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The International Society for Technology in Education (ISTE) is a nonprofit organization that works with the global education community to accelerate the use of technology to solve tough problems and inspire innovation. Our worldwide network believes in the potential technology holds to transform teaching and learning.

ISTE sets a bold vision for education transformation through the ISTE Standards, a framework for students, educators, administrators, coaches and computer science educators to rethink education and create innovative learning environments. ISTE hosts the annual ISTE Conference & Expo, one of the world’s most influential edtech events. The organization’s professional learning offerings include online courses, professional networks, year-round academies, peer-reviewed journals and other publications. ISTE is also the leading publisher of books focused on technology in education. For more information or to become an ISTE member, visit iste.org. Subscribe to ISTE’s YouTube channel and connect with ISTE on Twitter, Facebook and LinkedIn.

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Our mission. ISTE inspires educators worldwide to use technology to innovate teaching and learning, accelerate good practice and solve tough problems in education by providing community, knowledge and the ISTE Standards, a framework for rethinking education and empowering learners.

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I remember the feeling I got the first time that I heard a speaker say, “Today’s rate of change is the slowest that you will experience in your lifetime.” I don’t recall who said it or where I was when I heard it, but I regularly think about the sense of urgency I felt to make my work meaningful for the teachers and students in my district.

As a district administrator serving 28 schools and approximately 18,000 students, I’m responsible for innovation and instructional technology. I often reflect upon those words and sometimes even utter them myself as I look for opportunities for change and to shift mindsets.

Whether we’re talking about learning spaces, curriculum, device adoption, personalization or the host of other topics we focus on daily, the fact is that we’re in a constant state of change to meet the needs of our students.

ISTE is in a similar spot.

Each year we see new standards, programming, professional development opportunities and partnerships that are meant to meet the needs of you, the members of ISTE. I’m continually amazed at the powerful changes taking place across the country and how educators are responding.

Throughout my career, ISTE has provided resources, ideas and inspiration that inform my daily practice. The new opportunities emerging from programs like ISTE U and ISTE Certification for Educators, as well as the thought leadership in Edtech Advisor, continue to push my thinking and that of my teachers. We recognize that we’re in a constant state of change and that we’re forever in “beta.”

As I begin my term as president of the ISTE Board of Directors, I’m excited to be able to serve and give back to the organization and its members that have given me so much — and I’m not alone in this sentiment. Every board member is humbled by the opportunity to strategically position ISTE to help make education a better place for everyone. We offer guidance, oversight and strategic direction as ISTE continues to evolve to meet the needs of you and your communities.

Your board is comprised of educators and practitioners who work with schools, students and teachers every day, and we want to hear your voice. We understand the sense of urgency that you have in your work and, as we look to the future, we recognize that ISTE has the capacity to play a role in the changes you’re making.

Together, we hope to transform teaching and learning, accelerate innovation and solve tough problems in education.

Thank you for being resilient change agents who share the sense of urgency I felt to give students authentic and meaningful learning experiences. We appreciate your commitment to ISTE and your students, and look forward to our next steps together.

Please don’t hesitate to connect with the board using the hashtag #ISTEBoard or emailing us at board@iste.org. We look forward to serving and connecting with you throughout the coming year.
New platform puts edtech intel at your fingertips

Heidi Ellis
ISTE Senior Director of Membership

I often see discussions in ISTE Connect, home of our online communities, asking for advice about a tool that does this or software that does that. “I need a typing app that works with fourth graders on an iPad.” “Our school is looking for a new LMS.” “I’ve tried this assessment software, but it doesn’t do everything I need.” Members quickly respond to share their experiences and offer work-arounds.

What if there was one place to bring all these conversations, experiences and input together, where you could see ISTE member insights on hundreds of products? Now there is – ISTE Edtech Advisor.

Powered by LearnPlatform, ISTE Edtech Advisor provides access to data-driven insights on more than 5,000 tools to help determine a product’s potential to transform learning and identify contexts where the tool has been most successful.

A rubric for each product provides information on how often the reviewer uses the tool, how long it took to set up and ease of use. Ratings on how the tech supports the ISTE Standards for Students are also included so you can see how the tool impacts learning based on the standards. And everyone providing reviews is an ISTE member – one of your tech-savvy peers.

