



Voice

CS CAREERS

The Voice of K-12 Computer Science Education and its Educators

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Your Symposium Invitation

Chris Stephenson, CSTA Executive Director

Plans are now well underway for the seventh annual Computer Science and Information Technology (CS&IT) Symposium and the organizers are putting together another dynamic learning experience for the attendees.

The CS&IT Symposium is held every year in conjunction with a major educational computing conference such as the National Educational Computing Conference (NECC) and features a full day of practical and cutting-edge professional development for K-12 computer science and information technology teachers.

This year's symposium, which will take place June 28, 2007 in Atlanta, will feature top-notch keynotes and an expanded selection of breakout sessions. The conference will include sessions on the new AP case study, troubleshooting

your lab, Alice, robotics, Google, Python, and Flash programming just to name a few. There will also be two BYOL (bring your own laptop) sessions, one on programming games in Microsoft XNA and the other on Wikipedia.

Attendees will also receive all kinds of giveaways and a chance at a range of great new gadgets in our annual raffle.

Registration for the CS&IT Symposium will begin in March. For more information, or to register for the symposium, please visit www.csitsymposium.org. Registration is limited, so be sure to register as soon as possible.

CS&IT 2007 is hosted by the Computer Science Teachers Association (CSTA) and the International Society for Technology in Education (ISTE) and is sponsored by Microsoft.

Creating a Future in Computing

Skills Students Need

Kevin Schofield

I am often asked how students should prepare for careers in the field of computing—even before college. Over time, through my experiences both as a programmer and as a manager of technical employees, I've developed a particular philosophy about the skills, knowledge, and personal traits that correlate most with success.

The obvious answer would be a list of specific programming languages or other technical expertise. I actually think that's

the wrong approach; technologies, and even languages, change frequently enough that specific knowledge of them has a relatively short shelf-life. However, experience doing programming—in any language—as well as an understanding of the way that classes of technologies work, such as relational databases or web servers, are very helpful. The thought processes needed to perform these activities help students develop a mental model of "how things work."

IN THE NEXT
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THE VOICE

Innovative
Teaching

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Letters to the Editor are limited to 200 words and may be edited for clarification.

CREATING A FUTURE IN COMPUTING

continued

There are certainly core aptitudes that everyone should have; mathematical reasoning and communications skills top the list. Math is essential in order to be able to think through algorithms. Likewise, the ability to articulate your ideas to fellow employees, verbally and in writing, is essential in any workplace—including technical positions. Your great ideas are useless if you can't convey them clearly to someone else.

Beyond these core skills, there are some very specific traits that I find in the very best technical workers. Students should be encouraged to begin developing these abilities in middle and high school. The first is problem-solving, because that's what computer science is all about. In fact, many people in technical careers aren't computer scientists; however, they are successful because of their excellent problem-solving skills. Many people I work with, who are talented programmers, believe that actually writing the code to implement a function is the least interesting part of the software development process. Coming up with the solution to the problem at hand is the fun part of the job for them.

Technology and programming languages change over time. The corollary to that axiom is that the ability to quickly learn new things is essential. If you're not learning, you're becoming obsolete.

Likewise, it's important that technical workers understand that they can't wait for someone to tell them which new technologies to learn; they should be self-directed. Fortunately, a healthy curiosity solves much of that problem, and teachers would do well to encourage that kind of curiosity and exploration.

I would also suggest that "generalist" skills are very important—and very underappreciated. Software design is inherently interdisciplinary; here at Microsoft we hire graphic designers, psychologists, anthropologists, ethnographers, and a host of other domain experts to work side-by-side

Your great ideas are useless if you can't convey them clearly to someone else.

with programmers in the design of a piece of software or hardware. It truly takes a village to build software, and someone needs to be able to integrate all the different domains with their diverse perspectives into a coherent whole. Those who can learn about fields outside their own area of expertise and help to bridge the gap in interdisciplinary teams will quickly rise to leadership positions.

Finally, I've observed that the most successful tech workers are the ones who have a real passion for making a difference and who bring that *continued on page 5*

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CSTA Voice is a publication of the Computer Science Teachers Association.

CSTA Voice is a quarterly publication for members of the Computer Science Teachers Association. It provides analysis and commentary on issues relating to K-12 computer science education, resources for educators, and information for members. The publication supports CSTA's mission to promote the teaching of computer science and other computing disciplines.

