



Voice

ADDRESSING EQUITY

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

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Critical Issues in Computer Science Education

Numbers tell the Story

By Robb Cutler, President, CSTA

The numbers tell the story. Only 15% of the students taking the Advanced Placement Computer Science exam in May, 2004 were female. Only 5% were self-identified as Latino and less than 3% were African-American.

Contrast this with girls representing 30% of students taking AP Physics, 46% of students taking AP Chemistry, and 58% of students taking AP Biology. Nine times as many African-American students took the AP Biology exam last year as took the AP Computer Science exam. Four times as many Latino students took the AP Chemistry exam as took the AP

Computer Science exam.

Similar statistics pervade the non-AP computer science courses as well. Clearly, in terms of reaching everybody, we're not doing the job.

Join us in this issue of the *CSTA Voice* as we look at the challenges encountered and progress made in improving equity in computer science. Inside you'll find ideas for involving the community in the solutions, revisit the CS & IT Symposium, discover new resources such as films and websites, and learn the strategies developed by educators and researchers in Virginia, Wisconsin, and California.

Diversifying the Computer Science Pipeline in LA High Schools

By Joanna Goode, Ph.D. and Jane Margolis, Ed.D.

A new study at UCLA addressing why so few African-American, Latino/a, and female high school students are choosing to study computer science may provide important new strategies for achieving equity.

For the past four years, the "Out of the Loop" research team at UCLA has been investigating this topic. Three very diverse schools in the Los Angeles Unified School District (LAUSD) provided the data for the research.

The researchers found that when a differentiation is made between basic low-level "computer literacy" skills and computer science, there are dramatically dif-

ferent learning opportunities for different groups of students. While schools may have a plethora of computers, schools serving lower-income students of color commonly fail to make available the more challenging college-preparatory academic computing courses (such as AP CS).

The data also reveals how the lack of computer science learning opportunities for students is correlated with the struggles of computer science teachers. The research shows that most of the teachers at these schools had never attended professional development training for computer science educators, had difficulties with counselors who had mistaken

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Letters to the Editor may be edited for space or clarification.



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

LA HIGH SCHOOLS

continued

notions of computer science (and often used computing courses as a “dumping ground”), and received inadequate curriculum support.

The Computer Science Equity Collaborative, which consists of leaders from the LAUSD, faculty and researchers from the UCLA’s Graduate School of Education & Information Studies and UCLA’s School of Engineering and Applied Science, was formed to address the problems. The result was a two-week UCLA/LAUSD summer institute that provided 25 LAUSD

teachers with Java instruction, pedagogical strategies, cutting-edge examples of computer science university projects, and a network of teachers with whom to form professional relationships.

Leaders modeled different teaching techniques aimed to engage all students, especially females and students of color, in doing interesting computer science activities. The teachers participated in object-oriented programming role-playing activities, worked in groups, and expanded their own understandings of 21st century computer science. The institute concluded with a luncheon at which funders, university and school administrators, school counselors, and teachers came

together to celebrate the collaborative commitment to diversifying the field of computer science.

This pilot institute was followed by rapid and dramatic success. The number of AP Computer Science courses in the district doubled, the number of Latino students tripled, and the number of female students doubled. There was also a small increase with African American students, and more work to be done to

The number of AP Computer Science courses in the district doubled, the number of Latino students tripled, and the number of female students doubled.

better serve this student population.

Throughout the 2004-5 year, we supported a group of these teachers and their students monthly on Saturday mornings for more intensive instruction in anticipation of the AP exam.

These promising developments have occurred over a relatively short period of time and these reforms are fragile and vulnerable unless there is continual support and attention. The Computer Science Equity Collaborative is developing a committed alliance of critical stakeholders that will help sustain these developments, collaborate to build the capacity in LA public schools to teach and engage traditionally under-represented students in

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computer science, and conduct research that will expand our knowledge to broaden participation in computing. Future plans include articulating a model for building K-12/university alliances that other districts and states can coalesce

around in their efforts to increase the diversity of computer science education.

