Support K-12 Computer Science Education in West 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 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 215 graduates in computer science in 2020 and only 78% of all public high schools teach a foundational computer science course.

Computer science in West Virginia

- Only **405 exams were taken in AP Computer Science by high school students in** West Virginia in 2020 (119 took AP CS A and 286 took AP CSP).
- Only 36% were taken by female students (23% for AP CS A and 41% for AP CSP); only 14 exams were taken by Hispanic/Latino/Latina students (5 took AP CS A and 9 took AP CSP); only 7 exams were taken by Black/African American students (1 took AP CS A and 6 took AP CSP); only 3 exams were taken by Native American/Alaskan students (1 took AP CS A and 2 took AP CSP); no exams were taken by Native Hawaiian/Pacific Islander students.
- Only **46 schools** in WV (38% of WV schools with AP programs) offered an AP Computer Science course in 2019-2020 (16% offered AP CS A and 32% offered AP CSP), which is 12 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 West 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 WV support expanding computer science education opportunities: 64% 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 West Virginia?

- Send a letter to your school/district asking them to expand computer science offerings at every grade level: %a{href:"https://code.org/promote/letter"} www.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 West Virginia

- In West Virginia, Code.org's curriculum is used in
    - 17% of elementary schools
    - 27% of middle schools
    - 20% of high schools
- There are 4,467 teacher accounts and 189,321 student accounts on Code.org in West Virginia.
- Of students in West Virginia using Code.org curriculum last school year,
    - 39% attend high needs schools
    - 41% are in rural schools
    - 44% are female students
    - 5% are Black/African American students
    - 1% are Hispanic/Latino/Latina students
    - 1% are Native American/Alaskan students
    - 0% are Native Hawaiian/Pacific Islander students
    - 81% are white students
    - 2% are Asian students
    - 3% are students who identify as two or more races
- Code.org, its regional partner(s) West Virginia University, and 10 facilitators have provided professional learning in West Virginia for
    - 630 teachers in CS Fundamentals (K-5)
    - 133 teachers in Exploring Computer Science or Computer Science Discoveries
    - 97 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 West Virginia Department of Education approved a state plan for expanding Computer Science in October 2019.

 K-12 Standards - West Virginia adopted K–12 computer science standards in 2019.

 Funding - With the publication of the West Virginia Computer Science Plan in October 2019, the state also allocated yearly funding for professional development for teachers as recommended by SB 267 (2019). During 2022 and 2023, the state used leftover funds due to costs saved during 2020-2021 as a result of the switch to virtual programming instead of allocating annual appropriations. Funding expired in 2023.

 Certification - In West Virginia, teachers with existing licensure can obtain course-specific authorizations for Introduction to Computer Science, Computer Science Discoveries, and/or Computer Science Fundamentals by completing specified professional development.

 Pre-Service Programs - West Virginia **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 West Virginia Department of Education has a Computer Science Supervisor.

 Require High Schools to Offer - SB 267/HB 2415 (2019) required the West Virginia State Board of Education to adopt a policy detailing the appropriate level of computer science instruction that shall be available to students at each programmatic level prior to the 2020–2021 school year. Policy 2510, revised in 2015, required all high schools to offer a computer science course.

 Count Towards Graduation - In West Virginia, an AP computer science course can count as the fourth mathematics credit or a science credit for graduation.

 IHE Admission - West 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.

 Graduation Requirement - West Virginia **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, Julia Wynn, at julia.wynn@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.