DOZENS OF REASONS TO ATTEND THE 2017 CONFERENCE

Don’t miss the 2017 CSTA Annual Conference July 8–11 in Baltimore, Maryland. The extraordinary lineup of more than 40 workshops, sessions, BOFs, plus renowned keynote speakers, exhibitors, and networking opportunities, is what makes the CSTA Annual Conference the premier computer science (CS) professional development event of the year. In addition to the quality PD you’ve come to expect from CSTA, we have a few new things that will fire up your identity as a CS teacher with superpowers....

• Our first track on Cybersecurity
• A Certiport Testing Lab
• A “Head Shot Lounge” to get your professional photo taken
• A Cyber Panel on Monday afternoon
• A “Selfie Station”
• A new “PD Badging” program

The CSTA Annual Conference couldn’t happen without the very generous support of our Conference Partners and volunteers. They firmly believe that the CSTA Annual Conference should be on your list of summer PD events and some have shared reasons why you should attend...

“Oracle Academy partners with educators and organizations to make CS part of the education pathway for every student. We are proud to sponsor the CSTA Annual Conference, which lets teachers participate in high quality professional development, experience some of the best CS education resources available, and expand their community network of CS education professionals.”

~ Alison Derbenwick Miller, Vice President, Oracle Academy, Oracle

“The CSTA Annual Conference is a great chance to meet and share ideas with other CS teachers from all over the country. Many teachers may be the only ones teaching CS at their school, and the CSTA Annual Conference is a great way to get connected to the larger CS education community. At CodeHS we’re working with thousands of teachers and it is always great to meet them in person as well!”

~ Jeremy Keeshin, CEO, CodeHS

“We’re excited to share success stories from CS teachers across the country who have incorporated cybersecurity into their curriculum. Teachers will have the opportunity to learn more about cybersecurity education resources available to help them understand the fundamentals and get ideas on how to include the concepts in their classrooms.”

~ Rick Geritz, CEO, LifeJourney

“The CSTA Annual Conference is the premier opportunity to meet with other K–12 CS educators and supporters, learn about the latest trends and best practices in the classroom, connect with companies and content providers, and expand your knowledge about CS. It’s also a blast and the friends you make there will be the colleagues you will share and learn from for years to come.”

~ Dave Reed, Chair, CSTA Board of Directors

“Teachers should come to the CSTA Annual Conference to meet with each other! It’s the best gathering of CS teachers in the country.”

~ Fred Martin, Chair-Elect, CSTA Board of Directors, Professor of CS, University of Massachusetts Lowell

“We the Program Committee and CSTA staff, with both partners and volunteers, have been working for months to make the 2017 CSTA Annual Conference an engaging and enjoyable learning experience. There will be greater partner and international participation, in addition to our many hallmark sessions and workshops “by teachers for teachers.” Come and share your CS superpowers as we explore and celebrate the K–12 CS education community!”

~ Mark Nelson, Executive Director, CSTA

“The conference is a great place to meet other CS teachers, share experiences, gather new ideas, and build a network of resources. It is the one time a year you have colleagues that understand and share in the job you do.”

~ Stephanie Hoeppner, CSTA Annual Conference Program Chair

We can’t wait to meet you in Baltimore!
MEET THE CUTLER-BELL PRIZE RECIPIENTS

Editor’s note: This year’s Cutler-Bell Prize recipients will be formally recognized during the Tuesday morning Keynote at the 2017 CSTA Annual Conference, July 11, in Baltimore.

The Association for Computing Machinery (ACM) and CSTA announced the three high school students selected for the Cutler-Bell Prize. The Cutler-Bell Prize recipients are recognized for taking the fundamentals they have learned in the classroom and developing novel approaches to solving pressing, real-world challenges.

Students applied for the award by submitting a project that engages modern technology and computer science (CS). A panel of judges selected the recipients based on the ingenuity, complexity, relevancy, and originality of their projects.

In 2016, David Cutler and Gordon Bell established the award. Cutler is a software engineer, designer, and developer of several operating systems at Digital Equipment Corporation. Bell, an electrical engineer, is researcher emeritus at Microsoft Research. Each Cutler-Bell Prize winner receives a $10,000 cash prize that is applied toward college tuition.

Elizabeth Hu, Thomas Jefferson High School for Science and Technology (VA)

Elizabeth developed a geographically-explicit, agent-based model, written in Java, to study the past and future patterns of refugees for researching past migration models. It offers potential guidance for both policy and humanitarian aid decisions. Traditional migration modeling techniques, including spatial interaction and regression, fail to account for individual differences and decision-making processes.