For more info: <http://outoftheloop.gseis.ucla.edu/>

This research was funded by the National Science Foundation.

CS Rocks!

By Kate Conley

"CS Rocks!" was the message delivered at the sixth annual Computer Science & Information Technology Symposium, held in Philadelphia, PA, on Sunday, June 26. That message (which was imprinted on rock-shaped squeezable stress reducers included in the registration materials) was reinforced throughout the day by speakers from education and industry, including Duke University, IBM, Mount Carmel High School (Belmont, IL), the University of Waterloo, and Microsoft.

Stephenson commented that several teachers approached her to say how delighted they were to have attended

High school computer science teachers, information technology teachers, and other educators gathered at the Loews Philadelphia Hotel for what Symposium Chair Chris Stephenson promised would be an invigorating day. Attendees came from as far away as Hawaii and South Africa to find out what's new in computer science and information technology education.

The symposium, which is co-hosted by the Computer Science Teachers Association (CSTA, www.csta.acm.org) and ISTE (www.iste.org), provides a comprehensive cross-section of practical, relevant information to help teachers prepare their

students for the future.

Symposium attendees were highly engaged and often amused. There was as much laughing as there was critical thinking going on in Fran Trees's session on recursion in which she and a cadre of participants wore Groucho Marx disguises and sang songs to illustrate key computer science concepts.

Returning attendee Janet Meizel, from the Davis Joint Unified School District (CA), said enthusiastically, "It was a terrific day!" Several teachers also noted how important it is to have opportunities to participate in relevant professional development.

Other topics covered included: kinesthetic learning activities, Flash programming, student perspectives on the social relevance of CS, and ideas for creating a comprehensive body of resources to support the implementation of a U.S. K-12 computer science curriculum.

Find complete presentation descriptions, materials, handouts, resources and other details about upcoming or previous symposia at the CS&IT Symposium Web site: <http://www.iste.org/profdev/symposia/cs/2005/jun/>.

The CS&IT Symposium is sponsored by Microsoft.

Finding a Computing Curriculum that Fits

By Chris Stephenson

An increasing number of countries are beginning to address issues of global technological competitiveness by focusing on needed improvements to computer science education beginning at the high school level.

In a National Science Foundation sponsored panel at the National Educational Computing Conference (NECC) on June 28, 2005, speakers from five countries including the United States, described

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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:

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Your First Year of CSTA Membership is FREE!

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Build a Regional Presence

Bring your colleagues to CSTA

The strength of CSTA will be enhanced with strong regional networks of computer science teachers. Knowing CSTA members in your area builds a better organization by:

- ◆ Welcoming new members
- ◆ Overcoming the isolation teachers experience in their schools
- ◆ Facilitating discussion of local issues

Our membership is growing steadily and rapidly. CSTA now has more than 2500 members! It is not always easy, however, to locate teachers, to let them know about CSTA, and to offer them a chance to become members. You can help.

Tell the computer teachers in your community about CSTA.

Spread the CSTA website URL (csta.acm.org)

Share the availability of CSTA resources.

Download and distribute the CSTA flyers (<http://csta.acm.org/Membership/sub/CSTAFlyers.html>)

Together we can build and support more robust local teacher networks and CSTA.

FINDING COMPUTING CURRICULUM

continued

their current computer science curriculum for high schools and the issues that surround its implementation.

Speakers from Canada (Ontario), Israel, Scotland, and South Africa discussed the importance of supporting computer science education as a means to ensure the economic futures of their countries. The panel chair, Dr. Anita Verno from Bergen College in New Jersey, noted that U.S. efforts are currently focused on developing and enhancing the curriculum model framework proposed by the ACM (*A Model Curriculum for K-12 Computer Science*) but that these efforts are being seriously hampered by a lack of understanding in the U.S. of the connection between ensuring that students have the opportunity and incentive to develop technological skills and our long-term economic survival in a global economy.