Plus, in the additional comments area, you get a fuller picture of how a tool has been used and how it may work for you. You can even ask questions of reviewers if you’re curious about a specific feature. This is especially helpful if you’re asked by your administrator to evaluate tools that perform a certain function or task.

Edtech Advisor also provides graphical reports that show how a product is rated on many aspects and how it compares to similar products. Reports are easy to download, print or email for use in presentations.

ISTE members who are administrators receive a discounted rate to extend the benefits of LearnPlatform to their entire district. LearnPlatform is a comprehensive edtech management system that improves districts’ capacity to analyze information about product usage and impacts on student achievement, along with other benefits.

The partnership between ISTE and LearnPlatform is designed to enhance the use of high-quality research and data-driven insights to inform improved edtech impact and decisions for district leaders, educators and product developers.

The Edtech Advisor library continues to grow as individuals share the products they use, and the platform becomes more powerful as educators like you add more reviews.

And, in addition to helping peers, submitting a review provides valuable feedback to edtech developers seeking to improve their products based on educator feedback.

So why not take a few minutes right now to write one review for a tool you know is great, but might underappreciated or is not widely known? Provide your insights. Share your experience. Get the word out there and help fellow ISTE members get valuable information they won’t find anywhere else!

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By Kimberly Lane Clark

Not long ago, I was a high school student sitting in a classroom wondering how taking a particular class would help me in life. Luckily, most of the courses I was taking actually complemented what I planned to study in college – computer science.

Even as a child, I was intrigued by how computers operate. I wanted to know things like how to take a computer apart, and how emails are sent and then magically appear in someone’s mailbox.

I couldn’t get enough, and all of my friends and teachers were aware of this. During the summer, my mother would let me take computer classes to feed my interest.

Today, I often wonder where I’d be if my mother didn’t provide me with the opportunity to learn about computers. What if my mother didn’t know what opportunities were out there? What if I didn’t have mentors to assist me in fulfilling my dream?

Fast forward to a recent conversation I had with a male college student who is majoring in electrical engineering during an event about combating water issues that was held at his school. The students had to work together to solve a water issue, and throughout the project he had a mentor, an electrical engineer, who helped him work on the problem.

Throughout the conversation with this smart young man, I couldn’t help but wonder what it would be like if young women had the same opportunities in schools. What if they heard from women who look like them and work in STEM-related fields?

After all, we know women are not adequately represented in STEM and computer science fields, and yet by 2020, 60 percent of STEM jobs will be focused on computing. Currently, 74 percent of middle school girls say they are interested in STEM and CS fields, but only 0.4 percent actually end up majoring in these fields. And the statistics are even worse for African-American and Latino students.

I believe it’s time to ensure that girls are seeing, hearing from and being mentored by people who look like them working in the fields they want to pursue. And I think
Educators can be on the leading edge of making that happen. Here’s how:

**Be intentional.** As educators, we have to be intentional about providing access to opportunities. There’s a diversity divide in many STEM and CS fields, and it’s up to us to help bridge that divide. If there’s a lack of African-American and Latino women represented in these fields, we must present opportunities to them.

**Become an advocate.** Advocacy starts with voices of educators. To develop that voice, we must be educated on the issues within the STEM community. We’ve heard about the gender divide, but what about other underrepresented groups? Advocacy for these groups must begin in within K-12 schools, first by recognizing there’s a problem and then by collaborating on solutions.

Educators can get up to speed by attending STEM-focused workshops and conferences to get a deeper understanding of how to bridge the STEM and CS gap. Then we should return to our communities and encourage stakeholders to provide training, resources and mentoring for underrepresented groups.

**Focus on your community.** School leaders, parents and business owners need to hear about the learning divide girls face when it comes to STEM and CS. Teachers can spread the news – and help create solutions – by establishing committees to address the issue and encouraging committee members to find places for girls to explore, build, design and express their creativity.

For example, I created a CS ambassador group made up of teachers and principals that meets a few times a year to brainstorm ways to bring CS to our district in new ways. This year, we’re partnering with local businesses on a STEM night during Computer Science Education Week.

Two ambassadors are starting a monthly Genius Bar where students can submit tech questions and have them answered by other students. In the future, the program will also offer physical computing sessions.