Avi Swartz, Cherry Creek High School for Computational Biology (CO)

Determining what proteins are present and the quantity of each protein component in biological samples is a key step in analysis to understand normal, as well as diseased, processes. Mass spectrometry is the best approach, but when done manually, the process can take hours. Avi’s computer program, the “Automated Peptide Selector” (APS), automates the picking of indicator peptides for any protein in any species. The program reduces the required user time to select peptides from six hours for 25 proteins to several minutes.

Aaron Walter, Yorkville High School for Computer Science (IL)

Aaron’s new software program, Rubric Pro, helps teachers recognize students’ understanding of curriculum components. Rubric Pro organizes components of a curriculum into a hierarchical structure and allows teachers to easily create and analyze data from the curriculum’s components.

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CSTA THANKS...

**Thank you, Infosys Foundation USA and Degreed.com**
for the funding and support to create the Continuing Professional Development Pipeline (CPDP).
This fantastic project will strengthen the competence and confidence of K–12 educators teaching CS.

**Thank you, Google**
for your generous support of the Conference, underwriting the Chapter Leadership Summit,
and providing nearly 100 travel scholarships for chapter leaders.

**Thank you, Oracle Academy**
for providing 35 scholarships for first-time attendees at the 2017 CSTA Annual Conference.
Your continued support enhances CS education for so many students!
BUILD YOUR COMPUTING SUPERPOWERS
ORACLE ACADEMY TEAMS WITH CSTA

Denise Hobbs

Editor’s note: Oracle Academy is a Conference Partner for the 2017 CSTA Annual Conference. Please visit their exhibit and attend their conference session, “CS Curriculum for K–12 and Beyond.”

What are your plans for the CSTA conference in Baltimore this July 8–11? Not sure? Never been? Oracle Academy, Oracle’s flagship program in education philanthropy, can help.

The CSTA Annual Conference is a premier event for educator professional development in computer science (CS). This year, Oracle Academy is delighted to offer CS curriculum for K–12 and beyond on Sunday, July 9. One of the many benefits of Oracle Academy’s Institutional Membership level is access to free academic, standards-aligned CS curriculum developed by educators for classroom use. In this session, teachers will have the opportunity to:

• engage in hands-on guided exploration of Oracle Academy Workshops in Java programming, robotics, and Oracle SQL;

• discuss with fellow educators how to use these free resources in your classroom—from standalone lessons to teaching Advance Placement (AP) CS Principles and AP CS A; and

• learn about the ways Oracle Academy brings CS to classrooms, including Oracle Certification exams suitable for CTE end-of-pathway exams.

For teachers who have never been to the CSTA conference, Oracle Academy and CSTA have collaborated again this year to offer Oracle Academy Scholarships for first-time conference attendees. The competition was fierce and the demand was surprising—we were able to award scholarships to less than 10 percent of the applicants.

Then we started receiving thank-you notes, from teachers who had won, and from teachers who had not. CS teacher Ramsey Young from Omaha, NE, an Oracle Academy Scholarship winner from 2016, wrote, “I am overjoyed that I will be able to attend the CSTA Conference! The Oracle Academy Scholarship was the only way that I would have been able to attend this conference and I know that my students, my CSTA chapter, and my fellow computer science teachers in my district will all reap the rewards of what I bring back from this professional development opportunity. Computer science is a growing field in my state and chances to interact with and learn from other computer science teachers are extremely limited. I’m grateful for this amazing opportunity!”

We knew offering Oracle Academy Scholarships was important, but until we started receiving these notes, we didn’t fully realize the impact. So this year, we made some big changes. We nearly doubled the size of the first-time attendee scholarship program! For 2017, we plan to support 35 first-time-attendee teachers with free conference registration and $1,000 Oracle Academy Scholarships that can be used toward conference lodging, transportation, and meals. Winners are selected by CSTA and receive special recognition at the conference. This year’s scholarship recipients will be announced soon, and we can’t wait to meet everyone in Baltimore.
We’ve been asked why we are so passionate about our collaboration with educators. The answer is easy: we believe everyone should have the skills and the opportunities to achieve their dreams. In this century, making this vision a reality starts with computing education and good teachers. Oracle Academy offers free memberships to educational institutions and to individuals affiliated with schools and universities, to drive knowledge, innovation, skills development, and diversity in technology fields. Our resources and benefits are modularized and designed so you can use them in ways that work best for your students, from sparking initial interest in computing to teaching advanced Java and Oracle SQL programming. You can even download Oracle software and develop your own course materials around technologies used by more than 450,000 businesses, government agencies, and non-profits every day. We aim to make you as successful as you can be, so you can do the same for your students.

We hope your summer plans include building your CS superpowers at the CSTA Annual Conference. Past experience has shown it is one of the best ways for teachers to receive professional development, engage in community with other CS teachers, and learn about current trends and issues impacting computing education today. At Oracle Academy, we are proud to partner with educators and with CSTA to help make CS for all a reality.

