



# Voice

Advanced Placement CS

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

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CSTA NEWS

## Be There or Be Square

2015 CSTA Annual Conference, Grapevine, Texas, July 12-14

If you don't make it to the 2015 CSTA Conference, you are going to wish you had. We'll be celebrating the 15<sup>th</sup> year of the conference as it continues to grow and evolve to meet your professional development needs.

The event is the premiere conference for K–12 computer science (CS) and information technology (IT) educators. The three-day lineup is packed with learning opportunities, including expanded hands-on workshops, dozens of sessions, a K–8 strand, motivational keynote speakers, an exhibit hall, and a Monday night social event. All of that, plus networking and catching up with old friends and meeting new friends.

The conference will be held at the Hilton

DFW Lakes Executive Conference Center in Grapevine, Texas. Situated on 40 forested, lakeside acres, the Hilton DFW Conference Center is a great place for a professional development retreat with beautiful event facilities in a relaxing resort-style setting. It's just two miles from Dallas/Ft. Worth (DFW) International Airport and 20 minutes from downtown Dallas. Take a look: [grapevinetexasusa.com/csta](http://grapevinetexasusa.com/csta).

For CS and IT educators, this IS the event of the year. Make plans now. Register today. Complete details, registration link, and housing information are available at the conference site ([cstaconference.org](http://cstaconference.org)).

See you there!

## See the Impact of Computing on Society

Andy Kuemmel

*Editor's note: Learn more from Andy Kuemmel at the CSTA Annual Conference. He will present on this topic in a workshop on July 12.*

The Advanced Placement (AP) Computer Science Principles (CSP) course provides exciting opportunities for students to see a wider picture of CS while broadening participation from groups of students who do not usually enroll in CS. The AP CSP curriculum framework provides seven Big Ideas for the course, one of which is "Computing has global impact." In my four years of teaching this course, I have found that this topic excites

students about the course and offers a chance for teachers to provide students with meaningful, relevant, enduring knowledge.

Each Big Idea includes Enduring Understandings that frame instruction. The four Enduring Understandings for Global Impact are:

1. EU 7.1: Computing enhances communication, interaction, and cognition.
2. EU 7.2: Computing enables innovation in nearly every field.
3. EU 7.3: Computing has a global effect – both beneficial and harmful – on people and society.

*continued on page 2*

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## See the Impact of Computing on Society

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- EU 7.4: Computing innovations influence and are influenced by the economic, social, and cultural contexts in which they are designed and used.

When planning instruction for a lesson, unit, or course, I first ask myself, “Where are my students right now in respect to the curriculum and where do I want them to be?” High school students entering my course have a very strong grasp of Enduring Understandings 7.1 and 7.2 but often do not have deep knowledge of Enduring Understandings 7.3 and 7.4. In particular, my students often are fixed on the immediate, personal effects of computing, and they do not naturally make connections to the

as Sherry Turkle, Jaron Lanier, Danah Boyd, Clive Thompson, Douglas Rushkoff, and others. After reading these essays or watching the author’s videos, debates are held. The students are given questions such as “Do cell phones make us smarter or dumber?” or “Have computing innovations reduced or increased inequality?” or “Does technology strengthen or damage relationships?”

After the debate, students research additional articles and write their viewpoints. The research and writing helps them prepare for the AP CSP “Explore” Performance Task, a through-course assessment in which students explore the impacts of computing on social, economic, and cultural aspects of our lives.

**I want my students to have an internal framework for considering how social structures both impact and are impacted by innovations.**

economic and social implications of computing innovations. By the end of the course, I want my students to take a global view, one in which they see not only the beneficial and harmful effects of computing, but also the impacts that innovations can have on how people live, work, purchase, play, and relate to each other. I want them to contemplate the long-term effects of computing innovations on our society, economy, and culture.