You can also engage parents by inviting them to a STEM expo at your school. Sometimes parents think coding and CS are just about video games, an activity they don’t care to support during school hours. But by hosting a STEM expo or coding jam, you can dispel that myth, point to the benefits of CS, and explain how CS and coding experiences can shape students’ college or career opportunities.

Kimberly Lane Clark (@AskATechNogGirl) is an award-winning educator and speaker based in Texas. She coaches educators in CS integration, diversity inclusion strategies, blended learning strategies and edtech. She also serves as the city lead for Black Tech Women in Dallas, and is the president of ISTE’s Computer Science Network.

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By Julie Phillips Randles

Cecilia Rodriguez Alcala’s Facebook page resembles that of many young adults: photos of art she likes, snapshots of her nieces and nephews, a group selfie on a night out with friends in Asunción, Paraguay. She also quotes Abraham Lincoln and posts links to media coverage of her job.

But Rodriguez Alcala isn’t your typical young professional and MBA graduate. She believes in the power of one, and she set out in July 2008 to transform theory into reality as the founder and executive director of Paraguay Educa.

One laptop per child. That simple declaration has led to a non-governmental organization (NGO) that, so far, has raised more than $6 million dollars to create Paraguay’s first “Digital City” in Caacupé, benefitting 35 schools by bringing connectivity, education and laptops to 15,100 children.

But it took a one-of-a-kind woman to set the wheels in motion.

Rodriguez Alcala was born in Asunción but moved to Miami, Florida, with her family when she was 15, where she attended a large public high school rather than the private schools that had been her experience. She aced her classes and earned a full scholarship to Tufts University in Massachusetts, where she majored in international relations and history and minored in political science. But learning is a hands-on activity, so she also worked for Yale’s Jumpstart program, training college students to work with low-income preschoolers, and accepted a position on the board of Sparks International, which created the first co-ed school in Kabul, Afghanistan.

With her diploma tight in hand, she accepted a position with Fundación Paraguaya, an NGO for entrepreneurship, self-sufficient schools and microfinance programs, and wrote for FOCO Magazine. During an interview with computer scientists for an article, the seed of an idea was born: Computers in the hands of schoolchildren could change education dramatically.
Cecilia Rodriguez Alcala says we shouldn't underestimate children's ability to teach others, even adults.
The final myth about changing the world is that it’s better to wait until you have more experience. The world needs you before you stop asking naïve questions, and while you have the time to understand the true nature of the complex problems we face and take them on. Don’t put your desire to change the world on hold. She threw herself into making this happen, not just securing the hardware but addressing teacher training and code programming lessons for every student in Caacupé. Using the results from her One Child, One Laptop program, Rodriguez Alcala then teamed up with youth organizations and journalists to push for a trust fund for education in Paraguay that now earmarks $1 billion.

Thanks to these efforts, she earned the AMBA (Association of MBAs) Independent Student of the Year award in 2015 upon her completion of an MBA at IE Business School, and was named adviser to Paraguay’s National Educational Reform in 2017. She also forms part of major international platforms that include the Global Shapers Community of the Davos World Economic Forum.

Rodriguez Alcala brings critical insights to all of her roles. And she also shares the wisdom her mentors have passed along: “The final myth about changing the world is that it’s better to wait until you have more experience. It may seem from where you sit that the impact you can have at this point in your lives is negligible. But I’m a big believer in the power of inexperience…. The world needs you before you stop asking naïve questions, and while you have the time to understand the true nature of the complex problems we face and take them on. Don’t put your desire to change the world on hold. Start now…. If you don’t give yourself room to explore by starting early, immersing yourself in an issue you care about and embracing the iterative process, you’ll never end up with your best draft – or your best self.”

Rodriguez Alcala sat down with ISTE to talk about her international efforts.

YOU RAISED MILLIONS OF DOLLARS TO BRING CONNECTIVITY AND DEVICES TO THOUSANDS OF SCHOOL CHILDREN IN PARAGUAY, AND YOU HELPED PASS LEGISLATION THAT ESTABLISHES A TRUST FUND FOR EDUCATION-RELATED PROJECTS TO THE TUNE OF $108 MILLION A YEAR FOR 10 YEARS. WAS THERE A SITUATION OR PARTICULAR EVENT THAT MOTIVATED YOU TO TACKLE SUCH EXTRAORDINARY PROJECTS?

