

Support K-12 Computer Science Education in Arkansas

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 500 graduates in computer science in 2020 and only 99% of all public high schools teach a foundational computer science course.

Computer science in Arkansas

- Only **1,339 exams were taken in AP Computer Science by high school students in** Arkansas in 2020 (404 took AP CS A and 935 took AP CSP).
- Only 33% were taken by female students (20% for AP CS A and 39% for AP CSP); only 143 exams were taken by Hispanic/Latino/Latina students (50 took AP CS A and 93 took AP CSP); only 118 exams were taken by Black/African American students (15 took AP CS A and 103 took AP CSP); only 18 exams were taken by Native American/Alaskan students (1 took AP CS A and 17 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 **67 schools** in AR (23% of AR schools with AP programs) offered an AP Computer Science course in 2019-2020 (14% offered AP CS A and 16% offered AP CSP), which is 4 more than the previous year.
- Teacher preparation programs in Arkansas only graduated 5 new teachers prepared to teach computer science in 2018.
- According to a representative survey from Google/Gallup, school administrators in AR support expanding computer science education opportunities: 73% 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 Arkansas?

- Send a letter to your school/district asking them to expand computer science offerings at every grade level: <https://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 Arkansas

- In Arkansas, Code.org’s curriculum is used in
 - 28% of elementary schools
 - 35% of middle schools
 - 24% of high schools
- There are 10,171 teacher accounts and 579,878 student accounts on Code.org in Arkansas.
- Of students in Arkansas using Code.org curriculum last school year,
 - 72% attend high needs schools
 - 55% are in rural schools
 - 47% are female students
 - 19% are Black/African American students
 - 9% are Hispanic/Latino/Latina students
 - 1% are Native American/Alaskan students
 - 1% are Native Hawaiian/Pacific Islander students
 - 55% are white students
 - 2% are Asian students
 - 4% are students who identify as two or more races
- Code.org, its regional partner(s) Arkansas Computer Science and Computing Initiative, and 2 facilitators have provided professional learning in Arkansas for
 - 2,323 teachers in CS Fundamentals (K-5)
 - 4 teachers in Exploring Computer Science or Computer Science Discoveries
 - 3 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 Arkansas Department of Education developed and regularly updates a state plan for computer science education on recommendations from the Computer Science and Technology in Public School Task Force in 2016. In October 2020, the Computer Science and Cybersecurity Task Force released a new set of recommendations.

□ **K-12 Standards** - Arkansas adopted revised K–12 computer science standards including multiple high school pathways in 2020. All students learn the K–8 standards and take a coding block in 7th or 8th grade.

□ **Funding** - Act 572 (FY 2024), Act 217 (FY 2023), and Act 1006 (FY 2022) allocated \$3.5M for the Computer Science Initiative; Act 154 (FY 2021), Act 877 (FY 2020), Act 243 (FY 2019), Act 1044 (FY 2018), and Act 189 (FY 2016 and 2017) allocated \$2.5M annually for the initiative. One grant program for schools prioritizes programs that broaden participation in computer science courses.

□ **Certification** - In Arkansas, teachers with existing licensure can add a 4–12 endorsement by passing the Praxis CS exam; teachers can also earn an initial license in computer science. Any teacher with a grade-appropriate license can obtain an approval code by completing one of the following: approved professional development, prior computer science teaching, coursework in computer science, or other department requirements. State funding for computer science can support credentialing for teachers. Beginning with the 2023–2024 school year, each public school district must employ at least one computer science certified teacher at each high school (Act 414, 2021).

□ **Pre-Service Programs** - Arkansas has approved secondary computer science preparation programs at several institutions of higher education and lists these institutions publicly. The state also requires all preservice elementary teachers to receive instruction in computer science education, and each preservice program will incorporate computer science as their educator competencies come up for revision. ForwARd Arkansas scholarships are available for students studying to become licensed computer science instructors and commit to teaching in a ForwARd Community school district.

□ **Dedicated State Position** - The Arkansas Department of Education has an office of computer science with four staff members focusing on computer science, including the State Director of Computer Science Education, Lead Statewide Computer Science Specialist, Computer Science Program Policy Advisor, and a Computer Science Program Coordinator. There are also nine statewide computer science specialists. In 2021, the department created a new position, the Director of STEM and Computer Science Continuum, to focus on postsecondary, including college and careers.

□ **Require High Schools to Offer** - Act 187 (2015) required all high schools to offer computer science by the 2015–2016 school year. Each school reports computer science enrollment by grade and race. The Middle School Introduction to Coding standards are required to be taught to all students in at least one

of grades 5, 6, 7, or 8.

□ **Count Towards Graduation** - In Arkansas, all students must take one credit of computer science (Act 414, 2021) or computer science-related career and technical education course to graduate (Act 654, 2023). Any computer science course can count as a mathematics, science, or career focus credit for high school graduation.

□ **Higher Ed Admission** - Any computer science course can count as a mathematics or science credit required for admission at institutions of higher education, which aligns with Arkansas's high school graduation policy.

□ **Graduation Requirement** - In Arkansas, all students must take one credit of computer science (Act 414, 2021) or computer science-related career and technical education course to graduate (Act 654, 2023). The credit may be earned in grades 8-12 and the ADE must approve at least 4 courses that can be taken in the 8th grade for HS credit).

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, Anthony Owen, at anthony.owen@code.org.
- The Expanding Computing Education Pathways (ECEP) Alliance (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. 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 Kelly Griffin at Kelly.Griffin@ade.arkansas.gov and see your state ECEP project at <http://www.arkansased.gov/divisions/special-projects/arkansas-computer-science-initiative>.

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.