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Careers in Computing and Information Technology

A Lesson Plan

This lesson plan is designed to accompany the *IT's All About Me* poster. The poster is available in PDF format from the CSTA website at: <http://csta.acm.org/Careers/Careers.html>.

Objective:

- To inform students, regardless of gender, about information technology (IT) and its role in various career fields.
- To encourage students to look beyond the stereotype of “computer scientist” and to explore technology jobs which would appeal to people with various interests and skills.
- To foster curiosity about IT and the careers related to IT.

Brief Outline:

- Students will identify how IT integrates into various career fields.
- Students will identify how specific IT skills support the work of professionals in various fields.

Resources:

- *IT's All About Me* careers poster (csta.acm.org/Careers/Careers.html)
- Internet access for each student group
- Internet sites that demonstrate CS and IT involvement in various careers (see links below)
- Large chart paper and markers

Class Time Required:

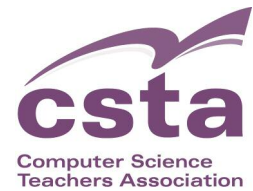
The expected in-class completion time is 45 minutes to one hour.

Procedure:

1. Display the poster so that students can see it clearly. Ask students to describe what they see happening in the small photographs embedded within the poster. Ask them to explain how the words near each picture relate to the activities they described.
2. Ask students to list technology careers that relate to or support the activities they identified. Alternatively, provide a list of technology careers. Students should be encouraged to be broad in their definitions; for example “radiation technician” would be an appropriate response for the medical picture.
3. Divide students into small groups. Each group should choose one career from the list brainstormed in step 2. They should research the career and create a poster describing the career, the education required, other fields that employ this IT career, and a possible career path. Students should be encouraged to be creative with the poster by including pictures and images.
4. At the end of the session, each group should share its poster with the entire class. Students should detail what they learned and how their understanding of IT careers changed.
5. As a class, develop a definition of “computer scientist.” Encourage students to use their new understanding of IT careers to form their definition.

Closure:

For homework, students can interview their parents or neighbors about the IT professionals they know and create a list of the things IT professionals do in the companies for which they work.



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The editorial board of the **CSTA Voice** is dedicated to ensuring that this publication reflects the interests, needs and talents of the CSTA membership. Please consider sharing your expertise and love for computer science education by contributing newsletter content.

Potential writers for the **CSTA Voice** should send a brief description of the proposed article, estimated word count, statement of value to members, author's name and brief bio/ background info, and suggested title to the editor at: cstapubs@csta.acm.org. The final length, due date and title will be negotiated for chosen articles. Please share your knowledge.

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ACM founded CSTA as part of
its commitment to K–12
computer science education.

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CAREERS IN COMPUTING AND INFORMATION TECHNOLOGY

continued

RECOMMENDED SITES:

Girls Inc. www.girlsinc.com/

This website provides information about science and technology careers. Profiles of professionals, as well as games and activities, are available.

University of Washington-Why Choose CSE? www.cs.washington.edu/WhyCSE

This website contains videos and profiles of University of Washington graduates who work in IT. It is recommended that students view the *A Day in the Life* video as well as access the additional profiles offered.

4000 Years of Women in Science crux.astr.ua.edu/4000WS/4000WS.html

This website profiles important contributions of women in science over the last 4000 years. Point out the contributions to computing made by Grace Hopper and Ada Lovelace.

Role Model Project for Girls www.womenswork.org/girls/compsci/

This site randomly displays the biography of a woman in science or technology.

Girl Geeks www.girlgeeks.org/

This is an online community for girls interested in technology and computing.

Women in Technology International www.witi.com/

This website is primarily for professionals, but the Hall of Fame, Photo Gallery, and Women on the Move sections under WITI Community can be useful for the purpose of learning about careers in CS and the women who work in them.

Finding the New Joy of Computing

Peter J. Denning, PhD

Kids often make choices from their hearts rather than from their heads. The lure of choosing a profession because of money or getting in on the ground floor is less powerful than the admiration of a teacher, hero, innovator, or leader. We can help our students find the joy in computing if we, as teachers, cultivate in ourselves the two qualities that we admired most in our own teachers: helping us to play in "big games," and providing "adult leadership."