After I’ve mapped out where my students are and where I want them to be, I consider how students will reach these goals in active, creative, and equitable ways. Because this is an AP course, I want them to read opinion essays from a wide variety of authors such

In addition to the debates, we examine the effects of earlier innovations. For instance, we analyze the (original) telephone as an innovation. My students complete an activity in which they describe the telephone in terms of Creativity, Abstraction, Algorithms, Programming, Internet (Networking), and Impact. Through this activity, students can see how telephones changed society, and this helps them realize the breadth and depth of impact from other innovations. This assignment is a wonderful framing activity which I do at the beginning and at the end of the course.

Long after they complete this course, I want my students to have an internal framework for considering how social structures

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**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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both impact and are impacted by innovations. When I articulated this goal to my wife, who is a sociologist, she pointed me to what American sociologist C. Wright Mills calls “the sociological imagination,” which helps students connect their personal circumstances and actions to a global society. This process moves them from

seeing only the phone in front of them, towards seeing the global systems and structures affected by computing innovations.

After learning about Global Impact from this perspective, my students will hopefully become more critical consumers of computing innovations, and live more thoughtful lives.

## Project Lead The Way A K-12 Computer Science Pathway

**Bennett Brown**

*Editor’s note: Learn more from Bennett Brown at the CSTA Annual Conference. He will present on this topic on July 14.*

As educators and employers put more emphasis on the importance of primary and secondary computer science (CS) instruction, CS opportunities are expanded for students at all levels. One of these opportunities is the K–12 CS pathway from Project Lead The Way (PLTW).

PLTW is a national nonprofit organization that provides project-based STEM curriculum and professional development to more than 6,500 schools serving grades K–12.

PLTW’s curricula are built around collaborative projects and problems in which student teams create meaningful artifacts and solve authentic open-ended design problems. PLTW teachers attend intensive core training at over 60 universities across the country and share expertise and creative variations of the curriculum through professional learning communities.

PLTW’s K–12 CS pathway includes content at the elementary level (PLTW Launch), middle school level (PLTW Gateway), and full-year courses at the high school level through the PLTW CS program. Courses at the high school level are aligned with the new Advanced Placement (AP) Computer Science Principles (CSP) and the existing AP CS A frameworks.

PLTW’s instance of AP CSP is Computer Science and Software Engineering (CSE). Intended as the first course in a rigorous high school program of study, CSE is structured in twelve lessons built around nine opportunities to practice the Create Performance Task of CS

Principles [see inset]. Students also practice the CSP Explore Performance Task in activities that delve into societal issues.

When students have access to the full K–12 CS PLTW pathway, they enter high school having learned entry-level concepts about sequencing and selection; lists and iteration; objects, properties, and procedures; pair programming; and an agile design process. If students have this background, teachers begin CSE, in which each pair of students creates a strategy, implemented in Python, for the Iterative Prisoner’s Dilemma – the seminal problem of game theory and social science simulations. Pairs post their strategy in a GitHub repository shared with other teams, and then compete in a round-robin tournament.

PLTW Launch and PLTW Gateway content will be available starting in fall 2015, allowing districts to offer the full K–12 PLTW pathway. Today, few high school students have prior experience with CS as part of a strategically designed pathway, which means that most CSE teachers start the course with lessons in which students learn entry-level concepts by creating software in Scratch and App Inventor.

PLTW curricula are unique in that all courses emphasize problem-based learning, as well as career readiness. Tools are selected to reflect current industry practice. Lessons are designed by asking, “What industry-relevant artifacts will show evidence of the desired understanding?” A sequence of activities is then designed to scaffold student learning to lead up to the project or problem that will produce that evidence.

For example, CSE includes a genomics data visualization activity that uses computing at the

*continued on page 4*



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## Project Lead the Way *continued from page 3*

cutting edge of biology. Each pair of students uses published DNA data and supercomputing resources to create a visualization of the relationships among twenty species discovered by the students from real data. Similarly, PLTW's instance of AP CS A delivers the Java course content in the context of industry-relevant tools. Students use Java, XML, and a backend server provided by PLTW to create apps that are interactive and web-ready.