During my childhood, my parents always insisted that my education was the most important investment in my future. Both
my grandparents had been university professors and were examples of lives dedicated to teaching and giving back to their community. In 2000, my family moved to the United States and I went from a small private school in Asunción to a 4,000-student public high school in Miami.

In Latin America, there are few success stories that emerge from public schools because there is a big gap in the quality of public versus private school systems. Given my own experience in a private school, I was very surprised when I heard that Jeff Bezos, CEO of Amazon, had graduated from my same public school in Miami. Not long after, I earned a scholarship to study at Tufts University, a school focused on public service, which made me appreciate, once again, the opportunities that arise when you work hard at achieving your goals.

After graduation, I returned to Paraguay and was urged to do something for Paraguay’s education system where only four out of 10 students graduate from high school.

WHAT IMPACT HAVE YOU SEEN AS A RESULT OF THIS WORK?

We’ve carried out four external evaluations in 35 schools in Caacupé, the city where Paraguay Educa has been working since it was founded. First, there are social impacts that go beyond academics, including providing children with identity cards, vaccinations and the opportunity to interact with their parents living abroad.

In terms of learning, impacts range from improving self-esteem and fostering a growth mindset to the development of 21st century skills, such as collaboration, creativity, problem-solving, critical thinking and global citizenship.

There’s also a multiplying effect in the community; children teach their parents how to use technology for their jobs and to make more informed day-to-day decisions.

such as the Google Code-In initiative or Nickelodeon’s animation challenge.

Three classes have now graduated from the program. I’m gratified when I witness the children’s impact in their surrounding community.

EVERY EFFORT TO BRING ABOUT LARGE-SCALE CHANGE HITS SOME ROADBLOCKS. WHAT HAVE BEEN SOME OF YOUR CHALLENGES ALONG THE WAY AND HOW HAVE YOU OVERCOME THEM?

Paraguay Educa has encountered a number of barriers, mostly related to the overwhelming corruption that exists in Paraguay. Once we worked with a governor who promised to develop the project in the Chaco region, and we helped him commit congressmen to allocate $1 million U.S. dollars to purchase laptops, connect schools and carry out teacher training.

It was terrible to see him steal the funding after we trusted his intentions and carried out advocacy efforts with citizens in the region who were truly committed. Our only resource was the press, where we insisted he should be judged and condemned for his actions. As a result, he faced a civil trial and his party lost the elections in the next term.

There’s also a multiplying effect in the community; children teach their parents how to use technology for their jobs and to make more informed day-to-day decisions.
Our lesson learned was to always seek public-private partnerships when allocating funding in order to have trustworthy citizens as a check and balance to corrupt politicians.

THE ONE LAPTOP PER CHILD (OLPC) INITIATIVE HAS BEEN WIDELY CRITICIZED FOR NOT LIVING UP TO EXPECTATIONS. IN URUGUAY, FOR EXAMPLE, ONLY 21 PERCENT OF EDUCATORS WHO RECEIVED THE LAPTOPS WERE USING THEM REGULARLY. OFTEN THE DEVICES, WHICH ENDED UP COSTING TWICE THE ORIGINAL ESTIMATE, WERE DROPPED OFF IN COMMUNITIES WHERE NO ONE WAS TRAINED TO USE THEM. FOR THESE REASONS AND MANY OTHERS, SOME HAVE CALLED THE PROGRAM AS A WHOLE A FAILURE. HOW WOULD YOU CATEGORIZE THE SUCCESS OF THE PROGRAM?

The OLPC initiative is being implemented in more than 60 countries, each with its own objectives and implementation characteristics. In Uruguay’s case, the government’s objective was to reduce the social and digital divide rather than focusing on academic performance. Consequently, I consider Uruguay a success in terms of its universal connectivity and elimination of its digital divide.

In contrast, Perú established a learning objective but failed to provide adequate teacher training and a support system for its IT infrastructure. The Zamora Terán OLPC experience in Nicaragua, Honduras, Costa Rica and Guatemala is a great example of a comprehensive educational program. So I’d be hesitant to call the OLPC program a failure as there are many differences within the 1:1 model, and a successful experience depends on each country’s objective and its commitment to adequate deployment.

HOW DO WE PREVENT WASTE WHEN IT COMES TO USING EDUCATIONAL TECHNOLOGY FUNDS EFFECTIVELY?

