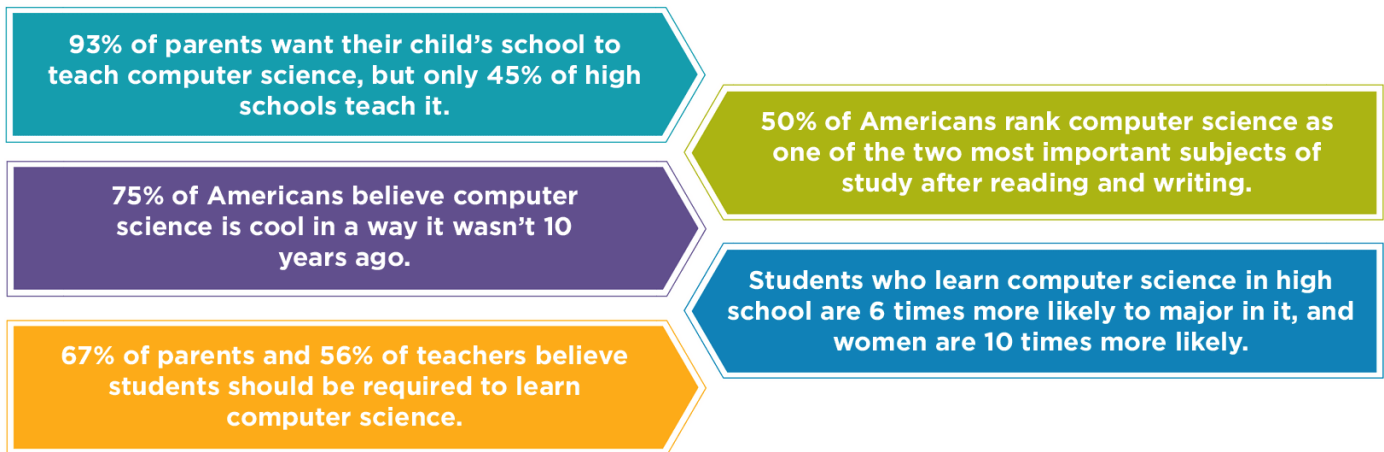
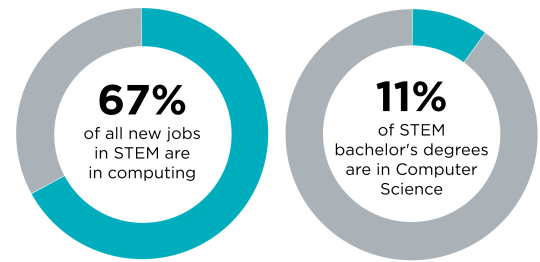


# Support K-12 Computer Science Education in Virginia

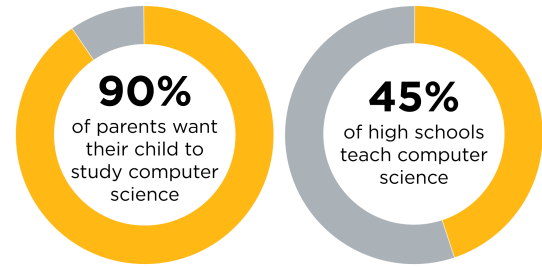
Computer science drives job growth and innovation throughout our economy and society. Computing occupations are the **number 1 source of all new wages in the U.S.** and make up over half of all projected new jobs in STEM fields, making Computer Science one of the most in-demand college degrees. And computing 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 Virginia