PLTW integrates core science and math content to accelerate, reinforce, and give meaning to what students learn in other courses. For example, during an activity on animation, students learn to work with vectors and right triangle trigonometry.

All PLTW courses are delivered through a learning management system with ready-to-use classroom materials, including the following: student instructions; online quizzes to check for understanding; teacher presentations in both PowerPoint for teacher adaptation and MP4 for "flipped" classrooms; day-by-day instructions for teachers; and assessments.

PLTW has a strong track record of preparing teachers to engage students in rigorous content; in fact, most current CSE teachers were new to CS two years ago. In summer 2014, PLTW trained over 6,000 teachers. You can find our PD offerings for 2015 at: [pltw.org/our-programs/computer-science](http://pltw.org/our-programs/computer-science).

### Opportunities to practice the Create Performance Task in PLTW

- A game or story in Scratch
- An app in MIT App Inventor
- A strategy for a round-robin tournament in Python
- An image processor in Python
- A website in HTML and CSS
- A dynamic website with JavaScript, PHP, SQL
- A data visualization
- A simulation in NetLogo

## Computer Science Not Just for Math and Science Students Anymore

**Carol Yarbrough**

I have been teaching computer science (CS) at the Alabama School of Fine Arts ([www.asfa.k12.al.us](http://www.asfa.k12.al.us)) for seven years. Students are admitted to the school in a chosen specialty: Creative Writing, Dance, Math and Science, Music, Theater, or Visual Arts. During my time here, I have almost exclusively taught Math and Science majors. However, the possibilities for the Arts students to use computing in their chosen fields are endless. Sadly, only a handful of Arts students have enrolled in CS courses in the past.

This year everything changed! There are now more Arts students wanting to take CS classes

than there is room for them in the classroom. The state of Alabama has begun to grant math credit for either the AP CS A course or CS Principles (CSP) course. This policy change has had an enormous impact on the CSP class. These gifted artists and performers are not always interested in learning mathematics, especially when they don't see it as applicable to their lives. They are, however, interested in creating something beautiful, interesting, and meaningful. And if they need mathematics to accomplish their artistic goal, it becomes okay.

For CS to be accessible and engaging for all

students, it needs to be taught in new and interesting contexts. The language independence of the CSP course gives teachers the freedom to use any tool that their students relate to and it gives the students the freedom to explore and create something personally meaningful. Creativity can be incorporated into the course in so many ways: Scratch, Alice, App Inventor, designing and printing 3D models, and writing programs to make music are just a few examples.

The Arts students bring a unique and refreshing worldview to CS. When we work with LEGO NXT Mindstorms, they want to make sure they are aesthetically pleasing. They decorate the robots, give them names, and make sure everything looks just right. When we put sound and images into our App Inventor apps, they work to make it exactly as they envision. When we program the Finch robots to play songs, every note must be exact. We are beginning to work with the Arduino LilyPads and they are already planning interactive stuffed animals, wall hangings, and sweaters—on the first day! They enthusiastically embrace open-ended projects that tend to intimidate many of the Math and Science students. They get so invested in their projects that they don't mind having to do the hard work that it takes to get it right.

Working with these creative “right-brainers” has given me new ways of looking at course

content. It has also caused me to re-examine some of my pedagogy. Teaching methods that have worked for years with the more logically-focused students do not always work with the more artistically-focused students. My existing strategies to teach Boolean logic, binary and hex number systems, or other more technical subjects, don't always work with the Arts students. Likewise, the strategies that work well with the Arts students don't always work with the Math and Science students. We have to spend more time on the mathematical concepts with the Arts students than I am accustomed to with others. However, concepts like design and aesthetics that have always been a struggle with the Math and Science students come naturally to the Arts students.