Everyone we talked to about school reform mentioned the importance of investing more in teacher training and curriculum development. It’s evident that professional

By observing children in the program taught in their own schools, we realized children’s capacity to teach themselves, teach each other and teach adults of all ages. Normally we think of children as quick learners, but we underestimate children’s ability to teach. When we told the Ministry of Education our trainers would be kids, no one believed us.
development must be a priority in any edtech initiative. However, by observing children in the program taught in their own schools, we realized children’s capacity to teach themselves, teach each other and teach adults of all ages. Normally we think of children as quick learners, but we underestimate children’s ability to teach.

We also learned that if you give kids responsibility, they will rise to the occasion. Faced with the challenge of encouraging teachers to incorporate programming in their lesson plans, some students volunteered to be the facilitators of the workshops. When we told the Ministry of Education our trainers would be kids, no one believed us. That’s why I advise investing in teacher trainers but also in children who can be mentors and leaders in capacity-building initiatives.

YOU’VE SAID THAT KIDS, WHEN PROVIDED WITH THE RIGHT TOOLS, CAN COME UP WITH AMAZING SOLUTIONS TO EVERYDAY PROBLEMS. CAN YOU GIVE US AN EXAMPLE OF THAT?

Ignacio is a passionate student at our Technology Center Serranía. Because he is blind, he was unable to walk to classes because the sidewalks in his community didn’t accommodate children with disabilities. This problem inspired five students from a school in Caacupé called Cristo Rey to create a “smart cane.”

The cane works similarly to the technology we use to park our cars. Using sensors, the cane sends audio signals to the user in order to alert and guide. To optimize costs and create the prototype, the children recycled various elements in their community, including a selfie stick, an old radio and speakers that were used to add music and allow Ignacio to listen to soccer games while he commuted from one place to another.

This is a great example of a design that was created by kids who were motivated to solve a real-life problem by collaborating and using their creativity.

HOW CAN A TEACHER IN A RELATIVELY UNDER-RESOURCED SCHOOL STILL BE EFFECTIVE IN PREPARING HER STUDENTS FOR THE JOBS OF THE FUTURE?

It’s definitely more challenging for teachers to be effective in places with scarce infrastructure or limited pedagogical support. And in underprivileged areas, children face a number of social problems associated with extreme poverty that go beyond academics.

However, we’ve seen various teachers with limited resources use their creativity to plan lessons incorporating design for change or project-based learning methodologies. They work with their students to solve community problems and, in doing so, develop critical thinking, collaboration and creativity skills.

Providing teachers with mentors and a learning community is also helpful, and a school’s leadership can make a big difference in teachers’ motivation and peer collaboration.

HOW SUCCESSFUL HAVE YOU BEEN IN YOUR EFFORTS TO ENGAGE GIRLS AND YOUNG WOMEN IN STEM? WHAT STRATEGIES DO YOU RECOMMEND?

We have been successful at engaging girls in programming and mathematics through a program called Programate. The biggest participation gap occurs when girls turn 12-13 years old and reduce their participation in extracurricular activities due to security problems.

To address this issue, we partnered with organizations like Girls Code and developed specific strategies to involve parents and teachers in groups that could look after girls attending our Technology Center Serranía. We also created WhatsApp groups to register their departure and arrival to different activities.

As a result, we were recently very proud to have a Scratch Day where 80 percent of the participants were girls.
WHAT ARE THE KEY ELEMENTS FOR A SCHOOL TO CONSIDER IN A DIGITAL TRANSFORMATION OF THEIR LEARNING ENVIRONMENT?
I recommend a five-point plan:
• Design a shared vision that identifies the critical steps needed to achieve a shift in the learning paradigm and a dynamic innovation-driven school culture.
• Provide professional development for teachers, school directors and administrators.
• Provide resources that connect content, technology and curriculum.
• Involve parents and other stakeholders in the community in formal and extracurricular activities.
• Establish technical and pedagogical support teams with constant feedback from end users.

WHEN EDUCATORS LOOK TO BUY EDTech SOLUTIONS, HOW CAN THEY MAKE SURE THOSE SOLUTIONS WILL MEET THE NEEDS OF THEIR LEARNERS?
We believe educators should choose edtech solutions according to their local context, including education objectives, student preferences and resource availability.

Oftentimes, through the foundation, we recommend open source software that can provide children with the opportunity to get involved in creating their own learning environments or personalizing existing solutions at a low cost.

