



Voice

Professional Development

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

Volume 12, Issue 2

May 2016

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CSTA Chapter Leadership Summit

Mark R. Nelson

By the time we reach the 2016 CSTA Annual Conference, our 70th chapter will be a reality. This is an incredible milestone for such a young association! As we look at the future of CSTA, the chapters are a strategically important asset for delivering value and building community. We seek to partner more with chapters and invest more in chapter success.

As an early step, we will host a Chapter Leadership Summit at the CSTA Annual Conference. Our aim is to have a leader from every chapter attend. The Summit is scheduled on Wednesday, July 13, 2016. Thanks to the generosity of Oracle Academy, we have a limited number of scholarships for first-time attendees to the conference, including chapter leaders.

The Chapter Leadership Summit will include a variety of professional development activities designed to help leaders strengthen their local chapters. This is an important opportunity for all chapters to be heard, and to gain new knowledge and support for their local teacher communities.

Leaders will learn how to use our new online chapter management tools and have time to build community, discuss challenges, and share best practices. Because chapter leaders are vital to the future of CSTA, they will learn about future goals and plans for CSTA and have an opportunity to provide input and feedback.

The goals for the Chapter Leadership Summit are to express our appreciation to chapter leaders for the important roles they play for our members, and to engage every chapter in a discussion about our future relationship. We want chapters to feel a part of the larger

association, and we want input on how to best work together to strengthen the overall K–12 computer science (CS) education community.

As an association executive, my philosophy has always been that an association is strong if its members are strong. The chapters are a strategically important element in that equation. Successful engagement at the chapter level generates participation and engagement in other CSTA events and activities.

For a young association with so many chapters, there is a risk that chapters exist isolated in silos and experience varying levels of success. If some chapters are successful while others are not, then CSTA as an organization must rethink the relationships to ensure that all chapters and local CS teacher communities can thrive.

We hope the Chapter Leadership Summit begins a process of ongoing strengthening of the communication and partnership between national and local communities. Improving chapters brings value to all members of the association, as well as to the many schools and communities where our members are engaged in developing and delivering CS education.

Every chapter should have received an invitation to send a representative to the Chapter Leadership Summit. I sincerely hope that chapters take advantage of this opportunity to build CSTA's future by sending a delegate to learn, engage, and share. Chapter leaders should register for the Chapter Leadership Summit at: bit.ly/23oYIZj.

I look forward to seeing many of you in San Diego in July.

IN THE NEXT
VOICE

CSTA Annual
Conference

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Staff

Mark R. Nelson

Executive Director
Phone: 518.281.2975
m.nelson@csta-hq.org

Lissa Clayborn

Deputy Executive Director/
Chief Operating Officer
Phone: 212.626.0507
l.clayborn@csta-hq.org

Pat Phillips

Editor
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Come make waves with CSTA during the 2016 CSTA Annual Conference in sunny San Diego, CA, July 10–12. We'll celebrate 15 years of CSTA in the biggest conference ever—three full days and eight strands of the high-quality PD you've come to expect from CSTA.

You'll find something for every professional development need. You don't want to miss it! San Diego is an amazing city. We did a little research and discovered a few fun facts to help you plan your trip.

San Diego is...

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- the 9th safest city in the country
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- location of Balboa Park, with 15 museums, numerous art galleries, beautiful gardens, the Tony Award-winning Globe Theatres and the world-famous San Diego Zoo
- the site of the Birch Aquarium at Scripps - the largest oceanographic museum in the U.S.
- home of the Hotel Del Coronado, which has hosted 10 U.S. presidents
- site of the world's largest collection of original Dr. Seuss manuscripts in the University of California, San Diego's Geisel Library

But be forewarned! It's illegal to shoot jackrabbits from the back of a streetcar in San Diego or to bring flying squirrels into the state.

Complete details, registration link, and housing information are available at the conference site (cstaconference.org).

You will find several articles in this issue of the *Voice* previewing the content of sessions and workshops scheduled for the 2016 CSTA Annual Conference.

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Find the agenda at: cstaconference.org

CSTA Voice ISSN: 1555-2128

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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Computer Science for All

A CIO's Perspective

Gary J. Beach

Editor's note: Gary Beach, Publisher Emeritus, CIO Magazine, will moderate the opening Keynote Panel on Tuesday, July 12, at the 2016 CSTA Annual Conference in San Diego, CA.