Not only has teaching CS to Arts students been fun, it has also been enlightening for both my students and me. Now that they are discovering the power of computing, they are beginning to see it as a new medium for their art, and as a discipline in which they can excel. The significance of creativity in CS Principles cannot be understated. Not only does this emphasis on creativity attract the non-traditional CS students to this course, but it also provides an opportunity for the traditional CS students to explore and express their creativity.

## Congratulations, CSTA Member

**Judith Gal-Ezer**

**Judith has been named 2015 recipient of the IEEE Computer Society Taylor L. Booth Education Award for her contributions to computer science education. Judith is a professor at the Open University of Israel (OUI).**

## Institutional Member Alert

Are you aware that you can post your K–12 CS professional development and K–12 CS student events on the CSTA website?

**Don't delay! Send the details today:** [customerservice@csta-hq.org](mailto:customerservice@csta-hq.org)

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## Meet the Authors

### **Bennett Brown**

*Project Lead The Way*

Bennett is one of five Directors of Instruction for CS at Project Lead The Way. After MIT, he taught at inner city and rural high schools for 15 years.

### **Baker Franke**

*Code.org*

Baker is a former CS high school teacher from the University of Chicago Laboratory Schools. He is currently the K–12 Curriculum Development Manager for Code.org.

### **Robert Juranitch**

*University School of Milwaukee*

Bob has been teaching science and CS in Milwaukee for 10 years and previously worked as an engineer. He is also the president of the CSTA-Dairyland chapter.

### **Andy Kuemmel**

*Madison, WI*

Andy teaches CS Principles at Madison West HS and at the University of Wisconsin-Madison. He is the past president of the CSTA Wisconsin Dairyland Chapter. He is coordinating a partnership with the Wisconsin Department of Public Instruction to create an alternative pathway to a CS teacher endorsement.

### **Ralph Morelli**

*Trinity College, CT*

Ralph is Professor of CS and co-PI of the Mobile CSP project, an NSF-funded effort to train in-service teachers to teach CS Principles.

### **Carol Yarbrough**

*Alabama School of Fine Arts*

Carol is in her seventh year as a CS teacher after spending more than 20 years working at aerospace and telecommunications firms as a programmer/analyst. She is a CSALT member.

## Classroom Tools

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A new CSP Curriculum from Code.org new CSP curriculum

**Baker Franke**

*Editors note: Learn more from Baker Franke at the CSTA Annual Conference. He will present on this topic in a workshop on July 13.*

Code.org is creating a complete Computer Science Principles (CSP) curriculum with a set of rich instructional resources consisting of a teacher dashboard with daily lesson plans, videos, tutorials, tools, and assessments that cover the learning objectives from the CSP Curriculum Framework ([advancesinap.collegeboard.org/stem/computer-science-principles](http://advancesinap.collegeboard.org/stem/computer-science-principles)). Code.org's CSP course is designed to be a rigorous, full-year course for high school students. Unique features of Code.org's CSP Curriculum include:

### Pedagogical approach and teacher supports

- Equitable teaching practices and inquiry-based instructional strategies to engage all students in constructing rich understandings of deep ideas in CS.
- Student group work and collaboration (required by the College Board for this course) built into suggested teaching strategies.
- A blend of online, guided tutorials and open-ended, project-based activities.
- A course designed to specifically address the latest developments in the College Board framework, including preparation for the Performance Tasks.

### Interactive computational widgets

- A variety of tools that enable students to experience, visualize, and play with computational ideas, including encoding information in binary, compressing text, encryption, and computationally hard problems.
- An Internet simulator that enables students to experience and solve problems related to networking, such as coordination, addressing, DNS, packet switching, and routing.