THE EDUCATION DISCOVERY FORUM
EMPOWERING EDUCATORS & TRANSFORMING CLASSROOMS THROUGH CS
Kevin Nolten

Editor’s note: The Cyber Innovation Center and NICERC will host several events at the 2017 CSTA Annual Conference. Please visit their exhibit and attend the Cyber Showcase Workshop and the Education Discovery Forum on July 8 or July 9, 2017.

What do you want to be when you grow up? This is a timeless question teachers across the country ask their students. Typical responses include doctor, nurse, lawyer, fireman, or veterinarian. Albeit great occupations, today’s workforce not only includes these professions, but also a plethora of opportunities in computer science (CS). As educators, we’re tasked to empower, educate, and develop our future leaders and our future workforce. Our responsibility is simple—at an early age introduce students to, and prepare them for, cyber opportunities, including current career fields and those 21st Century jobs that do not yet exist.

The National Integrated Cyber Education Research Center (NICERC), an academic division of the Cyber Innovation Center in Bossier City, Louisiana, was created to design, develop, and advance both cyber and STEM academic outreach and workforce development programs across the region and nation. NICERC’s objectives are to nationally disseminate innovative practices in cyber and CS education; to promote a culture of educational innovation; to serve as a catalyst
for future research in cyber education; and to provide a focal point for continued interdisciplinary collaboration in CS education.

NICERC programs have become a national model for cyber and CS education, a model that focuses on teacher professional development, curricular design, and collaboration in K–12 education. Through a diverse, multi-disciplinary team of university faculty, subject matter experts, and master teachers, NICERC has developed a vertically integrated, cross-curricular, project-driven curriculum for middle school and high school classrooms. Our approach to content design integrates STEM and liberal arts disciplines wrapped in a societal context with a technology underpinning. Taking this broad approach provides context for the content being taught in the classroom and engages a broader group of students. A sample of NICERC curricula includes STEM: Explore, Discover, Apply (STEM EDA); Cyber Literacy; Cyber Literacy II; Cyber Science; Cyber Society; Cyber Physics; Advanced Math for Engineering & Science; and CS. It is through a federal government grant that this library of curricula is available to educators at no cost.

This year, NICERC is partnering with CSTA to bring teachers a professional development experience unlike any other. The CSTA Annual Conference and the Education Discovery Forum are joining forces to provide teachers and administrators a unique workshop event on integrating cyber and CS principles into the classroom.

One registration provides educators the opportunity to attend three sections: the Cyber Showcase Pre-Workshop on Saturday or Sunday, the CSTA Annual Conference on Sunday through Tuesday, and the Education Discovery Forum on Wednesday through Friday.

During the Cyber Showcase Pre-Workshop (Saturday, July 8, or Sunday, July 9), educators and administrators will be introduced to NICERC’s library of STEM, Cyber, and CS curricula that is available to K–12 teachers. Teachers will experience project-driven, hands-on curricula, projects, and technology that provides new, innovative ways to engage students within the classroom.

Teachers attending the Education Discovery Forum (Wednesday, July 12, through Friday morning, July 14) will have the option to be immersed in one of the following NICERC content threads: STEM: Explore, Discover, Apply (STEM EDA); Cyber Literacy; Cyber Literacy II; or CS. Teachers will dive into the content and gain a greater understanding of the curriculum design process, projects, and opportunities for implementation. All Forum participants will have the opportunity to connect with NICERC subject-matter experts and many of the authors of the curricula.

The key for the further development and enhancement of STEM, cyber, and CS education begins with the teacher. Teachers are vital players in creating a systemic and sustainable change in K–12 education. Imagine a classroom of students who are on the edge of their seats, filled with enthusiasm and questions, and engaged in learning; where students are motivated, excited, and eager to come to school and learn; and where they are inspired to do independent research and testing. Students who were unmotivated and uninvolved are now key players in their small groups and interested in learning. The result is a transformed classroom.

Register for the CSTA conference and the Education Discovery Forum today.

2017 CSTA Annual Conference Special Receptions

Don’t miss these great opportunities for networking, catching up with old friends, and making new friends.

