



Computer Science Resources Overview

The following are guides, programs, resource lists, or models to help schools integrate computer science both in and outside the classroom.

Comprehensive

CodeHS

CodeHS is a teaching platform for computer science in high school. In addition to links, lessons, resources, and professional development, the site contains a brief overview of computer science in each state. When applicable, it lists courses and pathways that students can take to make the most of computer science classes in their state.

Code.org

Code.org has made major strides advocating for computer science in public schools. It has partnered with Amazon, Microsoft, Facebook, Google, and numerous nonprofits to help make online computer science content a reality for students and teachers across the nation. Offerings include professional development, courses for K-12 and beyond, information on local coding opportunities, and programs such as the “Hour of Code” intended for schools or organizations that want to provide computer science content.

Additionally, Code.org and Amazon are collaborating on [curriculum and a new approach](#) to AP Computer Science A that emphasizes equity and diversity. The projects are designed to be open-ended to allow students to relate their work to their communities and interests.

CSforALL

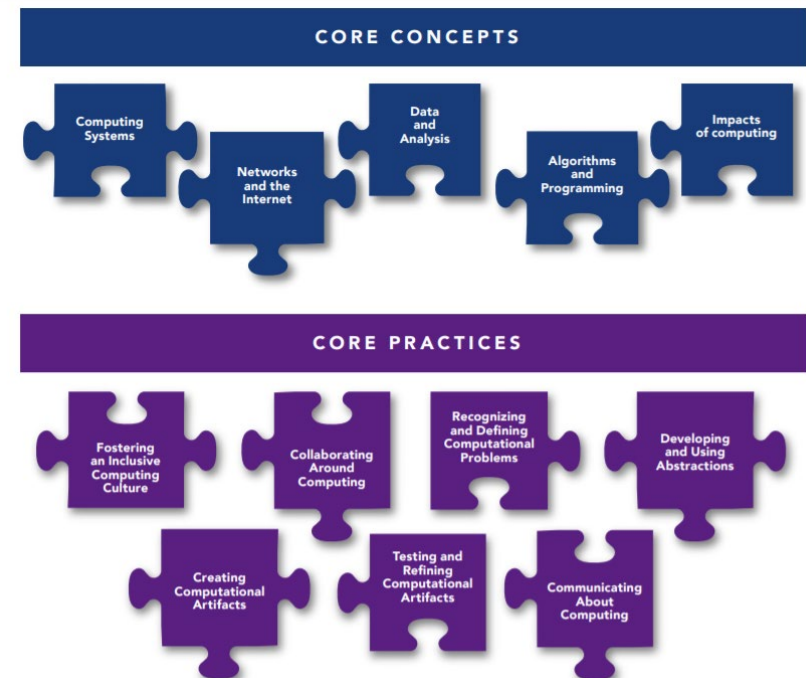
Computer Science for All is a resource that schools can use to connect to computer science education to ensure that all K-12 students have access to the skills they need to thrive in college and career. The CSforAll model builds on work being done in school districts to identify best practices in computer science education. Notable projects undertaken by CSforAll and its partners the following.

- [RPPforCS Grant Program](#): This is a four-year project funded by the National Science Foundation that aims to develop a community of practice and identify data-driven best practices to bring equitable computer science education to all schools. The immediate goals of the project involve building a connected community of practice across the RPPforCS teams, develop and manage a research-driven computer science agenda, advance the agenda, trace the implementation of the program in cohort projects, gather consistent data from districts, educators, and students, and provide an infrastructure to disseminate results and best practices.
- [SCRIPT](#): The Strategic CSforAll Resource and Implementation Planning Tool (SCRIPIT) framework guides teams of district administrators, school leaders, and educators through

collaborative and self-reflective exercises to create or expand upon computer science education plans for their students.