Few will argue that literacy is not critically important in our modern lives. Likewise, most understand that information technology permeates every aspect of life in the 21st century. Twenty-one years after Nicholas Negroponte, the co-founder of the MIT Media Laboratory, wrote the book *Being Digital*, individuals are now identified by two unique sets of data: DNA and the bits of computer code generated throughout their daily activities. Digital fluency has become a new required literacy.

Being digitally fluent can be described as the ability to transform bits of code into computer programs that drive the functionality of applications, computers, robots, and the Internet of things. While just as important as traditional literacy, ensuring citizens are digitally fluent has not reached a high level of urgency in the United States (U.S.). Some countries, including England, recently mandated that every student study code, programming, and computer science (CS).

While a variety of programs and organizations have recently introduced millions of students to the basic elements of coding, the U.S. Department of Education remains an uninterested bystander of CS and continues to support a national policy that does not deem CS to be a “core” subject taught in U.S. schools. So what do state and local school district officers, already consumed with testing and measuring student proficiency, then do? They opt not to offer those subjects in an overwhelming majority of classrooms.

And here's the unfortunate rub. While coding, programming, and CS courses continue to be mostly ignored by school officials, businesses have embraced it and are in the midst of what some call the “Fourth Industrial Revolution,” a

systemic and structural digital transformation of all types of businesses. A transformation that necessitates all workers be “digitally fluent.” A transformation that is creating millions of jobs.

Chief information officers (CIOs) are driving this new digital approach to work. But they have a big problem. While millions of tech jobs are open across the country, and reams of data highlight the fact that individuals with CS degrees will earn 40% more income than liberal arts degree holders, CIOs and their hiring managers claim job candidates applying for jobs at their companies do not have the digital skills needed to do work in the 21st century.

What needs to be done to rebalance the supply and demand of digital talent in America?

That question will be the focus of special Keynote Panel at the 2016 CSTA Annual Conference featuring leading CIOs. Panel members will address a wide range of topics, including the value of a digital fluency in the workplace and the role of businesses in partnering with schools to teach CS. They will answer questions such as these:

- Is the term “computer science” too “geeky?”
- How can digital fluency be more diverse?
- At what age should the basic elements of coding be introduced to young people?
- How are CS certificates from non-academic institutions perceived by CIOs?
- What are the effects of out-of-field CS teachers?
- What are the consequences to the U.S. if CS is not designated as a “core” subject to be taught in American schools?

Join us at 8:30 AM on Tuesday, July 12, to hear the ideas and suggestions offered by our expert panel of CIOs. Their comments will certainly make us think about the challenges and opportunities ahead.

Register at www.cstaconference.org.

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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: publications@csteachers.org. The final length, due date, and title will be negotiated for chosen articles. Please share your knowledge.

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Opening the Door to CS for Students with Learning Differences

Sarah Wille

Editor's note: Sarah Wille will be joined by Steve Svetlik and Erica Roberts in the presentation, Bringing CS to Students with Learning Differences, on Monday, July 11, at the 2016 CSTA Annual Conference in San Diego, CA.

The computer science (CS) education field is engaging in unprecedented efforts to expand opportunities in K–12 CS, with a particular emphasis on broadening the participation of students traditionally excluded from CS. Critical elements of this push include the new Advanced Placement Computer Science Principles (AP CSP) course, and the White House announcement of a new “CS for All” initiative. As momentum for K–12 CS grows, we have a collective responsibility to make CS learning opportunities more accessible for all students. To do this, we must first come to a shared understanding about who is included in “CS for All,” and what we can do to ensure all have opportunities to fully participate.

While motivated principals and teachers consider the district and school-level logistics for providing access to computing in general, and the AP CSP course in particular, they also face this practical classroom-level challenge: how to make the instructional materials accessible so all students have the same chance to succeed. This is especially true for students historically underrepresented in CS, such as students with learning disabilities (that is, students with specific learning disorders in reading, written expression, math, and language) and related disorders, such as ADHD and executive functioning challenges.