- **Chapter Leadership Reception**, Saturday evening
  July 8, time TBD
- **Reception sponsored by Oracle Academy**, Sunday evening
  July 9, 6–8 PM
- **Conference Attendee Reception**, Monday evening
  July 10, Time TBD
Industry Partnerships Help Build CS Programs

Brett Wortzman

Editor’s note: TEALS and Microsoft are Conference Partners for the 2017 CSTA Annual Conference. Please visit their exhibit and check out the sessions, “Blast Off with Space Battle—The Real-Time, Networked, Space Simulation Programming Project” and “Team-Teach Computer Science with Industry Professionals While Learning It Yourself”

Last summer, I had the privilege of attending the CSTA conference for the first time and connecting with fellow computer science (CS) educators. In my conversations, I heard stories of schools asking teachers new to the subject to teach CS classes. A perceived shortage of experienced CS teachers motivates this situation. According to a 2016 Google/Gallup study on K–12 CS education, 74% of superintendents responded that there was no teacher in their districts with the necessary skills to teach CS, and 33% said there was no teacher with those skills available to hire. Many of the people I met in San Diego last summer were new CS teachers who were just learning the subject and were, understandably, overwhelmed. If you’re one of these teachers, I have good news: you’re not alone!

At TEALS (Technology Education and Literacy in Schools), a grassroots, industry-wide effort supported by Microsoft Philanthropies, we help teachers and schools build and grow a rigorous CS program of study through our unique school/industry partnerships. In the 2016–2017 school year, TEALS partnered with 225 high schools in 25 states and helped over 9,000 students (of which 30% were females and 32% were from underrepresented groups) learn CS. Since the inception of TEALS in 2009, volunteers have contributed over 650,000 hours (equivalent to more than $94 million in services) supporting hundreds of teachers. Whether you’re brand new to CS or an established veteran, TEALS can help you build and grow your program with our two-phase approach.

If you’re just getting a CS program started, you’ll be in what we call the “build” phase. In this initial stage of the program, an experienced classroom teacher is paired with a team of TEALS-trained volunteer software professionals to team-teach a CS class. You lead the teaching team and act as the pedagogy and classroom management authority while your volunteers provide subject matter expertise for instruction, grading, and lab support. Over time, the volunteers not only assist in teaching CS to students, but also help you master the CS content yourself. You’ll gradually take on a larger role, eventually becoming the primary instructor. In this way, TEALS acts as a long-term professional development program you can experience in your own classroom! TEALS aims for each teacher to be teaching independently within two years, and 80% of our partners achieve this goal. If, on the other hand, you’re confident teaching CS on your own (perhaps because of working with TEALS volunteers), you can enter the “grow” phase, the second stage of the partnership. Volunteers in this phase serve in a teaching assistant role, helping support students during lab time and stepping in to teach the occasional lesson when needed. Volunteers can remain with your existing course if TEALS’ capacity allows, or you can choose to start a new course (perhaps Advanced Placement (AP) CS A to supplement an introductory offering). Through this process, many of our schools’ programs have grown from a handful of CS students to a full schedule of CS classes (which we see as the goal for our partner teachers).

At the upcoming CSTA conference, you’ll be able to learn more about TEALS in two separate sessions. In “Team-Teach CS with Industry Professionals While Learning It Yourself,” a panel of seasoned TEALS classroom teachers and volunteers will tell you about their TEALS experiences. You’ll hear directly from teachers how they could run CS classes without any previous experience, and from volunteers about the different roles they play with teachers who are just starting or teachers who have more experience. You’ll hear how, over time, most teachers could learn CS, begin teaching independently, and successfully grow rigorous programs at their schools. We’ll also discuss the different models of support TEALS offers.

In addition, the workshop “Blast Off with Space Battle—The Real-Time, Networked Space Simulation Programming Project,” will teach you about one of TEALS’ post-exam AP CS A projects. Space Battle, a real-time, networked space simulation framework, has been a hit in classes for the last five years. It has kept AP CS A students engaged at the end of the school year by launching them into a friendly competition to program autonomous spaceships. Developed by a veteran TEALS team, Space Battle is a highly accessible, easy-to-use framework that’s ideal for AP CS A classrooms.

We’d love to see you at these sessions, and we look forward to connecting with you at the CSTA conference!
I n my previous job as Computing/ICT Head of Department in a large secondary comprehensive school in Birmingham, England, crystal ball gazing was an exercise in which I needed to be skilled. I prided myself upon my ability to predict new developments and implement subtle changes so that when the crunch truly came, we were ready.

So, when the then-Secretary of State Michael Gove made a speech at the BETT Show in 2012 and said words that would define and shape our future—that the Department for Education was to consult upon “withdrawing the existing National Curriculum Programme of Study for ICT from September”—it wasn’t a shock to me, even though the timescale surprised me.

I had already begun assessing various factors regarding our current practice. I noted two years previously that we were doing our students a disservice by simply offering a one-size-fits-all approach in the vocational qualification sector of ICT. To bring some rigor into our offerings and provide opportunities for students to achieve a different type of qualification, I introduced a General Certificate of Secondary Education (GCSE) ICT in 2011, after it had been re-validated by Office of Qualifications and Examinations Regulation (Ofqual). This turned out to be a wise move, as it also enabled us to begin thinking about things that we had not consider for a while: examination technique, controlled assessment, and grade boundaries.

