Support K-12 Computer Science Education in Texas

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.

Computer science in Texas

- Texas currently has **39,374 open computing jobs** (3.6 times the average demand rate in Texas).
- The average salary for a computing occupation in TX is **$94,779**, which is significantly higher than the average salary in the state ($49,720). The existing open jobs alone represent a **$3,731,843,897 opportunity** in terms of annual salaries.
- Texas had only **4,160 bachelor's degrees in Computer Science** in 2018; only **19%** were female.
- Only **12,394 exams were taken in AP Computer Science by high school students in Texas** in 2019 (6,550 took AP CS A and 5,844 took AP CSP).
- Only 27% were female (23% for AP CS A and 32% for AP CSP); only 3,317 exams were taken by Hispanic/Latino/Latina students (1,467 took AP CS A and 1,850 took AP CSP); only 488 exams were taken by Black/African American students (242 took AP CS A and 246 took AP CSP); only 22 exams were taken by Native American/Alaskan students (13 took AP CS A and 9 took AP CSP); only 11 exams were taken by Native Hawaiian/Pacific Islander students (6 took AP CS A and 5 took AP CSP).
- Only **506 schools** in TX (27% of TX schools with AP programs) offered an AP Computer Science course in 2018-2019 (19% offered AP CS A and 18% offered AP CSP), which is 44 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 Texas only graduated **25 new teachers** prepared to teach computer science in 2018.
- According to a representative survey from Google/Gallup, school administrators in TX support expanding computer science education opportunities: 70% of principals surveyed think CS is just as or more important than required core classes.
What can you do to support K-12 CS education in Texas?

- Send a letter:
  - To your school/district asking them to expand computer science offerings at every grade level: [www.code.org/promote/letter](http://www.code.org/promote/letter)
  - To your elected officials asking them to support computer science education policy in Texas: [www.votervoice.net/Code/campaigns/58463/respond](http://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](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.

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.
- The Expanding Computing Education Pathways (ECEP) Alliance ([www.ecepalliance.org](http://www.ecepalliance.org)), an NSF funded Broadening Participation in Computing Alliance, seeks to increase the number and diversity of students in computing and computing-intensive degrees by promoting state-level computer science education reform. ECEP supports 22 states and the territory of Puerto Rico to develop effective and replicable interventions to broaden participation in computing and to create state-level infrastructure to foster equitable computing education policies. You can reach your ECEP point of contact Dr. Carol Fletcher from the University of Texas at Austin at Cfletcher@tacc.utexas.edu.

Code.org's impact in Texas

- In Texas, Code.org's curriculum is used in
  - 16% of elementary schools
  - 18% of middle schools
  - 13% of high schools
- There are 55,842 teacher accounts and 2,009,157 student accounts on Code.org in Texas.
- Of students in Texas using Code.org curriculum last school year,
  - 63% attend high needs schools
  - 20% are in rural schools
  - 43% are female students
  - 63% are students from marginalized racial and ethnic groups underrepresented in computer science (Black/African American, Hispanic/Latino/Latina, Native American/Alaskan, or Native Hawaiian/Pacific Islander)
- Code.org, its regional partner(s) Texas Advanced Computing Center at the University of Texas at Austin and Rice University School Mathematics Project, and 33 facilitators have provided professional learning in Texas for
  - 10,400 teachers in CS Fundamentals (K-5)
  - 297 teachers in Exploring Computer Science or Computer Science Discoveries
  - 227 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.”
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** - Texas is in the process of creating a plan for K–12 computer science that includes goals, strategies, and timelines, as required by HB 2984 (2019).

**K-12 Standards** - Texas 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.

**Funding** - Although Texas does not yet provide dedicated state funding for computer science professional development, HB 3 and HB 963 (2019) consolidated all computer science (or technology applications) courses into CTE and allowed schools to receive weighted funding for students enrolled in those courses in grades 7–12.

**Certification** - In Texas, teachers with or without existing licensure can obtain an 8–12 certification by completing a state-approved teacher preparation program and passing certification exams.

**Pre-Service Programs** - The Texas Education Agency has approved teacher preparation programs leading to certification in computer science and lists these programs publicly.

**Dedicated State Position** - Texas 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.

**Require High Schools to Offer** - The Texas State Board of Education added computer science courses to the list of required offerings at high schools (19 TAC § 74.3) in 2014.

**Count Towards Graduation** - In Texas, AP Computer Science A, IB Computer Science Higher Level, or discrete math can count as a required mathematics course for graduation. Computer science can also count as an advanced science credit, and multiple course options can satisfy the foreign language requirement.

**IHE Admission** - Computer science can count as the fourth mathematics credit required for admission at institutions of higher education in Texas.

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.

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.