The National Center for Learning Disabilities suggests children with learning disabilities make up between 5% and 20% of the total school-age population. Yet, the national dialogue about broadening participation in K–12 CS has given almost no voice to these learners. They have been a “hidden” underrepresented group in CS. Those with disabilities, in general, are simply less visible in conversations about broadening participation in computing.

Students with learning disabilities and related disorders are present in general education classrooms across the United States (U.S.). For example, 66% of students with learning

disabilities spend 80% of their school day in general education settings. Overlooking necessary supports for these students is problematic in terms of educational equity, but also because it means we miss out on the rich creativity and talent that these unique learners can contribute to computing. At this pivotal moment in our nation's history with so much interest and growth in CS, teachers will need guidance about how to make CS more accessible for students with learning disabilities and related disorders so those curious about, or already eager to take computing, can fully participate and contribute alongside their peers.

To address this problem, our team at Outlier Research & Evaluation at CEMSE, University of Chicago, and the Wolcott School (an independent college-preparatory high school in Chicago for students with learning differences) received National Science Foundation (NSF) funding for an exploratory study with the aim of making CS more accessible for students who learn differently. Our work is rooted in the idea that useful, practical education research should generate findings that directly address the needs of educators, and that it requires the active involvement of a diverse team. To that end, our core team includes special education experts, CS teachers, students with learning disabilities and related disorders, curriculum developers, and education researchers.

Over the next two years, our team will apply a rigorous research approach to identify barriers specific to learning disabilities and related disorders in the CSP instructional materials in *Beauty and Joy of Computing* and Code.org's *CS Principles*, propose adjustments to the materials to navigate those barriers, and test the suggested adjustments in CS classrooms at Wolcott School. The team will share what works and why with CSP developers and CS teachers to provide them with strategies for addressing student needs specific to learning disabilities and related disorders. This initial work is intended to introduce the CS education community to the varied needs of students who learn differently and to begin to build a foundation for future research to explicitly provide more equitable opportunities for these students.

In our upcoming CSTA Conference, we will

share what we’ve learned to date in our new work and ignite a dialogue about supports for students with learning disabilities and related disorders in K–12 classrooms. Specifically, we will identify recommendations developed from our initial findings to provide examples for how to fully include this population in CSP, and CS classes more generally.

To expand our understanding about students in CS who learn differently, we’ll facilitate full-session and small group discussions about common scenarios teachers face related to barriers that students who learn differently encounter in a CS classroom, and possible solutions to those barriers.

This research is supported by the NSF grant # 1542963.

LEARN MORE:

- AccessCS10K: www.washington.edu/accesscomputing/accesscs10k/about

- *Beauty and Joy of Computing* for NYC: bjc.edc.org/bjc-r/course/bjc-4nyc_2015-2016_teacher.html?course=bjc4nyc_2015-2016.html&novideo&noassignment
- Bring CSP to Your School: advancesinap.collegeboard.org/stem/computer-science-principles/bring-csp-to-your-school
- Code.org *CS Principles*: code.org/educate/csp (requires free registration and sign-in)
- Cortiella, C. & Horowitz, S. (2014). *The State Of Learning Disabilities: Facts, Trends And Emerging Issues*. New York: National Center for Learning Disabilities. www.nclld.org/wp-content/uploads/2014/11/2014-State-of-LD.pdf
- Learning Disabilities Association of America: ldaamerica.org
- National Center for Learning Disabilities: www.nclld.org

CSTA Advocate Blog

Resources when you need them

Sheena Vaidyanathan

Computer science (CS) education is gaining momentum with each passing day. Recently, New York City (NYC) Mayor Bill de Blasio announced that, within 10 years, the city’s public schools will offer CS to all students. NYC is joining others large districts, such as San Francisco Unified and Chicago Public Schools, in changing the school day to include CS. Even entire countries are getting on board with comprehensive plans to include CS in the curriculum.

As schools begin implementing CS classes, there will be many questions. I recommend the *CSTA Advocate* blog as the first place administrators and teachers should look for quality information from experienced CS educators.

Reason 1

The *CSTA Advocate* blog is from a trusted source. The blog is sourced, edited, and approved by CSTA, the folks who know CS education best. CSTA is a membership organization that supports and promotes the teaching of CS through deep and varied avenues. CSTA wrote the K–12 CS Standards, hosts the best conference for CS educators, and is involved in many

initiatives to promote equity and excellence.