The next thing that I had to do was assess my staff’s readiness for delivering the new curriculum. Computing is not ICT. One of the most difficult jobs was trying to convince senior leaders that the two subjects were entirely different; one of my favorite explanations was that an ICT teacher teaching computing was like a French linguist delivering Latin. I agree that there are similarities and crossovers, however, the subject knowledge and curricular content are very different.

I suppose you could say that it was a blessing in disguise that I had a large department. By 2012, my department included nine teachers. This meant that I had a wide array of talent and skills at my fingertips—three computer scientists, four ICT teachers, and two business studies teachers in the ranks. I needed a strategy.

I decided to avoid the new wave of qualifications that began quickly flooding the Years 14–16 market and that the best course of action would be to begin with our Years 16–19 offering. I utilized the skills of two computer scientists within the department, and they immediately began preparing the new Computing A-Level to deliver starting in September 2012. At the same time, my Key Stage 3 coordinator began looking at our Year 8 offering. We decided that students in Year 8 would study an entry-level computing program, covering aspects of the new curriculum such as computational thinking, binary numbers, algorithms, hardware and software, and visual and textual programming.

The thinking behind all of this was simple; my computer science (CS) specialist staff could challenge themselves and work with talented post-16 students who saw CS as a field of interest despite not having any previous experience. During this time, my ICT and Business specialists could begin teaching entry level computing at Year 8, while also embarking upon their own professional development.

I invited Miles Berry of the University of Roehampton to work with my staff for a training day, and his input from a standpoint of being an eminent voice in the negotiations over the new curriculum was invaluable.

Following a successful first cohort of post-16 students, we were ready to begin delivering the new GCSE computing curriculum in September 2014. My staff now had the confidence of having delievered computing at a lower level and they were now able to do a good job of delivering the crucial GCSE.

I began the article by talking about crystal ball gazing. I suppose the other key factor that I failed to mention is that without the flexibility and willingness of my staff to adapt and improve, none of the above would have happened. A successful middle leader must instill confidence and trust and be a leading example. The road from ICT to computing was not an easy route, but well-timed alterations and a good eye for spotting upcoming changes will see you through.
Speaking from Experience
A Technology Integration Mindset

Cindy James

At the beginning of the 2016–17 school year, and after teaching K–8 technology courses for several years, I was named the Technology Integration Specialist for Norwood School District 63 in Peoria, IL. Since then, I’ve been working very hard to figure out exactly how I can use that position to enhance our students’ achievement. Fortunately, I feel that we have experienced great success and want to share our experiences with others.

The transition required a new mindset for myself, my fellow teachers, and students. Acknowledging that I didn’t know everything was one of the first steps. We still have a lot to learn, but we are learning by working together—students, teachers, and administrators.

Our district has grown this year from two dedicated computer labs to nearly 600 Chromebooks in a 1:1 program. Classrooms for grades three through eight have two carts of Chromebooks, one Chromebook for each student. Kindergarten through grade two have five Chromebooks for each class, five laptops, a couple wired PCs, and access to iPads. This is very different for teachers who before had two wired PC’s per classroom and the occasional iPad cart to manage. Previously for these early grades, technology instruction was provided in the computer lab.

Students in kindergarten through grade four still receive separate technology instruction and the classroom computers provide the needed reinforcement. They learn basic computing skills, keyboarding, Google Apps, and the Microsoft Office Suite, beginning in the first grade. All students, kindergarten through grade four, learn technology vocabulary and coding.

At first, the students in grades five through eight really missed a dedicated computer class. This transition has been tough for me, as well as for them. But as we progress through this transition, I see that the new arrangement is better because they have more opportunities for creativity and engagement all day long. Our teachers are excited about the devices in their rooms and are exploring new opportunities. I have been able to teach many of the lessons and skills that I had previously taught in the lab to the grade-level classroom teachers, and they are incorporating the lessons into their teaching. I now have time to research and provide solutions and lesson ideas for all of them. As everyone’s skills rise, I look forward to the time when we will be able to embrace cross-curricular lessons and whole-school projects.

Recently, we’ve integrated some interesting tools: Screencastify (an extension for video recording), Aurasma (an augmented reality app), Google Cast for Education, Nearpod, Padlet (virtual posters), and Tagul.

Eighth grade students used the Screencastify extension and Aurasma for a technology enrichment to a poetry unit. They recorded themselves reciting poems that they had written and then linked pictures of themselves with their poster projects to the video using Aurasma. With access to our Google Dashboard, I created separate grade-level accounts for students to keep the videos private.

We did a similar thing for the fourth grade “living museum” project. Students found a picture online of a historical character and linked the video of them delivering a speech about this person to the photo, along with a biography link, on YouTube. Parents and families loved using their phones and tablets to access the videos of their children.