My high school math teacher, Ralph M., was the faculty advisor for the science club. He encouraged everyone to join the club and to participate in "big games"; he insisted that every club member prepare a project for the annual science fair. Noting my curiosity about computers, he told me to build a computer. Flabbergasted, I asked, "How can I possibly do that? There are no computer courses to teach

me what to do." He responded, "Computers are going to be a very 'big game.' You can be one of the pioneers who make that happen. Go learn what you can about computers now, and build one." And so I did. My project won first prize in the fair.

In graduate school, MIT's Project MAC brought me into an even bigger game. The "computer utility" was an early view of the Internet that envisioned a universal, inexpensive network computing service. To access it, you would plug a terminal into a wall socket, as with the electric utility. I was part of a community developing new concepts to make the computer utility real—concurrent process control, time-sharing, virtual memory, inter-process communication, user interfaces, object programming, packet networks, and much more.

These two “big games” brought me great joy and inspired a whole generation of computer scientists. Soon thereafter, in the late 1960s, the ACM Curriculum Committee sought to capture the core principles we had learned so that our students would learn them faster and experience the same joy we experienced; so we hoped.

Now, forty years later, the technologies based on those core principles (processes, virtual memory, networks,

We shared all sorts of issues from our lives with him and he rewarded us with valuable insights.

etc.) are mature. They are part of every network and operating system. We hardly notice them at all. And here’s the punch line: They no longer bring the joy of discovery to those who learn them. In its ability to motivate students, the 1960s framework for understanding core principles is obsolete.

There are many more applications of computer technology today than there were in the 1960s. They abound in art, music, entertainment, games, information management and discovery in the Web, biotechnology, genetic medicine, genetic engineering, development of new materials, nanotechnology, cosmology, deep space exploration, and more. Much joy awaits students who focus on these possibilities. Some might ask, “If our students are busy with big projects, when will they learn the basic principles?” I say, “Get

students to play in ‘big games’ involving computing. They will taste the joy of discovery. They will become interested in the principles. More important, they will discover new ones.”

Ralph M. was a superb science coach and adult leader. He inspired us with the possibilities of new worlds we could create. He got us to start building those worlds with our own hands. He promoted us with other people and showed us that they would take our ideas seriously.

He instilled in us the rigorous habits of thought needed for math, science, and engineering.

He counseled us about our relationships,

cars and sports, and art and music. We shared all sorts of issues from our lives with him and he rewarded us with valuable insights. Because of his grounding in life, we could envision rich and rewarding lives for ourselves as mathematicians, engineers, or scientists.

We often wonder why so many high school kids are attracted to sports rather than science and engineering. I don’t think it’s the lure of money or professional sports; it’s simply that most sports coaches are great life coaches. Students look up to them and admire them.

As teachers, let us be not only science coaches, but also life coaches for our students. Our students will see that practicing in computing is a source of wisdom, as well as joy. Playing in “big games” with help from “adult leaders” is a winning combination to win hearts.

CREATING A FUTURE IN COMPUTING

continued from page 2

enthusiasm to work every day. As educators and leaders we can inspire and encourage that kind of passion in students.

This is the most exciting time that the field of computing has ever seen, because we can clearly see how computing is changing people’s lives for the better around the globe and we can easily envision the even greater impact it will have in the near future. Computing has become a raw construction material for

building the world around us and an essential part of nearly every profession. By broadening the way we think about tech careers and the skills and experiences that are useful in applying technology to solve real problems, we also make those tech careers available to a much wider population and in the process we broaden the diversity of the tech workforce. That’s a good thing for everyone: for the people who will take up those jobs, but also for everyone who will use the products and services that they produce.

Meet the Authors

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Letter to the Editor

A Teacher Shortage?

As a retired Air Force member with a Master's in CS and Engineering from Auburn University, I assumed a place could be found for me within the K-12 system using "Troops to Teachers." As a technical instructor in the AF for three years I earned a "master instructor" rating while teaching theory and maintenance for nuclear weapons, so I further assumed I would be a "shoe-in." Additionally, over the years I taught software reuse, domain engineering, Windows/Office applications, OS/2, and Notes.

Having investigated the path to a teaching career, and taking and passing both the *Basic Skills* and *Technology Specialist* tests, I'm told no path exists for me to become a teacher in Illinois unless I pay for classes already taken while in the AF (e.g. Instructional Systems Development), including practice teaching. Even after doing so the salary would be that of a "fresh out" teacher, with no credit for prior teaching. My peers would be recent college graduates.