Reason 2

The *Advocate* is written by real educators and researchers with experience teaching CS in kindergarten through university classrooms. It provides insights and experiences different from articles written by journalists or bloggers on the “kids should code” hype, or marketing from a cool new startup or non-profit. The *Advocate* consists of articles that share real experiences from the classroom and discuss important issues and topics in CS education.

Reason 3

The *Advocate* presents in-depth analysis of every aspect of CS education. You’ll find articles on tools, pedagogy, competitions, certification, assessments, philosophy, international initiatives, and more. Use “Search” to find the articles that match your needs.

Visit the *Advocate* Blog now at: blog.csta.acm.org.

Meet the Authors

Gary J. Beach

CIO Magazine

Gary is publisher emeritus for *CIO Magazine*. He is the author of *The U.S. Technology Skills Gap* (John Wiley and Sons, 2013) and writes a column for *The Wall Street Journal* on the topic of tech talent.

Pierre Bierre

Pleasanton, CA

Pierre is a CS educator and developer of *Algorithmic Geometry w/Java*, a math course introducing college-prep students in grades 11–12 to the power of applied vector math implemented in software.

J. Philip East

University of Northern Iowa

Philip has been teaching computing for over 35 years. He is the Program Chair for the 2016 CSTA Annual Conference.

Kathy Kleiman

ENIAC Programmers Project

Kathy co-produced and co-wrote *The Computers: The Remarkable Story of the ENIAC Programmers*. She is also an attorney specializing in Internet law and policy.

Daniel Moix

CS Educator, AR

Daniel teaches CS at the Arkansas School for Mathematics, Sciences & Arts. He is Vice-president of CSTA Arkansas.

Mark R. Nelson

Executive Director, CSTA

Mark has more than 25 years of experience in education and organizations with experience in teaching, research, service, and executive roles.

Sheena Vaidyanathan

Los Altos, CA

Sheena enjoys combining her CS and art to create projects that engage and motivate her 6th grade students. She is the K–8 representative on the CSTA Board of Directors.

Sarah Wille

CEMSE, University of Chicago

Sarah is a Senior Education Researcher at Outlier Research & Evaluation, and the PI of the CSP and Students with Learning Differences study.

Administrators' Corner

CSTA Serves Administrators, too

Pierre Bierre

What does it take to develop a sustainable computer science (CS) program? What are the planning and approval challenges facing leadership at the school, district, county, and state levels? Where are the “gotchas?” This summer’s CSTA Annual Conference will include a five-hour Administrators workshop exploring best practices for strategic planning.

The idea for an administrators strand for the conference grew out of a 2015 Conference planning decision. Having selected California as the 2016 host state, the conference committee invited chapter leaders Joe Pistone (San Diego), Victor Casas (Los Angeles), and Pierre Bierre (Silicon Valley) to the 2015 Conference in Grapevine, TX, to get a full-year head start working together as 2016 local organizers.

Immediately, they zeroed in on the nagging policy issue known as the K–12 public school “computer science (CS) gap” (compared to private schools and academia). A few weeks later, a CS education summit in Sacramento with lawmakers and activists made clear that the Golden State had effectively devolved curriculum modernization to local control. A legislator who has worked the CS policy issue, a former U.S. Marine drill sergeant, stunned the group with unexpected candor: “Don’t count on the Legislature to make CS happen in CA....there’s a new local control process involving parents, students, teachers, bargaining units, and administrators....go out and make CS happen at the local level.” It had the distinct ring of “marching orders.”

But where to start? And how to begin outreach to administrators? The mindset adopted was that CSTA leaders would serve as expert consultants, leaving it to parents and students to drive a sense of urgency.

The Administrators workshop at this year’s Conference will get into the nuts and bolts of developing, growing, and sustaining a K–12 CS program. Topics will include leadership staffing, multi-year planning cycles, budgeting, teacher staffing and certification, curriculum frameworks and standards, and course vetting. Curriculum development will not be limited to just high school CS courses, but the entire K–12 scope, weaving cross-cutting computational thinking into other disciplines. The Workshop will explore strategies for maximizing synergy among all the players involved, cognizant of resistance to organizational change. For example, neglecting the issue of job security among teaching staff can easily alienate the bargaining unit and sandbag the entire process. The payoff for inclusive, strategic planning is a sustainable program that avoids setbacks and maintains excellence through continuous improvement.

