Moving Beyond Computer Literacy

Why Schools Should Teach Computer Science

COMPUTER SCIENCE GIVES STUDENTS VITAL 21ST CENTURY SKILLS WORK

THESE SKILLS STRENGTHEN LOCAL COMMUNITIES, NATIONAL INNOVATION, AND OPPORTUNITIES FOR YOUTH. Computer Science (CS) — not computer literacy — underlies most innovation today, from biotechnology to geoscience to national security. Yet three out of five U.S. schools do not offer CS classes that include programming or coding.[1] Seldom do schools actively engage and prepare students to innovate and create the new technologies that drive local and national economies. This ability to innovate with technology is also important for students' future success and ability to make a difference in a global society.

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[1] *Trends in the State of Computer Science in U.S. K-12 Schools, Google. www.ncwit.org/GoogleCSTrends*

Association for Computing Machinery

CSTA

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talking points

COMPUTER SCIENCE MEANS REWARDING CAREERS

JOBS ARE PLENTIFUL, INTERESTING, AND FLEXIBLE. The U.S. Department of Labor predicts that computing-related jobs will be among the fastest-growing and highest-paying over the next decade. In May 2018, the median salary for computer and IT occupations was $86,320.[2] Today, 58 percent of all new jobs in STEM are in computing. Computer scientists also enjoy a wide range of career options because all industry sectors involve computing (e.g., the arts, film, finance, health care, journalism, manufacturing, music, security, and more).

- By 2026, there will be **3.5 MILLION COMPUTING-RELATED JOBS AVAILABLE**.[3]
- Of those, **19 PERCENT** could be held by computing bachelor's degree recipients.
- People who major in CS in college **EARN AN AVERAGE OF 40 PERCENT MORE** than other bachelor's degree holders.[4]

COMPUTER SCIENCE: MORE THAN JUST USING TECHNOLOGY

THE FIELD OF COMPUTER SCIENCE IS BROAD. It teaches students design, logical reasoning, and problem solving — all valuable well beyond the computer science classroom. The ability to create and adapt new technologies distinguishes Computer Science from computer literacy, which focuses more on using existing technologies.

[2]Computer and Information Technology Occupations, United States Bureau of Labor Statistics. www.ncwit.org/CIBLS
[3]By the Numbers, NCWIT. www.ncwit.org/bythenumbers
[4]Computer Science is for Everyone, Microsoft Teals. www.ncwit.org/CSEveryone_Toolkit

WHAT CAN YOU TELL SCHOOL DECISION MAKERS ABOUT COMPUTER SCIENCE?

Tell them that…

COMPUTER SCIENCE (CS) PROVIDES 21ST CENTURY SKILLS NECESSARY FOR INNOVATION AND TRANSLATES TO HIGH-PAYING, IN-DEMAND JOBS. Emphasize that CS is increasingly necessary for community improvement; students' future opportunities; and local, national, and global innovation. Use facts to dispel myths that computing jobs are disappearing (see www.ncwit.org/scorecard).

CS CAN MAKE CURRICULUM MORE RELEVANT FOR STUDENTS. CS courses can tap into students' interest in technology, helping them become technology innovators. Other teachers can build on these skills, allowing students to design technical solutions to problems in science, math, social studies, the arts, and humanities. This can make these courses more relevant for youth, potentially improving their engagement and achievement in these areas.

CS CAN HELP EDUCATORS BETTER MEET ACCOUNTABILITY GOALS. Because a key component of CS involves the use of critical thinking and problem-solving skills, CS courses and units can help schools better meet some existing state standards in these areas, as well as some math and science standards.

CS DIFFERS FROM USAGE. CS differs from computer literacy. Technology is everywhere, and students are using computers every day. Empower them to be creators and innovators of technology by teaching them CS skills.

WHAT CAN YOUR SCHOOL DO TO SUCCESSFULLY INCORPORATE COMPUTER SCIENCE EDUCATION?

IMPLEMENT COMPUTER SCIENCE CLASSES AS EARLY AS POSSIBLE (i.e., elementary grades). Provide rigorous and engaging Computer Science courses. Excellent curricula are available, as are additional units for integrating computing concepts into other content areas.

MAKE THE CONNECTION IN ALL CURRICULAR AREAS. Computational thinking (a set of problem-solving methods) is at the heart of Computer Science education. Many 21st century careers will require this important skill. Actively look for ways to embed computational thinking into your school's curriculum. Create a Computer Science leadership team to support school-career connections by talking about how sustainable careers of the future involve computational thinking skills and Computer Science.

MAKE COURSES ACCESSIBLE FOR ALL. Actively encourage and recruit a diverse range of students (underrepresented students of color or students with disabilities, for example) to take computer science classes, and be sure to employ inclusive pedagogies in these courses.

MAKE COMPUTER SCIENCE LEARNING FUN! Introduce technology in a way that connects with students, and have fun doing it. Develop learning content that is visual and interactive. Visit Likeable STEM (www.likeablestem.com/likeable-computing) for a wide range of computer science tips, programs, and activities.

Find out more: www.ncwit.org, csta.acm.org, csforallteachers.org, or www.acm.org.

CHECK OUT MORE NCWIT RESOURCES:

GUIDE TO INCLUSIVE COMPUTER SCIENCE EDUCATION
www.ncwit.org/csedguide

COMPUTER SCIENCE PROFESSIONAL DEVELOPMENT GUIDE
www.ncwit.org/cspdguide

COMPUTER SCIENCE IS FOR EVERYONE TOOLKIT AND POWERPOINT PRESENTATION
www.ncwit.org/CSEveryone_Toolkit

BRIDGING THE ENCOURAGEMENT GAP IN COMPUTING
www.ncwit.org/PracticingEncouragement

ENRICH PK-8 COMPUTING EDUCATION
www.ncwit.org/enriched

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