K12 Computer Science Framework

The K12 Computer Science Framework is a comprehensive resource on computer science in schools that was developed in partnership with the Association for Computing Machinery, Code.org, CSTeachers.org, the Cyber Innovation Center, the National Math + Science Initiative, and the educational departments of 14 states across the nation. The framework is meant to inform stakeholders as they develop computer science standards and curriculum in their own states, districts, and schools.





Programs & Curriculum

AccessCSforAll

AccessCSforAll is a research-practitioner partnership that works to deliver resources, devices, and content to eliminate the barriers that students with disabilities face while engaging with computers. Resources developed via these partnerships include:

- A knowledge base for teaching students with disabilities computer science as well as case studies and promising practices. AccessCSforAll also develops curriculum.
- Guidelines that stakeholders can follow to make K-12 computer science accessible to all students.
- Information and media about universal design and accessibility guidelines.
- An online community of practice to connect educators and professionals in sharing accessible tools and curricula.
- Individualized support to help assist students with disabilities in computer science courses.

ECEP: Expanding Computing Education Pathways

The ECEP is an NSF backed alliance to increase the number and diversity of students in the computer science pipeline. The ECEP supports state-level computing education reforms via “interventions, pathways, partnerships and models that drive state-level computing education change.”

There are 22 states in the ECEP Alliance: Alabama, Arkansas, California, Connecticut, Georgia, Hawaii, Indiana, Maryland, Massachusetts, Minnesota, Mississippi, New Hampshire, Nevada, North Carolina, Ohio, Oregon, Rhode Island, South Carolina, Texas, Utah, Virginia, Washington – and the U.S. territory of Puerto Rico. As part of their mission, the ECEP uses a computer science model to build internal capacity in state leaders as they address the diverse and complex factors that prevent students from accessing quality computer science education. The ECEP Alliance works with state teams to develop and test interventions that will lead to systemic change: developing tools and resources for state support, defining computer science indicators, and measuring computer science goals. The ECEP is also a project supported by CSforAll.

FIRST

FIRST is a robotics community aimed at helping students explore and refine computer science skills. FIRST provides resources for schools or clubs that join the community. This includes robotics programming, competitions, and fundraising opportunities. FIRST robotic communities range from K-12, with divisions by grade.

Girls Who Code

Girls Who Code is an organization dedicated to closing the gender gap in computer science education. It provides research, resources, advocacy work and run summer programs and

afterschool clubs that seek to building computer science skills for girls in grades 3-12. Girls Who Code has worked with over 450,000 girls, 50% from underrepresented demographics.

goIT Student Technology Awareness Program

Tata Consultancy Services’ goIT community engagement program aims to help middle and high schoolers gain the confidence and skills required to pursue STEM degrees via hands-on projects incorporating technology and computer science skills. It was launched in 2009 and has worked with over 10,000 students in over 100 districts.

Governors for Computer Science

Governors for Computer Science is a bipartisan collective of state leaders committed to advancing policy and funding to expand access and increase equity in K-12 computer science. These leaders specifically aim to ensure that all high schools offer CS, increase funding for professional development, and develop high-quality computer science standards.

Hispanic Heritage Foundation’s Code as a Second Language

Code as a Second Language (CSL) is a program aimed at increasing the participation of Latino students in computer science. CSL is made of three basic components: Technical training that teaches computer science to K-12 students; summits that connect Latino technical talent across the nation via the Hispanic Heritage Foundation’s LOFT Coder Summits; and internships and fellowships that connect Latino computer science students with companies to support their efforts in creating a more diverse workforce.

Learning Blade

This is a series of interactive and online lessons for grades 5-9 where students can learn about STEM and computer science careers. The information is delivered via an interactive, game-based form. Students are given missions and, in the platform, must earn tools and assistance from teammates corresponding to STEM activities and careers. As part of its resources, students can engage in coding exercises with resources from Code.org.