"Troops-to-Teachers" mentions "stipends of up to \$5,000 ... \$10,000"—the key words here are "may", "up to", and "targeted school." I must pay for classes I don't need in the hope of getting reimbursed up to \$10,000—or let the government pay for the classes up to \$5,000. If I did either, someone would then tell me which "targeted school" to report to (where the "normal" teachers refuse to go) and I would be paid the minimum amount possible for doing so. Oh, and don't forget—there is no guarantee of a job at the end of the process. Here is the applicable portion of the response I received from ISBE on this very issue: "...your proposal is something they need in schools, the problem you have is you are not in the system." Duh! (and sic).

The Department of Defense operates several "real" schools where technical subjects are taught, including computer science. These instructors should have a clear path to teaching positions within the K-12 system.

Mark Sadler
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Equity in action:

IBM Supports HBCU's

Robin Willner, Vice President, Global Community Initiatives

As part of its efforts to expand the pipeline for science, technology, engineering, and math careers among African Americans, IBM is providing more than \$2 million in support of Phase 2 of the Technology Transfer Project.

The Executive Leadership Council, the nation's premier leadership organization of the most senior African American corporate executives in Fortune 500 companies, has moved its Technology Transfer Project (TTP) into Phase 2 of its mission to prepare students at historically black colleges and universities (HBCU) to use technology for advanced career success in information-driven work environments. TTP Phase 2 is supporting seven historically black colleges and universities in six states and the District of Columbia in a cross disciplinary, curricula transformation initiative.

The focus of the initiative is on new course development, faculty training, curricula assessment, and delivering new student teaching modules designed to enrich student learning and competency in using information technology. Students taking the courses are exposed to current, on-demand technology curricula. Technologies being used and taught are both IBM and open source offerings including Linux, Eclipse, DB2, Java, and Rational.

In 1996, Phase 1 of the TTP offered HBCUs innovative technologies to create an academic blueprint to help HBCUs bring a technology focus and direction to their academic environments.

During 2004, seven HBCUs were selected to participate in the initial offering of the TTP Phase 2. These seven institutions are: Florida A&M University, Hampton University, Howard University, Morehouse College, Morgan State University, North Carolina A&T State University, and Tennessee State University. The Executive Leadership Council plans to invite additional HBCUs to participate in 2006.

"This partnership is a win-win for everyone involved and an inspiration to the students and institutions engaged in educating tomorrow's workforce in the innovative use of technology," said Carl Brooks, President and Chief Executive Officer of The Executive Leadership Council.

The TTP initiative has succeeded in helping HBCUs address enterprise wide issues related to technology. Institutions that participated in Phase 1 leveraged the opportunity to create or enhance their campus technology infrastructures, develop technology strategic plans, enhance faculty and student development in technology, and address instructional technology issues.

The demand for innovation in society can only be fully addressed by utilizing talent from every community," said Al Zollar, General Manager of IBM Tivoli Software and Executive Leadership Council member. "IBM is helping to improve the availability of highly-skilled diverse talent by partnering with The Executive Leadership Council to provide HBCUs with the latest technologies that will drive innovation."

Promoting CS Education

Tomorrow's Information Technology Leaders

Daniel G. Gallagher, Dean of University Admissions

The renewed interest and opportunities available to students in the fields of computer science (CS) and information systems prompted Stevens Institute of Technology to host a workshop for high school CS teachers in order to share the news. The October, 2006 workshop aimed to dispel the myths of outsourcing, low job demand, and dead-end jobs by illustrating the exciting changes and challenges facing leaders in the information age.

Because of a shortage of students in CS there is a high demand on those who are graduating. Higher salaries and multiple job offers are the norm for these students. By January of 2007, 40% of the May 2007 CS Stevens graduates were placed in a job, as compared to 33% at the same time in 2006. In addition, U.S. starting salaries last year for CS majors averaged \$50,892, placing them fifth on the list compiled by the National Association of Colleges and Employers (www.nacweb.org).

The growth in database development by businesses and in electronic transactions by the banking and financial sectors has placed pressure on the employment levels of CS personnel. The more dependent we become on collecting and storing data, the greater the emphasis will be on security and as a result, opportunities in cybersecurity will grow rapidly in both the private and government sectors.