All of the speakers noted that a solid curriculum is only the beginning of bringing real changes to the classroom. Several also noted that their country's efforts to implement a new national curriculum were initially hampered by insufficient time for teacher training, a lack of timely resources specifically geared to the new curriculum contents, hardware problems, and budgets that did not account for on-

going training and revisions.

As a way of bringing the panel to a close, Verno asked each speaker to give his or her parting words of advice and here is what they had to say:

Chris Stephenson (Canada)

"A great curriculum on paper is never enough, and the only people who are going to make it work are teachers who care about their own professional interests."

Judith Gal-Ezer (Israel)

"Teachers are the cornerstone of this curriculum and we need more in-service and pre-service training, and we need a budget for this."

Jackie Martin (Scotland)

"Make sure you install your computer system before the day that you need to use it."

Mike Chiles (South Africa)

"Make sure that you have the funding and the trained staff to be able to implement the subjects."

Anita Verno (United States)

"I think it is time to make a broad commitment to CS education at the K-12 level so that our students can compete in this global environment that we are now a part of."

Meet Ellen Spertus

By Michelle Hutton

Ellen Spertus is Associate Professor of Computer Science at Mills College in California and part-time software engineer at Google. She is well known for a variety of accomplishments, including being "MIT cubed" (bachelor's, master's, and Ph.D. from MIT in computer science), authoring *Why Are There So Few Female Computer Scientists?*, and being voted "Sexiest Geek Alive" in 2001.

Michelle Hutton: How did you get interested in gender issues in computer science?

Ellen Spertus: I was interested in computer science pretty much always. I had access to computers when I was little even before the personal computer. When I was growing up I felt that computers and math were

male things. I used to think that men were more suited to things like computer science.

When I got to college I changed my mind. In my junior year I took a women studies class called 'Women in Literature.' That was the first time I had been assigned books by women. I had just assumed that there were no great books by women, because I hadn't been assigned any before. I had assumed that I lived in a meritocracy where the best work and the best people were recognized. What I was finding out was that you needed women studies and other special programs to highlight the excellent work done by women.

In my senior year I took a course on 'Gender in Computers.' For my term paper I decided to write *Why Are There So Few*

Female Computer Scientists? It was the question that I had wondered about. And coming to college, I had started with the hypothesis that maybe boys were smarter. But once I looked through the research I saw that in fact it wasn't a level playing field, and that in computer science and related fields, there were still a lot of barriers to girls and women.

MH: One of the classes offered at Mills is called 'Interdisciplinary Computer Science.' I am very curious about that at the college level because we encourage high school teachers to teach in this way.
ES: I am very enthusiastic about that program. We have a set of graduate programs

I should be considered the sexiest geek alive, or at least among the competitors.

titled 'Interdisciplinary Computer Science.' They are meant for people who have a bachelor's degree in a different field, but who want to learn computer science and combine it with another field. For example, someone may come in who has been a teacher and wants to combine education and computer science. Some people combine music with computer science. The program is co-ed but it's geared toward the aspirations of women. Many wouldn't have thought about majoring in computer science. They majored in something more traditional but later discovered an interest or talent in computer science. There is a theory that women are more interested in applying computer science to doing things that will benefit others as opposed to pure science where the result is less obvious.

MH: What advice would you give young women thinking about entering the field of computer science or related technologies?
ES: Don't worry that men won't like you if you are smart or good at math or computers because that's not really true. There may be some men that feel that way but they wouldn't make good boyfriends or husbands anyway. A lot of men like smart women and in computer science there are a lot of men. So you will be the belle of the ball if you go into a computer science department. Of course that's not the reason

you should do it. But certainly don't let a fear of being unable to find a husband or a date stop you...pretty much all the women I know who want to be married are.

On a technical note, I would say choose a college wisely. MIT was a good match for me. I had already worked as a professional programmer before starting college and had considerable programming experience so I did well in a competitive environment. If you think you'd do better in a smaller environment where the focus isn't so much on the top students, but on all of the students, consider going to a liberal arts college. There are coed liberal arts colleges where you get small classes and encouraging teachers.