A special education teacher uses Google Cast for Education and Nearpod to share students’ screens and their work in the classroom. And a seventh grade teacher uses Tagul to create word clouds with Chromebooks and is working with me to integrate coding into the math curriculum using Scratch, Code.org, and Kodable.

Our new mindset has enabled these accomplishments. Teachers are more aware of the technology skills that their students already possess and acknowledge that many times, they exceed their own. Our job is to guide students to authentic sources, stress the importance of digital citizenship, and to enable them to choose the technology tools best suited to achieving curriculum objectives. They are growing to realize they not only have a global voice, but a global responsibility.

Learn more:
Mrs. James Technology blog
Mrs. James CS & Technology Education
Mrs. James Technology
Wow! More exhibitors than ever before will be waiting to visit with you in the exhibit hall at the 2017 CSTA Annual Conference. Be sure to stop by to see what’s new. They have great ideas for your classroom!

- ACM-W
- Bootup PD
- Certiport
- Cyber Innovation Center-CIC
- CodeCombat
- CodeHS
- CoderZ by Intelitek
- Codio
- College Board
- Dexter Industries
- Digital Media Academy
- DK Penguin Random House
- Georgia Institute of Technology
- Google
- IBM
- Infosys
- Johns Hopkins Center for Talented Youth
- KOFAC
- Microsoft
- NC Lab
- NCWIT
- NICE
- Oracle Academy
- Project GUTS
- Rising Stars
- SPEL Technologies
- Stylus Publishing
- SUNY Albany
- TEALS
- Ten80
- ThinkFun
- University of California, Berkeley
- UTeach-Austin
- VidCode
- Wonder Workshop
- Zero Robotics
- Zulama

Free Certiport Testing Lab at the 2017 Conference

Certiport is proud to partner with CSTA in offering a FREE Microsoft Technology Associate testing lab at this year’s conference. Attendees will have access to the full suite of MTA Certification exams, including the Introduction to Programming Using Block-Based Languages exam, which is the first offering in the new suite of coding certifications. Those who pre-register for an exam at the conference will receive a complimentary information kit, as well as a free practice test voucher to help them prepare for the exam. Exams include:
- Introduction to Programming Using Block-Based Languages
- Microsoft Office Specialist 2010 & 2013
  - Excel
  - Excel Expert
  - Word
  - Word Expert
- PowerPoint
- Access
- Outlook
For the last three summers, I have enjoyed teaching more than 100 students in grades two through five how to program in a camp environment. Programming is still the term thrown around on book covers and in technology articles, but I’ve found that students prefer the newer term, “coding.” And they like calling themselves “coders” as they learn to create games and apps. Learning to code is a good investment because workers with coding skills are in-demand and the demand is expected to continue for decades to come.

When it comes to teaching children how to code, I’ve researched several methods, including the video-on-demand style of teaching, such as Khan Academy and YouTube videos. These types of sources often use voice-overs or on-screen text to teach programming concepts. What I’ve observed with my students, however, is that nothing quite beats books in the students’ laps or on the desktops as they learn to code. And through trial and error, I’ve found the perfect workbooks that work well for both independent and collaborative learning.

For the last few years, I’ve relied on several DK coding books and workbooks that teach Scratch programming. Scratch is a free programming tool from MIT that introduces programming concepts such as conditional statements, variables, and loops to young programmers. The drag-and-drop format of Scratch allows students to snap in blocks of code like building with LEGO blocks.

While Scratch is not difficult to learn, it’s still a programming tool, and even the most tech-savvy students can feel overwhelmed by the user interface and all the buttons, menus, and windows. For this reason, I start my young coders with DK’s Scratch workbooks rather than the lengthier books.

The DK Scratch workbooks are 40 pages in length and in color. The smaller size isn’t as scary as the typical 300- to 400-page programming book. Because the workbooks use the same colors and graphics as the Scratch environment, they’re immediately inviting.

There are currently four workbooks: Coding with Scratch Workbook, Coding in Scratch: Games Workbook, Coding in Scratch: Projects Workbook, and Scratch Challenge Workbook. I begin by having the students read the two-page introduction to the Scratch interface. Then it’s straight to the first hands-on project; it could be to create a game to control a flying monkey and avoid hitting buildings or to create their own music maker. Each workbook offers five or six projects with complete step-by-step instructions with images that students can use to check their work.

The workbooks are great for both independent and collaborative learning. Independent learners can work at their own speed. I often provide students with extra challenges when they finish their projects; this is usually some little twist on the project, such as increasing speed or adding additional obstacles in a game. Whether the campers work independently or on teams, the workbooks are an incredible and reasonably priced resource ($5.99 US). When the camps are finished, campers take their workbooks home.