A team of experts, including Owen Astrachan, Lien Diaz, Gary Page, Irene Lee, Anthony Owen, Susan Yonezawa, Nan Renner, David Yamashiro, Debra Richardson, Julie Flapan, and Trish Williams, will be on hand to support the planning exercises. “Having state-level public education leaders from Arkansas and California eager to participate is a good sign that a workshop designed specifically for administrators can draw a critical mass,” says Bierre.

“The Workshop will be very useful to school districts intent on creating a support system to create and expand CS offerings for their students, K–12,” offers Pistone.

“Why start from scratch when there are earlier adopters ready to help?” posits Casas.

Administrators can sign up by registering for the

CSTA Conference admission and marking the checkbox “Administrators” workshop.” There is no additional fee. It will be held Tuesday, July 12, 2016, from 10:00 AM to 3:30 PM. The announcement is posted at: www.tinyurl.com/adminTrack.

Please tell your administrators about this Workshop. A perfect place to start is with your STE[A]M curriculum coordinator. District-wide and county-wide leadership teams are strongly encouraged to attend as a group.

For more information contact: Joe (JPistone@ucsd.edu), Pierre (pierre@AlgoGeom.org), or Victor (cstasocal@gmail.com).

Conference Spotlight

The Remarkable Story of the ENIAC Programmers

Kathy Kleiman

Editor’s note: *Special screening of The Computers: The Remarkable Story of the ENIAC Programmers will be held on Monday, July 11, at the 2016 CSTA Annual Conference Networking Event/Conference Kick-Off, followed by a Q&A with Co-Producer, Co-Writer Kathy Kleiman.*

The film, *The Computers: The Remarkable Story of the ENIAC Programmers*, shares the story of six brilliant young women who served as the first programmers of ENIAC, the world’s first all-electronic, programmable, general-purpose computer and part of a secret U.S. Army project during World War II.

This inspirational documentary was co-produced by Kathy Kleiman, founder of the ENIAC Programmers Project, and senior PBS Producers Jon Palfreman and Kate McMahon of the Palfreman Film Group. The film builds on many years by Ms. Kleiman locating the ENIAC Programmers and researching their stories.

Kleiman was shocked as a computer science student when she learned that the ENIAC Programmers had played such a pivotal role in early computing, yet their stories and contributions had been lost from history. She founded the ENIAC Programmers to ensure that the legacies of Betty Snyder Holberton, Jean Jennings Bartik, Kay McNulty, Mauchly Antonelli, Marlyn Wescoff Meltzer, Ruth Lichterman Teitelbaum, and Frances Bilas Spence were preserved – and that their stories are shared. *The Computers* draws heavily on her extensive broadcast-quality oral histories with four of the original six ENIAC Programmers and the wonderful stories they had to share.

The Computers premiered at the Seattle International Film Festival (U.S.) and Inspirefest2015 Dublin (Europe) and Kleiman has shared it with audiences around the world. Although the film is a favorite with young professional women in technology, Ms. Kleiman says that her intended audience is students. “I worked hard to create an inspirational film for students because I found the ENIAC Programmers so exciting. Their work, commitment, and innovations were surprising to me and inspired me to stay in computing when many other signals were urging me to leave. This decision changed my life and I hope it changes the lives of other students.” She adds, “I don’t understand why we have so few role models for girls interested computing. Computing was a ‘pink collar’ profession in the early days—most of the early programmers were women!”

A 20-minute documentary is designed to fit easily into classroom schedules. Further, it was produced with the

student audience in mind. Says Kleiman, “PBS producers normally produce documentaries for an older demographic audience, but I asked them to produce a film for a younger one—ages 12 and up. They did a wonderful job and we have enjoyed sharing the film with people age 10 to 92—all to rave reviews!”

The documentary is also designed to help counteract messages that seem to flow to middle school and high school students from mainstream media which reinforce that computing is a field for boys, but not for girls.