So really think about what type of school will be best for you. Don't just assume you want to go to the biggest name that you can get into because the professors, in fact, might not be able to devote much time to teaching.

MH: I first heard about Ellen Spertus because of the "sexiest geek" competition. Could you talk about that experience?

ES: I was web surfing and saw some quiz "Are You the Sexiest Geek Alive?" I often take these quizzes and ridicule them. I took this quiz and they must have liked my answers because they invited me to advance to the next round where I could describe myself and post a picture online. People could then vote their choice. I was the only professor and all of my students voted for me, I think, many times. So I made it to the actual pageant in San Jose and I argued that sex is about reproduction and as a professor, I reproduce geeks more than anyone else on the stage so that I should be considered the sexiest geek alive, or at least among the competitors. And I guess they bought the argument, or maybe it was my costume, and I won the contest. I had a corset with a circuit board pattern on it and I wore a flip skirt with a slide rule strapped to my leg.

To learn more about Ellen Spertus and her work with equity issues visit <http://people.mills.edu/spertus/>.

Meet the Authors

Dr. Maureen Biggers, *Assistant Dean, Georgia Institute of Technology*
 Maureen has been instrumental in many equity initiatives at the College of Computing at GT.

Kate Conley, *Editor of Learning & Leading with Technology*
 Kate is the periodicals group manager at ISTE, the International Society for Technology in Education. She has a combined 25 years' experience in teaching and publishing.

Robb Cutler, *President, CSTA*
 Robb is the Assistant Head of School of The Harker School in San Jose, California and has taught AP Computer Science and Advanced Topics in Computer Science.

Barbara Ericson, *Dir. CS Outreach, Georgia Institute of Technology*
 Barbara has over 20 years' experience in computing in both research labs and academia.

Dr. Joanna Goode
 Joanna began her career as a math and AP CS teacher in a Los Angeles-area urban high school. This fall, she will be an Assistant Professor at the University of Oregon.

Michelle Friend Hutton, *Equity Chair, CSTA*
 Michelle teaches computer science at the Girls' Middle School in Mountain View, California.

Joe Knoch
 Joe taught AP CS at Washington High School, in Milwaukee, Wisconsin and has been an AP exam reader for 21 years.

Dr. Jane Margolis, *Research Educationist, UCLA*
 Jane co-authored *Unlocking the Clubhouse: Women in Computing* (MIT Press, 2002). She is the 2005 recipient of the CRA A. Nico Habermann Award for work on underrepresentation in computing.

Dr. Peggy Meszaros, *Professor, Virginia Tech*
 Peggy is the William E. Lavery Professor of Human Development and Director at the Center for Information Technology Impacts on Children, Youth, and Families.

Out & About the Community

Computer Girl

By Pat Phillips

Are you looking for online gender equity resources to help you increase the number of young women in your classes? Do you want a quality web resource for young women? Look no further than www.computergirl.us.

Stanford University student Amy Wu created this website for female high school students. Seeing it as a way to bridge the gap between young women in high school and the computer world, she chose the resources specifically to address their questions and concerns. There is hardly a topic related to careers in computer science that is not addressed.

Computer Girl includes a section on role models that lists dozens of women in computer science and information technology careers with links to their websites. In the "Student Concerns" area, girls with specific questions about CS careers pose a question of their own or can read questions posed by other girls and the answers from mentors. The information in the "Resources" section on "Job Categories" is very thorough, as is the section on "Statistics."

This is a resource you and your students will return to time and time again.

Computer Girl is now a project of the Association for Computing Machinery's Committee on Women in Computing (ACM-W) and earned the "Site of the Month" award for Best College Girls Site for December 2002, by the Women in Engineering Organization (<http://www.wieo.org>).

Classroom Tools

To Dream Tomorrow

By Pat Phillips

To Dream Tomorrow: A Portrait of Ada Byron Lovelace, is a 53-minute documentary film on the life and influence of Ada Lovelace and is a wonderful tool to present a more balanced view of the role of women in computer science.

