NEW REPORT OUTLINES EXTENT OF PROBLEMS WITH CS TEACHERS' PREPARATION

Lack of Teacher Education Negatively Affects Students, Threatens the Computing and Tech Fields

New York, NY--December 9, 2008 – Even though many computing and IT jobs are categorized as “recession proof,” given the shortage of talent in the field, a new study points to another hole in the pipeline in preparing students and future employees for well-paid careers in computing. The Computer Science Teachers Association (CSTA) today released a report on the state of computer science (CS) teacher certification in K-12 education, adding to what is already known about the lack of attention by states to teaching computing skills. The report (pdf), titled Ensuring Exemplary Teaching in an Essential Discipline: Addressing the Crisis in Computer Science Teacher Certification, found that the lack of attention states pay in adequately preparing CS teachers is resulting in fewer students ready to tackle the complex technology and computing fields – key drivers in our nation’s economy.

“The current systems of pre-service education and teacher certification, if they exist at all, are profoundly disconnected from the discipline of computer science, and the needs of teachers and students,” stated Chris Stephenson, executive director of the CSTA and report co-author. “States need to tap people who understand the CS discipline to create certification requirements and processes that require and recognize computer science knowledge. Some states like Texas are doing this well, but the majority of states desperately need to follow their lead.”

The major findings and recommendations of the CSTA report are:

• The current computer science teacher certification system lacks clarity, understanding, and consistency.

• Where certification or endorsement requirements do exist, they often have no connection to computer science content.

• Any preparation program for computer science teachers must include the following four major components:
1. Academic requirements in the field of computer science.

2. Academic requirements in the field of education.

3. Methodology (a methods course) and field experience.

4. Assessment to document proficiency in general pedagogy, for example the *Praxis II: Principles of Learning and Teaching* Test.

“The findings are particularly troubling as we read today about the 2007 [Trends in Math and Science Study](http://www.trendsinalphabeta.org) (TIMSS) data that point to U.S. fourth and eighth grade math scores still lagging behind nations like Chinese Taipei, Singapore, Hong Kong SAR, Japan and the Russian Federation,” stated Michelle Hutton, president of CSTA and head of computer science at The Girl's Middle School in Mountain View, CA. “If students are not building a solid foundation in math and science, there’s little chance they will be able to master a CS course. This, paired with questionable CS teacher preparation, provides a grim outlook for the nation’s capacity for future competitiveness and innovation.”

The report proposes a four-level model for teacher certification that outlines the degree, certification, teaching experience, and academic work and field experience required to ensure that teachers are well prepared. The model addresses the needs of the four major groups from which K–12 computer science teachers are drawn:

- New teachers who are presently college or university students working towards their first teacher certification;
- Veteran teachers with a certification in another area who have never taught computer science;
- Veteran teachers with a certification in another area who have experience teaching computer science; and
- Individuals coming from business with a computer science background and no teaching experience.

The ubiquitous nature of computing and technology goes beyond banking online and searching the Web, and extends to national security, energy infrastructure and the financial industry, among many other sectors of the U.S. economy. Yet, for all the power technology and computing hold in our society, America remains woefully unprepared in teaching the skills necessary for these careers. CSTA was launched in 2005 by the Association for Computing Machinery (ACM) to respond to the need to improve the quality of K-12 computer science education, including creating high-quality resources that reflect the skills necessary in today’s workforce.

The models presented in the report are tied to [*A Model Curriculum for K-12 Computer Science*](http://www.csta.org) (pdf), a guide CSTA and the Association for Computing Machinery developed in 2006. Computer science education is defined in the report as “the study of computers and algorithmic processes including their principles, their hardware and software design, their applications, and their impact on society.”
About ACM
ACM, the Association for Computing Machinery [www.acm.org], is the world’s largest educational and scientific computing society, uniting computing educators, researchers and professionals to inspire dialogue, share resources and address the field’s challenges. ACM strengthens the computing profession’s collective voice through strong leadership, promotion of the highest standards, and recognition of technical excellence. ACM supports the professional growth of its members by providing opportunities for life-long learning, career development, and professional networking.

About CSTA
The Computer Science Teachers Association is a membership organization that supports and promotes the teaching of computer science and other computing disciplines by providing opportunities for K-12 teachers and students to better understand the computing disciplines and to more successfully prepare themselves to teach and to learn. [http://csta.acm.org/](http://csta.acm.org/)