The bright outlook for students in CS was the major theme emphasized throughout the day by presenters including Jerry Luftman and Christine Bullen of Stevens Institute of Technology and Albert Schneider of IBM, as well as a panel of Chief Information Officers from various companies. The experts cited an aging IT workforce, low enrollments in CS training throughout the U.S., and new disciplines as factors which have lead to increased CS career opportunities. Panelists discussed the attributes that companies look for in job candidates: a strong technical back-

ground coupled with project management and business skills.

JoAnn Winson, an IBM representative, described teaching resources available to high school faculty for computer classes, including online lessons, syllabi and programs. Daniel Gallagher, Dean of Admissions, and Professor Dominick Duggan, Department Chair of Computer Science, both from Stevens Institute of Technology, discussed the qualities that universities look for in CS degree programs applicants. Successful applicants have high academic performance with an emphasis on math-based courses. Students should also understand the significant differences between CS programs offered at technical/engineering universities and at liberal arts colleges.

Leigh Ann Sudol of the Fox Lane School detailed the benefits of CSTA membership to fellow educators.

Participants had the opportunity to share their thoughts and concerns. Many felt frustration with the lack of support for CS education at the secondary level. Others were concerned over declining enrollments and wondered about how to reverse the trend. Participants felt that additional workshops that included both teachers and students, such as the one Stevens is currently organizing for the spring, would be beneficial and they felt positive about the opportunities in CS and information technology.

Now is the perfect opportunity for students to take advantage of the global workforce shortage of CS workers. By explaining the positive employment projections, rising salaries, and countless applications of a CS education, you will help your students prepare for the careers of the future.

The workshop was sponsored by IBM, the Society of Information Managers (SIM) and Stevens Institute of Technology.

COMPUTING AND SCIENCE—A SHIFT

“... what this report uncovers, for the first time, is a fundamentally important shift from computers supporting scientists to ‘do’ traditional science to computer science becoming embedded into the very fabric of science and how science is done, creating what we are prepared to go so far as to call ‘new kinds of science.’”

Towards 2020 Science, 2006

Teaching Ethics

Piracy and Privacy

J. Hannah Monisha

As a lecturer in computer science at a Government College in India, I am becoming increasingly convinced that instilling values in the minds of future professionals lies in the hands of the teachers and that the only way to stop piracy and ensure privacy is by educating students.

Recently, I conducted a survey among 200 students at my college to determine their awareness of e-ethics issues. The study showed that the majority of these students (67%) are aware of copyright issues and they perceive relationships between illegal and unethical issues. The remaining 33% of students, however, are unsure of their legal and ethical responsibilities. Of the “unsure” students, 21.1% stated that copying software for educational use is legal. Even more disturbing is that 10% of these students stated that it was also ethical to use copied software for educational purposes.

The results were similar for questions on spreading harmless viruses, peeping into a friend’s e-mail box, and submitting a downloaded assignment. Many students are unaware that piracy is equivalent to theft or that sharing their passwords with friends is a grave mistake.

Educational institutions face a huge challenge in finding ways to educate students on legal and ethical behavior in the e-world. In this new era of cyber media, however, we must teach our students in the same way we teach preschoolers. The perfect time to begin the training is when students first begin exploring the Internet. They need to be made aware that privacy is valuable and they must protect their privacy and value the privacy of others. When children begin using computers to gather information for school projects, the responsibility lies with the teacher to tell the child, “Taking away another’s intellectual property is also stealing.” There are several ways in which teachers can effectively address e-ethics in the classroom.

- Tell stories and share incidents of e-ethics.
- Have your students read case studies that involve ethical decisions. Discuss and debate their decisions with them. Describe the ethical decision you would make based upon your experience and knowledge of the law.
- React to bad behavior. When you come across an assignment of downloaded material without proper acknowledgement, reject it. Encourage students to be creative and show your appreciation when they are.
- Talk about cyber laws and describe the punishments for illegal behavior. The fear of punishment provides an extra boost of motivation to do what is right.

Too many young people think there is nothing wrong in pirating, hacking, or misusing a computer. The “Just for Fun” attitude can lead to dangerous e-ethics. Teachers play an important role in helping students understand why such behavior is dangerous to themselves and others.

In the earliest moral development stages of a child, called the pre-conventional level, right and wrong is learned from parents. Parents explicitly teach children to not take the property of others. They learn that stealing is wrong. They must be explicitly told in these early years that taking intellectual property is stealing.

