792 open computing jobs with an average salary of \$79,239.

Yet, there were only 794 graduates in computer science in 2018 and only 50% of all public high schools teach a foundational course.

Computer science in Tennessee

- Only **1,892 exams were taken in AP Computer Science by high school students** in Tennessee in 2020 (376 took AP CS A and 1,516 took AP CSP).
- Only 33% were taken by female students (29% for AP CS A and 34% for AP CSP); only 166 exams were taken by Hispanic/Latino/Latina students (19 took AP CS A and 147 took AP CSP); only 255 exams were taken by Black/African American students (13 took AP CS A and 242 took AP CSP); only 15 exams were taken by Native American/Alaskan students (1 took AP CS A and 14 took AP CSP); only 1 exam was taken by Native Hawaiian/Pacific Islander students (0 took AP CS A and 1 took AP CSP).
- Only **120 schools** in TN (32% of TN schools with AP programs) offered an AP Computer Science course in 2019-2020 (12% offered AP CS A and 28% offered AP CSP), which is 29 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 Tennessee 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 TN support expanding computer science education opportunities: 63% 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 Tennessee?

- 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 Tennessee: 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.

Code.org's impact in Tennessee

- In Tennessee, Code.org's curriculum is used in
 - 17% of elementary schools
 - 21% of middle schools
 - 19% of high schools
- There are 12,402 teacher accounts and 537,321 student accounts on Code.org in Tennessee.
- Of students in Tennessee using Code.org curriculum last school year,
 - 52% attend high needs schools
 - 34% are in rural schools
 - 45% are female students
 - 24% are Black/African American students
 - 10% are Hispanic/Latino/Latina students
 - 0% are Native American/Alaskan students
 - 0% are Native Hawaiian/Pacific Islander students
 - 48% are white students
 - 3% are Asian students
 - 4% are students who identify as two or more races
- Code.org, its regional partner(s) Tennessee STEM Innovation Network, and 15 facilitators have provided professional learning in Tennessee for
 - 1,664 teachers in CS Fundamentals (K-5)
 - 72 teachers in Exploring Computer Science or Computer Science Discoveries
 - 80 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 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** - The Tennessee Department of Education presented the Tennessee Computer Science State Education Plan to the legislature in April 2020 and posted a timeline for each recommendation on the department website.
- K-12 Standards** - Tennessee published a comprehensive set of K–12 computer science standards in July 2020.
- Funding** - PC 651 (FY 2021) includes \$518K for computer science education, including professional development, within the Governor's Future Workforce Initiative.
- Certification** - In Tennessee, teachers with existing licensure can obtain the Computer Science Employment Standard endorsement after completing approved professional development. An initial license in computer science requires completing academic coursework and passing the Praxis CS exam.
- Pre-Service Programs** - The Tennessee Department of Education has approved teacher preparation programs leading to certification in computer science and lists these programs publicly.
- Dedicated State Position** - The Tennessee Department of Education has a Director of STEAM and Computer Science.
- Require High Schools to Offer** - Tennessee **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 Tennessee, computer science can count as a mathematics credit for graduation.

□ **IHE Admission** - Tennessee **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.

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, Alexis Harrigan, at alexis@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.