Based upon research gleaned from British archives at Oxford, London, this award-winning film was produced over a period of four years by scholars and film-makers, Jo Francis and John Füegi. They are Fellows of the Maryland Institute for Technology in the Humanities and affiliated with Stanford University's Institute for Research on Women and Gender.

This film will fit nicely into an overview of computer history. Since it is fairly long, I would suggest that you present it in two sessions. Be sure to set the stage for the showing with background information on the state of technology at the time, the role of Charles Babbage, and the challenges of research and development for these early researchers.

Follow-up to this film could include a discussion of the differences between learning in the 1800's and today, investigation of the impact that the transition to symbolic representation has had in various technologies, and research on the lives and the influences of other individuals on today's technology.

Reaction:

"I think this is an important artifact in the history of computing, especially pertaining to the role and engagement of women in Math & Computer Science. Personally, I think every computer science program should own a copy and do a regular screening."

Dr. Deepak Kumar,

Chair of Computer Science, Bryn Mawr College

To order *To Dream Tomorrow* for classroom use contact jf@flarefilms.org. For high schools the cost of the film is \$50 plus \$5 for shipping and handling. For college level use it is \$100 plus \$5 for shipping and handling.

Career Corner

The Power of Partners:

Finding Their Way to High Tech Careers

By Dr. Peggy S. Meszaros

A project to provide resources for encouraging young women to consider careers in computing is now underway at Virginia Tech. Researchers participating in the "Women in Information Technology: Pivotal Transitions From School to Careers" project have produced a 20-minute video called *The Power of Partners: Helping Females Find Their Way to High Tech Careers*.

Designed for parents, teachers, guidance counselors, and college advisors, this video embodies key findings from a four year research project investigating factors that influence girls' and women's choices to enter into IT career fields.

A facilitator's guide to accompany the video is also being developed.

Both the video and guide will be available for distribution in 2006.

For more information contact Peggy S. Meszaros at Meszaros@vt.edu.

This project was funded by the National Science Foundation.

Spotlight

Opening Doors to the Community

By Joe Kmoch

Involving under-represented groups in computer science and information technology courses challenges school systems across the country. Presumably the CS and IT courses that you teach are academically rigorous and require students to use higher-level thinking skills. But what else can you do in your school and classroom to enroll more of these students and to keep them interested, both in a first course and in subsequent courses?

This has been especially challenging at Washington High School (Milwaukee, WI), which can be labeled a majority minority school. About 90% of our students qualify for free lunch. We have major issues revolving around self-confidence in academic courses, work ethics, and continued interest in school.

In our school and in our CS and IT program, we have used a variety of strategies to address these challenges. We involve role models from the community, create situations where students work in pairs or larger teams, provide context-sensitive problems, develop oral and written communication skills, and provide various kinds of outside resources.

We blend the so called "soft skills" with the academic content of the curriculum. We include professional CS and IT guest presenters, roundtable discussions, projects that develop over time, job shadowing, and the development of resume and interview skills to provide students with ongoing access to role models and help them internalize the "I can do that if I really try" attitude. This approach is even more effective when you recruit the help of young professionals and alumni from your program or school.

We also make professional resources available to our students by subscribing to free publications such as *Minority Engineer Magazine* and *Woman Engineer Magazine*. These resources contain valuable information on computer science and information technology, as well as engineering, for all students.

You might be asking yourself, "How can I include these obvi-

ously great strategies and still cover the curriculum?" Here are a few suggestions:

- Modify your assignments to include outside expertise. For example, instead of relying on typical textbook problems, involve professionals to provide more realistic CS and IT problem scenarios. This can be very engaging, especially if the assignment involves inviting the professional back to the classroom to view the completed work and to interact with the students through a discussion of their problem-solving strategies.
- Establish an Advisory Board of professionals and parents. They can help you find the resources you need and take some ownership of the program.
- Establish a Youth Advisory Board, made up of students who meet regularly as a student group and with the adult Advisory Board.

Obviously these strategies require time to plan and coordinate but they can transform your program by making it a community commitment.