After the campers have completed one or more of the workbooks, I provide a small library of additional DK Scratch programming books with more hands-on projects. Two of my favorites are Coding Projects in Scratch (224 pages, 18 projects) and Coding Games in Scratch (224 pages, 8 projects). The only problem is that my students want to take them home, also! I keep just three copies of each, so they share and the books stay in the classroom.

The popularity of my programming camps continues to grow and I’ve added additional sessions to meet the demand. I’m happy to know that DK is developing more books for Scratch. I believe that there will be a new batch of coders coming up prepared and ready to handle the growing career opportunities in coding because of their early introduction to programming through resources such as DK coding books.
In states and school districts across the country, there’s exciting momentum to get Computer Science (CS) to all students. Making equity in CS education a reality starts with helping you, the teachers, get the CS education you deserve. This article investigates:

How do teachers or administrators who are interested in bringing CS to their students find professional development (PD) that will prepare them for the task AND fit their unique needs?

**PD Is Personal**

According to many teachers and our experience at Zulama, there’s no one-size-fits-all answer to that question. Each of you and your schools have different interests, needs, and constraints to consider. It’s important to find a PD experience that leaves you feeling more confident and prepared to bring CS to your students.

“Highly effective professional development can lead to highly effective classrooms. Research has shown that effective professional development includes modeling techniques for teachers to use in their classrooms and feedback on lessons” (Harris, Graham, and Adkins, 2015). It’s not enough to teach the right things; we need to deliver the them in the right way.

At Zulama, we create life-changing experiences for students and their teachers. Our game-based CS curriculum and PD explore computing principles in fun, rigorous ways using the same tools as the pros do—so both you and your students are prepared to use the latest, cutting-edge software and programming tools. We have built PD programs of many shapes and sizes that prepare teachers for teaching programming, game design, and digital art. We’d like to share some of what we’ve learned to help you find the PD that suits your individual needs.

**What’s Out There?**

Fortunately, there are plenty of CS PD options out there to consider. The Zulama and CSTA partnership PD offering, CS and Game Design Certificate, costs $400 and includes a discounted GameMaker Studio license. Teachers will spend 30 self-paced hours online and be prepared to integrate PBL or GBL into any class, such as an Introduction to CS course or AP CS Principles.

**Making Sense of All the Options**

- What are the differences among the myriad of options?
- How does an online experience compare to an in-person one?
- Is long-term or short-term PD more impactful?

There is a variety of crucial factors that affect the efficacy of a PD experience. Here’s our take:

**Online vs. In-Person**

Online learning means lower cost, more flexibility, and the ability to work at your own pace. Online experiences also encourage people to ask questions that they might not be comfortable asking in-person. And if you want to start learning a new skill right away, an online option can be the perfect fit.

In-person PD, on the other hand, creates face-to-face connections that feel more like a mentorship-based experience. It can be a more intense, disciplined use of your time. We prefer to combine online and in-person PD experiences because we find that the two together lead to the deepest learning.
Ultimate Summer Guide Continued: Computer Science Professional Development

By Nikki Navta, CEO of Zulama

Short-Term vs. Long-Term
Many teachers say that the ideal PD is longer-term, “...something that you keep working on for a semester or a year” (Gates Foundation, 2014). Often an online component allows teachers to continue returning to the course content over the span of a semester or year.

Skill Building vs. Preparing to Teach a Specific Class
Some PD opportunities are designed to prepare educators for teaching a specific course. If your goal is to build your knowledge and confidence in the short run, these classes can be very useful. PD programs that help you build a new set of skills lead you to achieving specific career goals, developing yourself as a professional, and becoming more adaptive in the long run.

Hands-on Learning vs. Passive Learning
The general consensus among teachers is the best PD programs “...involve hands-on strategies for the teacher to actually participate in” (Gates Foundation, 2014). We have found that an effective way to incorporate hands-on learning in online environments is to ask participants to submit work products throughout the course. In the Zulama/CSTA Computer Science and Game Design Course, teachers create original video games and digital portfolios, submit them online, and then receive feedback from our expert certifiers. Reading the course syllabus is a great way to figure out how interactive the learning will be.

Selecting the Right PD for You
So, how do you decide which PD is right for you? There’s so much information to take in when making that decision, and your time is precious. Starting with a few simple questions can lead you down the path toward PD that you will find more engaging and relevant.

Learn more about our Computer Science and Game Design Certificate PD, developed in partnership with the CSTA, here. Subscribe to the Zulama Newsletter here.