“As our U.S. Chief Technology Officer Megan Smith tells us, there will be millions of high paying, creative, flexible computing jobs opening in the next 20 years. I agree with her that these jobs should be filled not just by boys, but by boys and girls—the very brightest and most creative of both genders.” She hopes *The Computers* will inspire both girls and boys to explore careers in technology.

The Computers: The Remarkable Story of the ENIAC Programmers is available to schools and universities from Women Make Movies, a non-profit distributor, at www.wmm.com/computers. More information and resources related to the ENIAC Programmers Project can be found at eniacprogrammers.org.

CT in Action

Computational Thinking for Non-Specialists

J. Philip East

In 1977, I started graduate study in computer science (CS) education after teaching junior high math for four years. An early experience there, and one of my strongest memories, is David Moursund (en.wikipedia.org/wiki/David_Moursund) asking something akin to, “Considering the increasing availability of calculators and computers, how should we use those devices in schools?”

As time passed, I came to believe that, in addition to the fact that mathematics was a tool for calculating answers to problems, mathematics education should have two separate goals. One goal is to develop specialists to do and teach mathematics. The other is to teach everyone else how to get answers to the numeric problems they encounter in their lives. Unfortunately, (as far as I can tell), instruction in mathematics continues to be focused on the development of math specialists.

I believe computational thinking (CT) to be a similar kind of tool, though I am not sure I really know what CT is. The techniques that computer scientists understand and make use of with CT can be applied to all sorts of problems encountered in daily life, if people know how to use them. I am concerned that CT will end up not being useful for, or used by, the vast majority of people—the non-specialists. The reason for that will be that we have not figured out what CT is or how to teach it.

I am able to use mathematics for solving everyday problems because I have a degree in mathematics. I am able to use CT for solving everyday problems because I have a degree in CS. Clearly, it is not feasible to ask everyone to major in CS so they will be capable computational thinkers.

As specialists in computing, we probably understand what Jeannette Wing (www.cs.cmu.edu/link/research-notebook-computational-thinking-what-and-why) refers to when she uses terms such as logical thinking, systems thinking, algorithmic thinking, parallel thinking, pattern matching, procedural thinking, and recursive thinking. And, certainly we

teach those concepts to our CS majors during college.

We can understand the taxonomy of computational thinking in mathematics and science produced by Weintrop, et al. (link.springer.com/article/10.1007/s10956-015-9581-5) which consists of four sets of practices—data practices, modeling & simulation practices, computational problem-solving practices, and systems-thinking practices. It provides substantial insight into CT for math and science. To me, however, it appears that the approach to teaching math and science would have to be changed in order to teach CT in the sciences. Something different needs to be done.

So, what is the alternative? I suggest we do not know and I worry that we are not working to determine how to instill CT skills in our students.

My research has not yet led me to any precise definition of CT. I do believe I know a couple things that CT is not. CT is not general problem solving and CT is not CS or computer programming, though it is closely related to both. But CT does require computers. And, it applies to all people. Just as all people should be capable at using mathematics in their daily lives, they should be skilled in CT.

My favorite example of CT was included in Snyder's early *Fluency with Information Technology* books. It involved manipulating paragraphs of text by removing extraneous return characters. One could automate the solution to this problem by first recognizing that paragraphs were a different pattern than other ends of line. That pattern could be abstracted and thought of as something else (perhaps two number signs). The word processor's replace tool could then (automatically) replace all pairs of return characters with ##. That would allow the remaining, single returns to be deleted (automatically). The task could be finished by using the tool one last time to replace all the ## with a single return. I like this example because it is not numerical and does not involve programming, but does represent a task that (at the time) many people could relate to.

We know the big ideas and related skills of CT—abstraction, categorization and pattern recognition, algorithmic thinking (for automation), modeling or problem representation, problem decomposition and planning, testing and debugging, etc. Thus far, however, we seem not to have determined how to teach those skills in a way that leads to CT capability.

I'm not giving up hope. Most of these skills are necessary to teaching programming. If we can figure out how to develop these sub-skills when teaching programming, we will have identified how to teach CT. Or alternatively, maybe someone will determine how to teach CT and we can use it when teaching programming.