Involving more minorities and women in CS and IT is vital to our future, and working together in partnership with the community is the key to success. An African proverb says, "It takes a village to raise a child." Our 30 years of experience with this approach yielded solid results.

SOBERING EQUITY STATISTICS

| | |
|--|-------|
| The percent of women in the IT professionals in 1990 | 33% |
| The percent of women in the IT workforce in 2002 | 26% |
| The female share of bachelor's degrees in CS in 1985 | 37% |
| The female share of bachelor's degrees in CS in 2001 (National Science Foundation) | 28% |
| The percent of Hispanic & African-Americans in the population | 24% |
| The percent of Hispanic & African-Americans computer scientists | 8% |
| The percent of Hispanic PhD students in 2004 | 1.3% |
| The percent of African-American PhD students in 2004 | 1.8% |
| The percent of Native American PhD students in 2004 (Association to Diversify Computing) | 0.2% |
| The percent of African American CS college professors Computer Scientists of the African Diaspora | 0.25% |

Bits and Bytes

Promoting CS to Girls and Others

By Michelle Hutton

"Bits and Bytes" is a regular column made up of little pearls of teaching wisdom and creative ideas.

EQUITY VIRTUAL BINDER

CSTA is excited to introduce theme-based virtual binders as a new benefit to members. Teacher volunteers select scholarly articles and documents from the ACM Digital Library based on their relevance to K-12 teachers. These articles are collected into a single website for easy access. The Equity virtual binder includes articles relevant to our work with female and other under-represented students. You will need to log in with your CSTA web account to access the binder. Visit <http://csta.acm.org> and click on "K-12 Virtual Binders."

PROGRAMMING AS A SECOND LANGUAGE

One way to approach introductory programming is to teach it as a second language. There are striking similarities between many pro-

gramming languages and the structures students are already familiar with in English, such as verbs (functions, methods), direct objects (arguments), and punctuation. The language analogy is a gentle introduction for all students and may be particularly suited to girls. It is excellent for younger students who usually do not have a strong grasp of abstract math but have been learning the parts of speech for years. This idea was presented by Justin Solomon at the CS & IT Symposium. Check <http://www.iste.org/profdev/cs2005> for this and other presentations from the Symposium.

WOMEN@SCS

The Women@SCS (<http://women.cs.cmu.edu/>) website from Carnegie Mellon University has a variety of resources under the "HS Teachers' Site" link. There is a free poster illustrating many exciting computer science related career areas that is perfect for the classroom. You can also download and adapt slides from the *Outreach Roadshow*, designed to encourage middle and high school girls to consider computing-related careers.

Don't forget!

Send your Bits and Bytes to cstaequity@csta.acm.org

Curriculum in Action

Gender Equity Initiatives Center Stage at Georgia Tech
By Barbara Ericson and Dr. Maureen Biggers

The College of Computing at the Georgia Institute of Technology (GT) is attacking the problem of inequity in computer science at the graduate, undergraduate, and secondary school levels.

At the graduate student level, GT offers a Ph.D. in Human Centered Computing which is 70% female, and a master's degree in Human-Computer Interactions which is 51.2% female. At the undergraduate level, a new B.S. in Computational Media is 24% female.

GT is attracting females and other under-represented minorities into computing at the undergraduate level by offering multiple paths into the field. The university offers three different introductory course sequences. Two of these teach contextualized computing. In these classes, computing concepts are introduced, as needed, to solve relevant programming problems drawn from engineering and digital media. The success rates in these courses are significantly higher than in traditional introductory courses. In fact, women are doing as well, or better, than men in these courses. The digital media based data structures course, which was 75% female, had a success rate of 91% the first semester. GT also offers many activities to support and retain female college students through the Women@CC group (<http://www.cc.gatech.edu/people/women/>).

In the summer of 2004, the College of Computing formed a partnership with the Georgia Department of Education to create the Institute for Computing Education (ICE). ICE offers summer camps that target talented girls and minority high school students who have minimal exposure to computing. ICE works with the Girl Scout Council of Northwest Georgia to introduce computing concepts to middle school girls with LEGO robots and Alice, the 3-D animation program from Carnegie Mellon University.