### Browser-based JavaScript programming environment (IDE) for creating apps

- Block-to-text-to-block round-tripping. The IDE enables students to program by dragging blocks or typing text, and to toggle back and forth. This eases the block-to-text transition to the point that it is almost an afterthought.
- Built-in remote data storage and database tools. Students are able to design their own data tables as backend databases for their apps, and program against them with ease. Data can be imported as CSV files. Data collected with apps can be exported for analysis.
- Built-in debugging, time-stepping, console interaction, and native documentation.
- Ability to quickly build and share small applications that live on the web with family and friends

### Videos – tutorials, teaching tips, concepts

- Tutorial videos for students to guide them through the use of sophisticated tools.
- Teaching tips videos for instructors that show lessons in action with tips for preparing and presenting them.

- Concept videos feature a diverse cast of role models, from well-known technology celebrities to social innovators who use CS to tackle real-world problems.

If we are to realize the goal of every school having rich CS courses, it means attracting both new students and new teachers to the discipline. This curriculum is designed to meet those goals. It was created by high school teachers, for high school teachers, with the new-to-CS instructor in mind, while offering a rich collection of materials and supports for the experienced instructor, as well.

Lessons are designed to be student-centered and to engage students with inquiry-based and concept-discovery activities. Students have support with learning essential concepts through interactive tools and videos. In this blended model of instruction, teachers can focus their attention on guiding student discovery, addressing misconceptions, and leading meaningful interactions with students

The course is designed to prepare students to succeed on the new-style Advanced Placement assessments (coming in 2016) which include an exam and submission of student projects called Performance Tasks.

The complete curriculum will be free and publicly available the summer of 2015. The resources will be distributed under a Creative Commons License.

## Curriculum in Action

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### The Mobile CS Principles Project

**Ralph Morelli**

*Editors note: Learn more from Raph Morelli at the CSTA Annual Conference. He will present on this topic in a workshop on July 13.*

The Mobile Computer Science Principles (Mobile CSP) project is a National Science Foundation (NSF) funded CS 10K project. Its goal is to train a new cohort of high school CS teachers to teach an Advanced Placement (AP) level course based on the emerging Computer Science Principles (CSP) framework.

The Mobile CSP course is organized around the theme of mobile computing for social good. Students learn the principles of CS by designing and building socially useful mobile apps using the App Inventor programming language. App Inventor is a visual, blocks-based programming language that was created by MIT's Hal Abelson. It is free and runs completely within a standard browser.

What makes the Mobile CSP course so attractive to teachers and students is the tremendous creativity it unleashes in all who experience App Inventor.

The Raffle app illustrates the power and appeal of App Inventor. When the fingers-crossed button is clicked, the app selects a random phone number from a list and sends the text message "You win a T-shirt" to the lucky winner. To join the raffle, a participant has to text the word "raffle" to the app's phone or tablet. We frequently use this app on the first day of class or at teacher workshops to raffle off a T-shirt or App Inventor book.

The Raffle app can be written within 10 to 15 minutes. Students immediately grasp its logic. At the same time, the app involves several important and sophisticated CSP about algorithms, control structures, user-interface design, and the

list data structure. And it's a real app. One can imagine using it for an actual club's raffle and can think of variations and spin-offs that use texting for other socially useful functions.

The Mobile CSP course leverages students' interest in mobile apps to engage their creativity and learn about the revolutionary impacts of mobile computing on privacy, security, and other aspects of our lives. Teachers report that students learn concepts and skills that they can apply in their everyday lives.

The course consists of approximately 60 lessons, half of which focus on designing and building mobile apps and half of which focus on other CSP topics. For the App Inventor lessons, a flipped classroom model is used. Students typically follow a short tutorial that introduces some of the fundamental concepts and practices involved in using App Inventor and designing a program. They are then given problems and challenges where they work in pairs to figure out the solutions themselves. Almost all of the programming lessons include exercises where student are invited to come up with and implement their own ideas.