Thank You, Outgoing CSTA Board Members

Thank you for your years of dedicated service

Deborah Seehorn

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PD Spotlight

How a French Teacher Learned to Teach CS
Daniel Moix

Editor's note: Daniel Moix will deliver the presentation, *ECP + How a French Teacher in Rural Arkansas Learned to Teach CS*, on Monday, July 11, at the 2016 CSTA Annual Conference in San Diego, CA.

When Arkansas Governor Asa Hutchinson campaigned last year, he promised, if elected, to make "coding classes" available to students in all Arkansas high schools. The small community of high school computer science (CS) teachers here were thrilled to see Act 187 pass, but we were also concerned because the law required schools to begin offering CS classes just a few months after its passage.

Some districts had already printed course catalogs and were in the process of organizing master schedules when they learned of the new requirement. A question heard over and over was, "Where will we find someone to teach this?" The Governor's plan was to offer web-based, distance-learning classes to all districts free of charge the first year.

Schools typically fall into one of three categories. Generally, larger districts in Arkansas have well-established CS programs led by veteran educators who are licensed in business or mathematics. Small, frequently remote, districts not only lack the local expertise to offer a course, but are so small that it would be difficult to fill even one section of an elective CS class. That leaves those in the middle—districts that could possibly support CS if they had someone equipped to teach it.

My school, The Arkansas School for Mathematics, Sciences & the Arts (ASMSA), has required all students to take CS to graduate since opening in the mid-1990s. We have been a provider of digital learning services to schools

within our state for many years. Our mission charges us to serve as a center for teacher education. Rather than simply offering distance learning CS classes to the state's educators, we invited districts from across the state to identify teachers interested in learning to teach CS and offered them a year-long mentoring opportunity.

The initial cohort of these educators first met at a week-long residential "boot camp" in July 2015. They were introduced to the fundamentals of CS and were equipped to support students in Scratch, App Inventor, and Java. We provided them with web-delivered weekly learning modules to study and use with their students. We provide ongoing support through twice-weekly video conferences with the students in their classrooms. Teachers meet monthly via video conference for professional learning community (PLC) meetings to review concepts they and their students are having difficulty with and to reconnect as a community of learners.

Registration is currently open for our second cohort of this course and we are considering this model to grow teaching capacity in other disciplines within our STEM Pathways program.

I encourage you to attend my session, *ECP+ How a French Teacher in Rural Arkansas Learned to Teach CS*, at the 2016 CSTA Annual Conference in San Diego. I'll share in greater detail how this program came to be, what students learn in the Essentials of Computer Programming class, more about the technology infrastructure being used, the student experiences, and the lessons learned.

Created in 1991 by an act of the Arkansas Legislature, ASMSA is one of 16 public, residential high schools in the country specializing in the education of gifted and talented students who have an interest and aptitude for mathematics and science. ASMSA is unique in its mission and service to education. Learn more about the Coding Arkansas Future program at: asmsa.me/cil_coding.

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ACSL All Star Contest
May 28, 2016
www.acsl.org

2016 CAS Annual Teacher Conference
June 18, 2016, University of Birmingham, UK
community.computingatschool.org.uk/events/4037

2016 CSTA Annual Conference
July 10–12, 2016, San Diego, California
cstaconference.org

Cybersecurity Summer Workshop for High School Teachers
July 14–22, 2016, Pleasantville, New York
bit.ly/1S1xo1S

CSPdWeek
July 18–22, 2016, Colorado School of Mines
www.cspdweek.org
CSTA is a founding partner of CSPdWeek

Consortium for Computing Sciences in Colleges (CCSC) (Midwestern)
September 30–October 1, 2016, Upland, Indiana
www.ccsc.org/midwest/conference

CCSC (Northwestern)
October 7–8, 2016, Portland, Oregon
www.ccsc.org/northwest/2016

CCSC (Rocky Mountain)
October 14–15, 2016, Denver, Colorado
www.ccsc.org/rockymt

CCSC (Eastern)
October 28–29, 2016, Frostburg, Maryland
www.ccsc-eastern.org

Check the most recent CSTA events on the CSTA website
www.csteachers.org/ProfDev
List your CSTA event by contacting t.nash@csta-hq.org