Support K-12 Computer Science Education in North Carolina

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 8% of STEM graduates study it. We need to improve access for all students, including groups who have traditionally been underrepresented.

North Carolina currently has 20,292 open computing jobs (5.0 times the average demand rate in North Carolina). The average salary for a computing occupation in NC is $91,422, which is significantly higher than the average salary in the state ($46,080). The existing open jobs alone represent a $1,855,130,354 opportunity in terms of annual salaries.

North Carolina had only 1,284 computer science graduates in 2015; only 20% were female.

In North Carolina, only 39% of all public high schools teach computer science.

Only 3,229 exams were taken in AP Computer Science by high school students in North Carolina in 2018 (1,243 took AP CS A and 1,986 took AP CSP).

Only 27% were female (21% for AP CS A and 31% for AP CSP); only 221 exams were taken by Hispanic or Latino students (78 took AP CS A and 143 took AP CSP); only 241 exams were taken by Black students (97 took AP CS A and 144 took AP CSP); only 7 exams were taken by American Indian or Alaska Native students (3 took AP CS A and 4 took AP CSP); only 2 exams were taken by Native Hawaiian or Pacific Islander students (0 took AP CS A and 2 took AP CSP).

Only 117 schools in NC (19% of NC schools with AP programs) offered an AP Computer Science course in 2017-2018 (10% offered AP CS A and 15% offered AP CSP), which is 22 more than the previous year. There are fewer AP exams taken in computer science than in any other STEM subject area.
Universities in North Carolina 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 NC support expanding computer science education opportunities: 69% 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 improve K-12 CS education?**

1. Call on your school to expand computer science offerings at every grade level.
2. Ask your local school district to allow computer science courses to satisfy a core math or science requirement.
3. Visit [www.code.org/educate/3rdparty](http://www.code.org/educate/3rdparty) to find out about courses and curriculum from a variety of third parties, including Code.org.
4. Visit [www.code.org/promote/NC](http://www.code.org/promote/NC) to learn more about supporting computer science in your state.
5. Sign the petition at [www.change.org/computerscience](http://www.change.org/computerscience) to join 100,000 Americans asking Congress to support computer science.

**Code.org's Impact in North Carolina**

- In North Carolina, Code.org’s curriculum is used in
  - 17% of elementary schools
  - 18% of middle schools
  - 8% of high schools
- There are 13,542 teacher accounts and 552,403 student accounts on Code.org in North Carolina.
- Of students in North Carolina using Code.org curriculum last school year,
  - 51% attend high needs schools
  - 40% are in rural schools
  - 44% are female students
  - 40% are underrepresented minority students (Black/African American, Hispanic/Latino, American Indian, or Hawaiian)
- Code.org, its regional partner(s) The Friday Institute, and 14 facilitators have provided professional learning in North Carolina for
  - 2,648 teachers in CS Fundamentals (K-5)
  - 178 teachers in Exploring Computer Science or Computer Science Discoveries
  - 44 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.

☑ North Carolina has created a state plan for K-12 computer science.

☐ North Carolina 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.

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

☑ North Carolina has clear certification pathways for computer science teachers.

☐ North Carolina 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.

☐ North Carolina 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.

☐ North Carolina 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.


☐ North Carolina 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
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 schools that offer computer science and parent demand, and Code.org for its own courses, professional learning programs, and participation data.