A similar hands-on approach is used for the non-programming lessons. Students learn how various forms of data (numbers, text, and video) are represented by binary numbers. They learn how to perform various sorting algorithms and they do experiments to determine the relative efficiency of different algorithms. They learn the basic mechanisms and protocols that make the Internet work, including some of the important cryptographic algorithms that make the Internet secure. And they have several reading and discussion assignments from the *Blown to Bits* book, which focus on some of the major issues and impacts of the digital revolution, particularly their manifestations in mobile computing. To help solidify and reinforce their learning, students maintain a daily web-based portfolio of their work where they post their reflections on each lesson.

The Mobile CSP project will hold a workshop at the 2015 CSTA Annual Conference on Monday, July 13. The Mobile CSP project provides a free, six-week professional development (PD) course in both face-to-face and online formats. During its first two years, 26 teachers have completed the Connecticut PD and 40 teachers have completed the online PD. There are currently more than 600 students taking the course, mostly in Connecticut. The next PD is scheduled from June 22 to July 31, 2015.

The free, openly-licensed Mobile CSP course is hosted on Google Course Builder in both a student-facing version and a teacher-facing version. Learn more at: [mobile-csp.org](http://mobile-csp.org).

## Spotlight

The Responsibility is Ours!

**Robert Juranitch**

When I first began teaching, I was concerned about my students' abilities to write about scientific concepts with clear logic and credible evidence. I walked into the office of the head of my English department and confidently asked her whose responsibility it was to train our students to write in this way. She looked at me very matter-of-factly and said, "The responsibility is yours!"

The need to teach effectual communication of computational concepts is a major point of emphasis in the Explore and Create Performance Tasks (PT) which are part

of the course assessment in the Advanced Placement (AP) Computer Science Principles (CSP) course. Each PT requires the student to write in several contexts to communicate varied CS concepts. As a CSP Pilot, I have found that I need to provide practice throughout the course if I hope to have the students approach the PTs with confidence.

Several techniques have been helpful in helping my students develop their skills in writing about computational concepts.

Upon entering any new discipline, the first task is to understand the vocabulary and usage patterns particular to that field of study. To help students expand their knowledge in a new topic, we use a shared Google Doc to assemble an annotated bibliography to which each student contributes content.

In my first unit, I have the students assemble resources addressing the Internet's impact on society. Through this exercise they learn how to evaluate credibility of a source, summarize concisely within a 150-word limit, assess authority of the author, and produce valid citations. This task also mimics the focus of the Explore PT in which they must investigate a computing innovation that has a significant impact on society, economy, or culture.

We then move to an assignment in which each student investigates a historical technology that advanced human communication. The task is to present three positive and two negative impacts of that technology in an online forum. Students are asked to contribute follow-up posts to support or refute three other students' original posts. Through this activity, each student gets a sense of the scale of impact of the Internet as a communication system. This activity can be replicated without technology in a rotating written response format.

From the first through the last day of class, I use writing prompts to give students practice in employing specific language to describe computational concepts. Writing prompts are focused questions in which students free write for a set period of time before employing their thoughts in the class activities of the day.

In early student writing, computational concepts or definitions are often used without a clear understanding of their meaning. After coming to a consensus definition, I might ask for clarification in an online forum in which students can debate phraseology or required elements. Often I will add video links or other Internet resources which will help them see the concept in a larger context. Ultimately, we work toward common definitions, which we continually employ and refine as our understanding grows.

Finally, I have found that practice in digesting the format and verbiage of the PTs is critical. Because the PT is a through-course assessment, teachers are limited in their ability to provide feedback once the task has been assigned. To ensure my students are ready for the formal assessment, I use formative assessments that are somewhat similar to the actual PT. For instance, the CreatePT asks students to identify the use of abstraction in a program of their choosing. My formative task might instead ask a student to describe their use of decomposition in a program of their choosing. All of these formative assignments are published in the same format as those of the actual PT.

In providing students an opportunity to practice their skills in communicating computational concepts throughout the course, we are not only increasing the likelihood of our students performing well on the PT of CSP, but also helping them prepare for the world of work.

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## Have You Voted?

