

What is Computer Science? Why Should K-12 Schools Teach It?

What is Computer Science?

When many people hear the words “computer science” they may actually be thinking of computer literacy or educational technology. Take a look at the following definitions to see how these three areas are distinct.

Computer literacy is the ability to effectively use digital tools and applications to access, understand and produce information. A few basic examples: knowing how to type, search and use word processing tools.

Educational technology is the integration of technology into teaching in order to advance student learning across subject areas. Example: using Geogebra to teach mathematics or tools like Quizlet to develop online flashcards.

Computer science is the study of computers, algorithmic processes, hardware and software designs, applications, and their impact on society. In simpler terms it is the art of blending digital tools, human ideas, and creativity to solve problems. Topics in computer science include: artificial intelligence, programming, data analysis, security, modeling, web design, ethical issues, and robotics.

Why Teach Computer Science?

Computer science provides students with valuable opportunities to be creators with technology and not just consumers of technology. By becoming creators, students engage in inquiry-based learning that is relevant to them and their interests thereby motivating them to push themselves to deeper learning.

Regardless of what field students end up in, computer science will prepare them by developing their practices of creativity, collaboration, communication, abstraction, and problem solving, some of the most important skills for the 21st century. There are also many connections between the experiences that learning computer science involves and the Common Core State Standards, for example: make sense of problems and persevere in solving them, attend to precision, and use appropriate tools strategically.

The future workforce picture provides an even clearer case why schools need to move toward improving computer science education. The United States Bureau of Labor Statistics projects that by the year 2020 there will be 4.6 million jobs in the computing and information technology fields. This means that computing will account for half of the 9.2 million US STEM jobs that year. And these jobs pay 75% more than the national median salary! In fields ranging from health care to entertainment to manufacturing, to media, and defense there are high demands for people with skills in computer science.

How might you answer the two questions at the top of the page? Share your ideas with a partner at your table.

Sources:

- Computer Science in K-12 Education Critical for 21st Century Skills and Knowledge by Computing in the Core
- code.org/files/convince_your_school_or_state.pdf