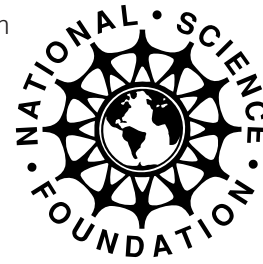
For a teenager, in the conventional level of moral development, friends and peers play a major role. During this stage, curiosity can lead young people to read others’ email, send fake emails, use a parent’s credit card number, create and distribute harmless viruses, or illegally copy software. Again, they must be explicitly taught that these activities are wrong.

Morality must catch up to technology. When we achieve this goal, the world will be equipped to step fearlessly into the e-world.

SHOW ME THE NUMBERS Americans Turn to the Net Millions who use it for life’s tasks

- 21,000,000 - get career training
- 17,000,000 - deal with illness
- 17,000,000 - choose a child’s school
- 16,000,000 - buy a car
- 16,000,000 - make financial decisions
- 10,000,000 - locate new home
- 8,000,000 - to change jobs

SOURCE: Pew Internet and American Life Project



MARK YOUR CALENDAR

Southern California Computer Science Conference

March 3 in Irvine, California
www.ics.uci.edu/sccs

SIGCSE 2007

March 7-10 in Covington, Kentucky
www.cs.potsdam.edu/sigcse07/index.shtml

Oregon Computer Science Teachers Association Spring Conference

March 10 in Salem, Oregon
www.superquest.org

The Twenty-First Annual Willamette University High School Programming Contest

March 10 in Salem, Oregon
fruehr@willamette.edu

Consortium for Computing Sciences in Colleges (CCSC-Midsouth)

March 30-31 in Monroe, Louisiana
www.ccsc-ms.org

Consortium for Computing Sciences in Colleges (CCSC-Central Plains)

April 13-14 in Springfield, Missouri
www.ccsc.org/centralplains

Consortium for Computing Sciences in Colleges (CCSC-Northeastern)

April 20-21 in Rochester, New York
www.ccscne.org/2007

Consortium for Computing Sciences in Colleges (CCSC-South Central)

April 27-28 in Wichita Falls, Texas
www.sci.tamucc.edu/ccsc

Schubmehl-Prein Essay Contest on Social Impact of Computing

Deadline: May 31
www.cse.nd.edu/EssayContest/

National Educational Computing Conference (NECC)

June 24-27 in Atlanta, Georgia
center.uoregon.edu/ISTE/NECC2006/about_NECC/future_NECCs.php

Innovation and Technology in Computer Science Education (ITICSE2007)

June 25-27 in Dundee Scotland
iticse2007.computing.dundee.ac.uk/

Computer Science and Information Technology (CS & IT) Symposium

June 28 in Atlanta, GA
www.csitsymposium.org

Advanced Placement (AP) Annual Conference

July 11-15 in Las Vegas, Nevada
www.collegeboard.com/apac/2006/2007/index.html

CS4HS: Explorations in Computer Science for High School Teachers

July 3-6 in Pittsburgh, Pennsylvania
www.cs.cmu.edu/cs4hs/

Passport Program

University of Maryland College Park
Check site for dates
www.cs.umd.edu/Passport

RESOURCES

Here's more information on topics covered in this issue of the *CSTA Voice*.

Page 1: CS&IT Symposium www.csitsymposium.org

Page 1: Kevin Schofield's blog on Channel 10 www.on10.net/blogs/kevinsch/

Page 3: *IT's All About Me* poster csta.acm.org/Careers/Careers.html

Page 4: Peter Denning <http://cs.gmu.edu/cne/pjd/GP>

Page 6: Troops to Teachers www.ed.gov/programs/troops/index.html

Page 6: National Association of Colleges and Employers www.nacweb.org/

Page 6: Stevens Institute of Technology www.cs.stevens.edu/

Page 6: White House Initiative on Historically Black Colleges and Universities
www.ed.gov/about/inits/list/whhbcu/edlite-index.html

Page 7: Towards 2020 Science, 2006 research.microsoft.com/towards2020science/

Other recommended resources:

- *The New Educational Imperative* csta.acm.org/Publications/sub/Documents.html
- *ACM Model Curriculum* csta.acm.org/Publications/sub/Documents.html
- ACM Digital Library portal.acm.org/portal.cfm
- *Peopleware*, by DeMarco and Lister www.dorsethouse.com/books/pw.html
- National Center for Education statistics nces.ed.gov/fastfacts/display.asp?id=71



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