The 2015 CSTA Board of Directors Elections will run from April 2, 2015 to May 4, 2015. In addition to three open positions on the Board, this year's ballot will contain two proposed changes to the CSTA Bylaws.

Each CSTA member, including institutional members, should receive an email on April 2 containing a personalized link to the election ballot. This email will originate from [electionbuddy.com](http://electionbuddy.com), our election service provider, so be sure to look for this email and/or whitelist the sender in your spam filter. If your email address has changed recently, notify [customerservice@csta-hq.org](mailto:customerservice@csta-hq.org) with your correct address.

The three open Board positions in the 2015 election are:

- K-8 Representative (1 position): A classroom teacher who is currently teaching or promoting computer science (CS) at the pre-high school level.
- 9-12 Representative (1 position): A 9-12 classroom teacher who is currently teaching CS at the high school level.
- At-Large Representative (1 position): An educator with responsibilities for K-12 CS education.

For more information about the candidates visit: [csta.acm.org/About/sub/AboutFiles/2015Election.html](http://csta.acm.org/About/sub/AboutFiles/2015Election.html)

## Job Seekers and Employers

The CSTA Career and Job Center is the perfect place for job seekers and employers in K-12 computer science (CS) education to find each other!

**Job Seekers:** The CSTA Career and Job Center will help you find your next great career opportunity in our searchable database of CS education jobs. Search CS education jobs in academia and corporate including: CS teacher, technical coordinator/administrator, curriculum developer, K-12 CS education outreach coordinator, and others. Post your resume and take advantage of free career tools for job searchers. These services are provided FREE to CSTA individual educator members.

**Employers:** Begin your search for an exemplary educator by creating a company profile and posting your available jobs, and, while you're waiting for applications to arrive, search through the resumes in the database. What better place to find talent than your own CS community?

To access the CSTA Job Board, visit: [cstajobs.acm.org](http://cstajobs.acm.org) or click the Job Board button from the CSTA homepage.



## MARK YOUR CALENDAR

### ACSL All-Star Contest

May 23, 2015, Orlando, Florida  
[www.acsl.org](http://www.acsl.org)

### CSECS (Computer Science Education and Computer Science)

June 4-7, 2015, Boston, Massachusetts  
[www.csecs.org](http://www.csecs.org)

### Scalable Game Design Summer Institute: Beginner 2D Game Design

June 8-12, 2015, Boulder, Colorado  
[sgd.cs.colorado.edu/wiki/Summer\\_Institute\\_2015](http://sgd.cs.colorado.edu/wiki/Summer_Institute_2015)

### Mobile CSP Professional Development for High School Teachers

June 22 - July 31, 2015  
[www.mobile-csp.org/participate](http://www.mobile-csp.org/participate)

### 2015 CSTA Annual Conference

July 12-14, 2015, Grapevine, Texas  
[cstaconference.org](http://cstaconference.org)



### ITiCSE (Innovation and Technology in Computer Science Education)

July 6-8, 2015, Vilnius, Lithuania  
[www.iticse2015.mii.vu.lt](http://www.iticse2015.mii.vu.lt)

### RESPECT 2015 (Research in Equity and Sustained Participation in Engineering, Computing, and Technology)

August 13-14, 2015, Charlotte, North Carolina  
[stcbp.org/respect2015](http://stcbp.org/respect2015)

### WiPSCe (Workshop in Primary and Secondary Computing Education)

November 9-11, 2015, London, United Kingdom  
[www.wipsce.org](http://www.wipsce.org)

### Check the most recent CSTA events on the CSTA website

[csta.acm.org/ProfessionalDevelopment/sub/TeacherWorkshops.html](http://csta.acm.org/ProfessionalDevelopment/sub/TeacherWorkshops.html)  
List your CSTA event by contacting [t.nash@csta-hq.org](mailto:t.nash@csta-hq.org)

For the latest and greatest tips & tricks and news & views, check out The Advocate Blog  
[blog.csta.acm.org](http://blog.csta.acm.org)