ICE also provides programs for high school teachers. Teachers with little or no programming experience are trained to teach an introductory programming course in Java with a digital media curriculum that is fun and engaging. In time, and with additional training, we hope that these teachers will become AP CS teachers. Equity and the recruitment of students into computing are important components of every workshop. Read more about ICE at <http://www.cc.gatech.edu/ice/>.

MARK YOUR CALENDAR

Association for Computer Educators in Texas (ACET) Annual Conference

October 5–8, 2005 in Fort Worth, Texas

<http://www.texasacet.org/2005conf/2005conf.htm>

Iowa Technology & Education Connection (ITEC) Annual Conference

October 9–11, 2005 in Des Moines, Iowa

<http://www.itec-ia.org/confer/>

Richard Tapia Celebration of Diversity in Computing Conference 2005

October 19–22, 2005 in Albuquerque, New Mexico

The Tapia conference offers a supporting environment for helping members of under-represented groups in diverse computing career paths.

<http://www.ncsa.uiuc.edu/Conferences/Tapia2005/>

ACM Special Interest Group for Information Technology Education (SIGITE) Conference

October 20–22, 2005 in Newark, New Jersey

SIGITE offers professional development on innovative teaching and lab strategies, curricula in IT, and specific technologies in education.

<http://www.it.njit.edu/SIGITE2005/>

Technology, Leadership, Learning – T+L2 Conference

October 26–28, 2005 in Denver, Colorado

An education technology conference designed for district leadership teams by the National School Boards Association.

<http://www.nsba.org/t+l>

Preview of Events in 2006

Texas Computer Education Association (TCEA) Conference

February 6–10 in Austin, Texas

Special Interest Group – Computer Science Education (SIGCSE) Conference

March 1–5 in Houston, Texas

Michigan Association of Computer Users in Learning (MACUL) Conference

March 8–10 in Grand Rapids, Michigan

Florida Educational Technology Corporation (FETC) Conference

March 22–24 in Orlando, Florida

National Council of Teachers of Mathematics (NCTM) Conference

April 26–29 in St. Louis, Missouri

National Education Association (NEA) Conference

June 30 to July 5 in Orlando, Florida

National Educational Computing Conference (NECC)

July 4–7 in San Diego, California

Advanced Placement National Conference

July 12–16 in Lake Buena Vista, Florida

RESOURCES

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

PROFESSIONAL DEVELOPMENT

Page 3: Computer Science Teachers Association <http://csta.acm.org/>

Page 3: International Society for Technology in Education <http://www.iste.org>

Page 3: NECC <http://center.uoregon.edu/ISTE/NECC2005/>

Page 4: Ellen Spertus <http://people.mills.edu/spertus/>

Page 6: ACM committee on Women in Computing <http://women.acm.org/>

Page 6: Women in Engineering <http://www.wieo.org>

Anita Borg Institute <http://www.anitaborg.org/>

Alliance of Technology and Women http://www.atwinternational.org/mission_and_goals.aspx

Links to many equity resources <http://jett.acm.org>

The Coalition to Diversity Computing <http://www.ncsa.uiuc.edu/Outreach/CDC/>

STUDENT RESOURCES

Page 6: Computer Girl <http://www.computergirl.us/>

Girls Go Tech Girls Scouts of America <http://www.girlsgotech.com/>

Career Pathways offered by Society of Canadian Women in Science and Technology

<http://www.harbour.sfu.ca/scwist/explore/index.htm>

TEACHING RESOURCES

Page 1: Out of the Loop-UCLA <http://outoftheloop.gseis.ucla.edu/>

Page 7: Women@SCS-Carnegie Mellon <http://women.cs.cmu.edu>

Page 7: Georgia Tech <http://www.cc.gatech.edu/people/women/>

Page 7: Institute for Computing Education <http://www.cc.gatech.edu/ice>



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