



The Computer Science Teachers Association (CSTA) is a membership organization created by ACM (Association for Computing Machinery), the premier organization advancing computing as a science and profession, to support and promote the teaching of computer science and other computing disciplines. It provides opportunities for K-12 teachers and students to better understand the computing disciplines and to more successfully prepare themselves to teach and to learn.

Computer Science education in America sorely needs attention

- The number of computer science teachers is decreasing overall, particularly within the high school and middle school grades.¹
- Minority students are dramatically underrepresented in K-12 computer science coursework. For example, less than 3% of AP Computer Science students in 2004 were African American.²
- Women are also underrepresented in computer science.³
- Less than 1 in 4 American high schools offers Advanced Placement Computer Science courses.⁴
- Fewer college students are enrolling in computer science courses, and fewer graduates with computer science degrees are going on to earn their Ph.Ds.⁵
- Government labor forecasts clearly indicate that we are not producing enough computer science graduates to meet the needs of industry or to compete in an increasingly global economy.⁶

¹ Market Data Retrieval, retrieved from <http://www.schooldata.com/>

² AP Report to the Nation, College Board, 2005

³ National Center for Education Statistics, Trends in Educational Equity of Girls and Women, 2004

⁴ Ibid.

⁵ 2002-2003 Taulbee Survey

⁶ Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2004-05 Edition, retrieved from <http://www.bls.gov/oco/ocos110.htm>

Computer Science benefits all students

- Computer science teaches students how to be innovative and solve problems—essential skills for students to be college- and career-ready.
- We need to teach students from all disciplines how computers actually process information. Even if we are not aware of it, computers are part of almost every aspect of our lives (banking, health care, shopping, travel, etc) and it is vital that we understand their capabilities and their limitations.
- All students need a basic level of knowledge about how to use computers safely and securely.

CSTA is working hard to address these issues

CSTA is addressing serious issues including: curriculum standards, certification, professional development and the need for more and better resources.

- CSTA provides a voice for K-12 computer science educators, both nationally and internationally, representing their interests at all levels of the educational system and with the state and federal authorities whose policies impact educational content, practice, and funding.
- CSTA provides up-to-date research on computer science education and new teaching strategies.
- CSTA works with teachers to build a community of educators committed to educational excellence.
- CSTA provides a bridge between high school educators, university educators, and the high tech industry.
- CSTA works with teachers to address critical needs for professional development and for the creation and distribution of key curricular, teaching, and resource materials.

As a policy maker, you can help raise awareness about the computer science crisis, and promote policies and programs to influence change. The influence you have as a community leader enables you to spread the word about the importance of computer science education, not only for those who will pursue careers in the field, but also for all students who are living in today's technology-driven society. Below are some specific suggestions for how you can help communicate the need for our nation to improve computer science education in our schools.

Spread the word

- Talk about the importance of computer science when you are speaking at events, and with other local leaders and community members.
- Include computer science in the 21st Century skills conversation. When people talk about the importance of Science, Technology, Engineering and Math (commonly referred to as "STEM" skills), emphasize and clarify the "T." Making the most of technology education is not just wiring schools or teaching students to use computers. That's only half the battle.
- Make sure conversations about the competitiveness of the United States include encouraging students to go into computer science careers and why it is so important for our nation to be a leader in this field.
- Talk to people in your community about outsourcing technology jobs. Explain how this trend can be combated by focusing on the education of future workers in our own country.
- Help dispel the myth that there are no job opportunities in computer science. There are many exciting and cutting edge jobs available, such as nanotechnology (activities at the level of atoms and molecules that have applications in the real world) and biometrics (e.g., fingerprint matching technology).

Assess future needs

- Ask what state and/or local school authorities are doing to ensure students are learning what they need to get the jobs of the future.
- Federal job statistics show software engineers, systems analysts and geneticists are top areas of future job growth. Talk to your local leaders and community members about what they see as future computer science job needs in their areas.
- Identify how much is being spent on computer science education in your state or local area, and determine if there have been cut backs on computer science education.
- To combat identity theft, illegal downloading, pirating and other disturbing technology trends, we need a large corps of professionals with strong computer science training—far more than are in today's pipeline.

Prepare your communities for future opportunities

- Communicate what kind of qualifications and certifications computer science teachers in your states are required to have.
- Ensure that schools of education and on-the-job professional development opportunities are adequately training computer science teachers in your area.
- Promote funding for computer science course equipment and materials.
- Encourage business involvement with area schools for support and mentoring opportunities. Explain the importance of businesses' role in the education of future workers.
- Point community members to the resources of nonprofit groups, such as CSTA, that provide curriculum models and other supports to computer science teachers.

CSTA Resources

www.csta.acm.org

Java Education Teacher Training (JETT) program
<http://jett.acm.org/>

Teacher Engagement for Computer Science (TECS) program **<http://tecs.acm.org>**

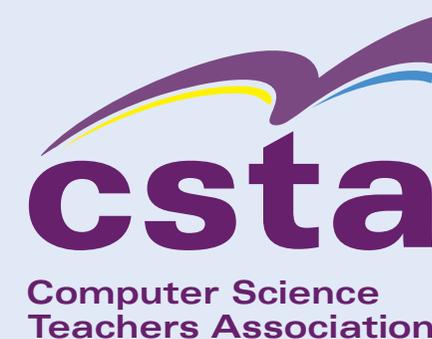
Model Curriculum for K-12 Computer Science
(http://www.acm.org/education/k12/curriculum_promo.html)

How to Contact CSTA

Chris Stephenson, Executive Director, CSTA
1515 Broadway
New York, NY 10036
800-401-1799
cstephenson@csta.acm.org



csta.acm.org



***Supporting Teachers &
Pursuing Excellence in K-12***

***A Guide for
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