A robust pipeline of talented high school students trained in computer science would make a powerful impact on a wide array of industries. However, world-class computer science education is not available to many high school students interested in the field. Fewer than half of the schools in the U.S. teach even the basics of programming. Worse still, the teachers of these classes are often not qualified to teach computer science. This chronic and pervasive problem prevents talented, interested high school students — including low-income and underrepresented populations — from fully engaging in computer science.

Approximately 60 percent of the schools using or planning to use our CMU CS Academy curriculum are Title 1 institutions, which means they enroll high numbers of students from low-income families—students who might not receive computer science experience without our curriculum.

DESIGNING HIGH-IMPACT SOLUTIONS

Carnegie Mellon's School of Computer Science (SCS) has the solution: Computer Science (CS) Academy offers a high-quality computer science curriculum for high school students everywhere. Known as a world leader in innovative thinking and game-changing collaborations, Carnegie Mellon also cares deeply about the computer science community. Mark Stehlik and David Kosbie — two award-winning teaching professors at SCS — developed and launched this visionary program.

OUR VISION

CMU CS Academy aims to create an entirely free, universally accessible, online, interactive high school computer science curriculum. In addition to the curriculum framework, CMU CS Academy currently offers teacher training, an online interactive textbook, and online technical support from our undergraduate computer science students, available "24/7".

ACCESS FOR ALL

CMU CS Academy offers a quick on-ramp for all teachers who want to teach computer science, including those without any formal training. Teachers can attend free professional development sessions taught by a certified CMU CS Academy trainer and leave ready to use the curriculum in their classrooms. The platform uses autograded graphics (unique to our program) to help students and teachers identify mistakes in each exercise. ▶

Carnegie Mellon University
School of Computer Science

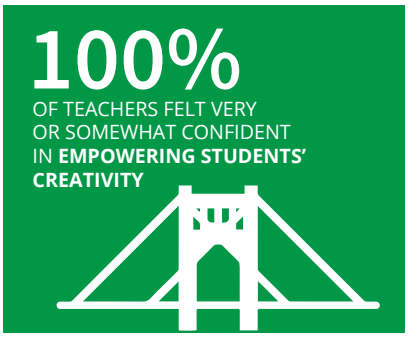
Our Reach

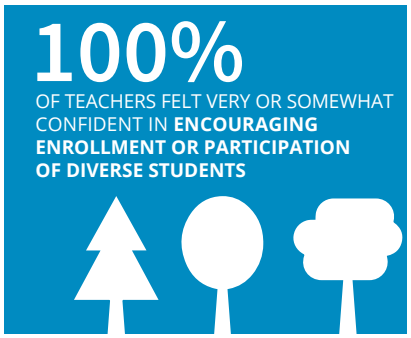
We have grown tremendously. Starting with just 14 schools in the beginning of 2018, CMU CS Academy is now in 1,600 schools; 35,000 students around the world are using our curriculum this semester; and since our launch, 150,000 total students have participated in our program. We expect 2,500 teachers and 50,000 students to participate in the 2021-22 school year. **Our goal is to reach one million students by 2024.**

Current Curriculum

All curriculum materials for CS1 and CS0 are available in English and Spanish.

- **CS1:** Our CS1 curriculum is a deep dive into the fundamentals of programming concepts and teaches text-based coding using Python. It is designed for high school classrooms and no prior programming experience is required.
- **CS0:** CS0 is a lighter version of our CS1 curriculum. It is intended for middle school classrooms, out-of-school programs, and summer camps. Like CS1, no prior coding experience is necessary.
- **CSP:** In consultation with Code.org, we have developed an alternative option for Code.org's AP CSP programming units: AP CSP (Computer Science Principles). This curriculum is intended for teachers who want to teach the programming units using CMU CS Academy's Python offerings. For these units, students and teachers will work from the CMU CS Academy platform and program in Python. Our curriculum meets the needs of students who have no prerequisites as well as those who have previously taken our CS1 course by providing multiple entry points.
- **CS2:** Currently in its second pilot year, the CS2 curriculum is designed for students who have taken at least some of our CS1 course. This course builds on the CS1 foundation, covering some additional programming and CS topics, and then applying and extending computational problem-solving skills in a variety of application areas. The sequencing and duration of the units are now modular, allowing teachers to customize the course to best suit their students' needs.
- **CS3:** Honors College-Preparatory Computer Science
  A full-year honors-level course in programming and computer science, CS3 prepares students for college studies in computer science and related disciplines. This course re-examines earlier topics (functions, conditionals, loops, strings, lists, and more) in greater detail and increased rigor. The course also covers intermediate data structures (sets, dictionaries), recursion, object-oriented programming, exceptions, monte carlo methods, cloud computing, efficiency, limits of computation, style, and top-down design, among other topics. The course culminates in a significant creative project.





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