Finding the Right PD

- How much time is available to commit to CS PD?
- How much money is there to allocate to CS PD in the next year?
- What are the goals of this PD offering? Do those goals match up with my personal PD goals or my school’s PD goals?
- Does this PD prepare me to teach one kind of CS class or does it prepare me to bring CS skills and computational thinking to various different classes?
- How would I or teachers at my school like to learn? Would I prefer to explore a new skill fairly independently (online) or have an intimate one-on-one mentor-based experience (in-person)?
- Who is delivering this PD program? Was the content written by educators who understand a teacher’s perspective or by individuals without experience in the classroom?
When you visit Baltimore for the 2017 CSTA Annual Conference, you’ll want to plan time to explore this amazing city. Here are a few interesting things to see and do.

- Babe Ruth was born in Baltimore. Today his memory is honored in the Babe Ruth Museum.
- A statue of Babe Ruth stands prominently outside the gates of Camden Yards, home of the Baltimore Orioles baseball team.
- Baltimore was the birthplace of the American railroad. The B&O Railroad (Baltimore & Ohio), the country’s first commercial railroad and passenger station, was built in 1829. The B&O Railroad Museum is an affiliate of the Smithsonian.
- The National Aquarium lies in Baltimore’s Inner Harbor. It’s home to thousands of marine species, including a spectacular jellyfish exhibit and dolphins.
- The Star-Spangled Banner (the flag, not the song) was sewn in Baltimore by Mary Young Pickersgill. Pieces of it are on display at the Star-Spangled Banner National Historic Landmark.
- Edgar Allen Poe is buried in Westminster Church Cemetery at Fayette and Green. It’s a tradition for visitors leave coins on the grave. Every year since 1949, on the night of Poe’s birthday, a mysterious stranger left a bottle of Cognac and three roses on his grave. The practice mysteriously stopped in 2010.
- America’s first Catholic cathedral, the Baltimore Basilica of the Assumption, is in Baltimore.
- The first African American-owned shipyard in the US is now an African American heritage site, the Frederick Douglass-Isaac Myers Maritime Park Museum.
- I.M. Pei’s World Trade Center (1977) is the tallest equilateral pentagonal building in the world at 405 feet tall.
- Billie Holiday, the jazz singer, was born in Baltimore. A monument in her honor stands on the corner of Lafayette and Pennsylvania Avenues.

The Baltimore Museum of Art houses the world’s largest collection of Matisse paintings in the world. Visitors can enjoy the museum’s permanent collection for free.

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- Baltimore/Washington International Thurgood Marshall Airport is the first and only US airport to have a dedicated trail for hiking and biking.
- Maryland is famous for great seafood, especially crabs. During lunch hour on Maryland’s Chesapeake Bay, vendors sell almost as many crab cakes as hot dogs and hamburgers combined.
- The snowball, predecessor to the slushy, snow cone, and shaved ice, was invented in Baltimore during the American Industrial Revolution.

And a few tidbits for being a knowledgeable and respectful visitor…

- The city is named after Cecilius Calvert, Lord Baltimore, a member of the Irish House of Lords and the founding proprietor of the Maryland Colony.
- During The War of 1812, the “Star-Spangled Banner” was penned by Francis Scott Key, on the outskirts of this city.
- Baltimore’s nickname is “Charmed City.”
- According to the Brookings Institution, almost a quarter of the jobs in the Baltimore region are science, technology, engineering and math positions.
- In Baltimore, it’s illegal to throw bales of hay from a second-story window.
- It’s illegal to take a lion to the movies.
- Being in a public park with a sleeveless shirt is prohibited.
- Spitting on city sidewalks is prohibited.
- And…. it is illegal to mistreat oysters.

ENJOY YOUR VISIT!
MARK YOUR CALENDAR

April 27–May 1, 2017
San Antonio, TX
AERA Annual Meeting

May 27, 2017
Newbury Park, CA
ACSL All-Star Competiton

June 16–17, 2017
University of Birmingham, UK
Computing At School (CAS) Conference

June 25–28, 2017
San Antonio, TX
ISTE

July 8–9, 2017
Baltimore, MD
The NICERC Cyber Showcase & Education Discovery Forum

July 17–21, 2017
CSPdWeek
• Colorado School of Mines, Golden, CO: Bootstrap, BJC, NCWIT, and others
• College of St. Scholastica, Duluth MN: Mobile CSP
• University of Texas, Dallas, TX: UTeach AP CSP
• University of California, Berkeley, CA: Beauty and Joy of Computing

Check the most recent CSTA events on the CSTA website
List your CSTA event by contacting: customerservice@csteachers.org

Are you a Cyber Teacher?
Issued by the Computer Science Teachers Association (CSTA), the Cyber Teacher Certificate Program is an online professional development course providing teachers with eight hours of continuing education units (CEUs). The course has a $400 value and is FREE for US-based CSTA member teachers.

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Proceeds to benefit Computer Science Education
Only available online through the CSTA T-shirt Campaign.

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