- Virginia currently has **25,162 open computing jobs** (3.8 times the average demand rate in Virginia).
- The average salary for a computing occupation in VA is **\$106,580**, which is significantly higher than the average salary in the state (\$55,310). The existing open jobs alone represent a **\$2,681,768,208 opportunity** in terms of annual salaries.
- Virginia had only **2,098 bachelor's degrees in Computer Science** in 2018; only **21%** were female.
- In Virginia, only **73% of all public high schools teach a foundational computer science course**.
- Only **5,719 exams were taken in AP Computer Science by high school students in Virginia** in 2019 (3,473 took AP CS A and 2,246 took AP CSP).
- Only 29% were female (28% for AP CS A and 32% for AP CSP); only 465 exams were taken by Hispanic/Latino/Latina students (246 took AP CS A and 219 took AP CSP); only 441 exams were taken by Black/African American students (207 took AP CS A and 234 took AP CSP); only 5 exams were taken by Native American/Alaskan students (1 took AP CS A and 4 took AP CSP); only 5 exams were taken by Native Hawaiian/Pacific Islander students (3 took AP CS A and 2 took AP CSP).
- Only **167 schools** in VA (34% of VA schools with AP programs) offered an AP Computer Science course in 2018-2019 (25% offered AP CS A and 21% offered AP CSP), which is 9 more than the previous year.
- Teacher preparation programs in Virginia 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 VA support expanding computer science education opportunities: 64% 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 Virginia?



- 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 Virginia: [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, Pat Yongpradit, at [pat@code.org](mailto:pat@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 Chris Dovi at [cdovi@codevirginia.org](mailto:cdovi@codevirginia.org) or Rebecca Dovi at [rebeccadovi@codevirginia.org](mailto:rebeccadovi@codevirginia.org).

## Code.org's impact in Virginia

- In Virginia, Code.org's curriculum is used in
  - 18% of elementary schools
  - 19% of middle schools
  - 17% of high schools
- There are 20,878 teacher accounts and 754,445 student accounts on Code.org in Virginia.
- Of students in Virginia using Code.org curriculum last school year,
  - 41% attend high needs schools
  - 35% are in rural schools
  - 41% are female students
  - 37% 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) CodeVA, and 7 facilitators have provided professional learning in Virginia for
  - 1,334 teachers in CS Fundamentals (K-5)
  - 215 teachers in Exploring Computer Science or Computer Science Discoveries
  - 94 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](https://code.org/files/Making_CS_Fundamental.pdf) and see our rubric for describing state policies at <http://bit.ly/9policiesrubric>.

**State Plan** - Virginia **has not** yet created a state plan for K-12 computer science. A plan that articulates the goals for computer science, strategies for accomplishing the goals, and timelines for carrying out the strategies is important for making computer science a fundamental part of a state's education system.

**K-12 Standards** - Virginia added mandatory K–12 computer science standards to the state Standards of Learning in 2017, effectively requiring all K–12 schools to offer instruction in computer science. Standards within each grade band address concepts of equity, such as bias, accessible technology, and inclusivity.

**Funding** - HB 30 (FY 2021 and 2022) allocated \$1.35M annually to support computer science education and implementation of the standards, including professional development. HB 30 (FY 2021 and 2022), HB 1700 (FY 2019 and 2020), and HB 1500 (FY 2017 and 2018) also allocated \$550K annually for K–12 computer science professional development with CodeVA.

**Certification** - In Virginia, teachers with existing licensure can obtain an endorsement through academic coursework or passing the Praxis CS exam. An initial license in computer science requires completing a state-approved program or academic coursework. The Department of Education convened a workgroup on micro-credentials for certification in subjects including computer science and is now developing recommendations as authorized by HB 836 (2020).

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

**Dedicated State Position** - The Virginia Department of Education has a Computer Science and Virtual Learning Specialist.

**Require High Schools to Offer** - HB 831 (2016) added computer science into the Virginia K–12 Standards of Learning, which all schools must implement.

**Count Towards Graduation** - In Virginia, a variety of computer science courses can count as a credit for graduation in lab science, career and technical education, or mathematics at or above the level of Algebra II. Students in English as a Second Language programs can add a computer science elective for graduation credit if they test out of their foreign language requirement.

**IHE Admission** - Virginia **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](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.

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.