Project Lead the Way

PLTW is an online community that districts can enlist to help provide computer science modules and professional development for their students and faculty. The group provides curriculum, assessments, teacher training, and ongoing support. The community also promises to connect students to scholarship and career opportunities within the computer science industry. The programs are divided into PreK-5, 6-8, and 9-12 for computer science, biomedical science, and engineering. PLTW also provides grant opportunities for schools to help implement computer science programs.

WeTeach CS

WeTeach_CS was developed by the Expanding Pathways in Computer (EPIC) group at the University of Texas at Austin’s Texas Advanced Computer Center. The program works to educate and help K-12 computer science teachers, administrators, professional development



providers, and university teachers develop a vision of computer science for all. The initiative's equity focus is at the forefront of its work. The group holds events, works to certify teachers in CS, and provides computer science curriculum.

Youth Code Jam

Youth Code Jam makes computer science fun, sociable, and accessible to all, by providing free and low-cost coding classes and activities to K-12 learners. Youth Code Jam partners with local community centers to reach students from minority racial and ethnic groups. Its She Code Connect aims to create a safe learning space that offers a sense of belonging, where students can connect with other gender minorities and see the possibilities of where coding can take them. Youth Code Jam also encourages the neurodiverse community to explore the logical, predictability that is binary code, through its programs, Community Code Jams and Low Sensory Community Jams.

Games and Resources

CAPACITY: Culturally Authentic Practice to Advance Computational Thinking in Youth

This was a two-year program funded via a grant from the NSF that brought together a team from Georgia Tech university to collaborate with two partner school systems to create, pilot, and assess a new Introduction to Digital Technology (IDT) curriculum. The schools, which have primarily underrepresented computer science populations, will “engage students in authentic and culturally relevant problem-based, inquiry learning (PBIL) projects in STEM topics, such as resource sustainability.” In turn, the students were expected to make multimedia digital narratives consisting of web pages, mobile applications, and computationally generated music.

CodeWizards free and paid coding websites

CodeWizards has amassed a list of coding exercises and websites that students can use to improve their computer science skills. The entries include a brief overview of the programs, their fees, and the target age range.



Quick Links to Resources

- Research report on the status of computer science: [2021 State of Computer Science Education: Accelerating Action Through Advocacy](#)
- [Publications on diversifying computer science](#)
- Resources to aid school systems in strategically planning for computer science education:
 - [The SCRIPT: Strategic CSforALL Planning Tool for School Districts](#)
 - [Expanding Computing Education Pathways: State Summit Toolkit](#)
 - [Code.org: State Computer Science Planning Toolkit](#)
 - [Computer Science Teachers Association: Standards for CS Teachers](#)

Take a Break & Learn to Code 😊

- [Take a Code Break](#)
- [Get Creative with Coding!](#)
- [Youth Code Jam - Spurs Give Coding Camps](#)

Order these STEM-CS Kits for Your Child or Classroom

- [Code
](#)
- [Black Wall Street Kids](#)
- [CIAS Game Development](#)

Computer Science.org: Computer Science Before College

This resource offers an overview for any student or stakeholder interested in programs and lists websites that provide coding resources, lessons, and games. It is divided into a few sections, emphasizing beginning programs for younger students to resources that would be helpful to students with a more comprehensive background in coding.

DATA USA Computer Science

This site contains an overview of computer science at the university level and in the job market.

Resources for computer science teachers

This article was written by a computer science teacher and provides resources to help computer science educators better understand computer science pedagogy, plan activities, and utilize resources to help promote computational thinking in the classroom. The article is also dedicated to reviewing *Computer Science in K-12: An A to Z Handbook on Teaching Programming*.

STEM for all Multiplex

The STEM for all Multiplex is an archive of videos showcasing federally funded project intended to transform STEM and computer science learning. The videos and presentations cover numerous disciplines and include community initiatives, games and apps, and learning from PreK through graduate education.

A potentially useful resource regarding computer science specifically was an expert panel conducted in June of 2020 on [integrating computer science and computational thinking in PreK-8th grades](#).