In terms of edtech acquisitions, Paraguay’s Ministry of Education operates through a very centralized structure as compared to the U.S. The advantage is that economies of scale allow for a reduced price in the edtech acquisitions, but the

INTERVIEW

Some of these kids have said that before the project, they thought they were destined to work in certain trades but now they have a number of options and aspirations.
disadvantage is that oftentimes there is a single solution provided for schools that have very different realities.

In my opinion, there should be a mix between centralized and decentralized support systems for teachers to choose the solution that best fits their needs.

IS THERE A SCHOOL YOU’VE WORKED WITH THAT WAS ABLE TO REALLY TRANSFORM THEIR APPROACH WITH THE POWER OF TECHNOLOGY? TELL US ABOUT IT. WHAT MADE THEM SUCCESSFUL?

Daniel Ortellado in Caacupé is a school I always love to visit because it’s an example of a learning culture driven by transformative leadership. Lucia Villalba, the school director, has involved all the teachers in making the school a model for the community despite its limited resources. During one visit she explained that lunch was a key time to carry out teacher planning sessions and in doing so, integrate different subject matters for school projects.

Since most teachers went home for lunch in their neighboring homes, she decided to cook the meals herself and treasure this time for team initiatives.

On another occasion, we introduced her to an intern from Italy who was an expert in programming. Lucia valued his work so much that she found a place for him to live in the community.

Daniel Ortellado teachers have one characteristic in common – they’re always researching and coming up with novel approaches to learning. There are many children from this school who have created an extracurricular group called “xo evolution” that has led them to work on a number of interesting robotics initiatives. Some of these kids have said that before the project, they thought they were destined to work in certain trades but now they have a number of options and aspirations.

CAN YOU THINK OF A PARTICULARLY EFFECTIVE LEADER OR EDUCATOR YOU’VE WORKED WITH? WHAT MADE THEM SO IMPACTFUL?

Brothers Nelson and Daniel Ojeda come to mind when I think of effective leaders. They teach fourth and fifth grade with so much enthusiasm. They’re very resourceful in finding edtech solutions that will engage their students. Their classes are also characterized by the integration of computational thinking across the curriculum.

A common denominator between the Ojeda brothers and other teacher leaders we work with in other schools is that they are focused on continuous improvement and adaptation of their lesson plans according to students’ interests and the local context. They believe in encouraging students to develop a growth mindset for increased motivation and achievement. I don’t think there’s a substitute for dedicating quality time to prepare classes and receive constructive feedback from students.

In my opinion, there should be a mix between centralized and decentralized support systems for teachers to choose the solution that best fits their needs.
Previous experience routinely colors our expectations, and that was certainly the case for us when 60 iPads arrived in our small village school in Purley on Thames, United Kingdom. These wonderful devices were presented to us by the JDO Foundation in response to our application to engage in its global collaboration program.

Having previously taught computing skills using three lethargic PCs in the corner of the classroom, I felt as though a fairy godmother had waved her wand. Now I was equipped to resource my students with 1:1 tech to teach coding skills, communication options, website building, collaborative mind-mapping and digital citizenship. In short, I could begin to teach 21st century students today’s curriculum using 21st century technology embedded within our learning opportunities.

At least, that’s what I saw when the iPads arrived.

It hadn’t occurred to me that our 21st century students have 20th century parents who remember their own school experiences of “computer time” as a reward for completing “real” work or behaving well. In other words, a holding activity or even entertainment for break times.

I hadn’t considered the alarm experienced by excellent parents fighting to regulate their children’s screen time at home, only to witness their efforts seeming to be undermined by the school carting devices into the classroom and encouraging children to have routine access. I didn’t stop to consider our parents’ perceptions of iPads and the wider world of technology.

And so it wasn’t long before concerns began to filter through: from parents and caregivers, from other members of the community and even, to a degree, from within school itself. I rapidly became aware that for many, the concept of teaching with tech was oxymoronic, two completely incompatible notions. My shiny new power tools were likely to be relegated to a locked storage unit with strictly time-tabled access if I didn’t bring my community on board.

In order to infuse vision and excitement, I needed to offer both reassurance and inspiration.

This process started with a tech evening, which I now run annually. Parents and supporters are invited to school for a three-part evening: explanation, exploration and inspiration.

Recognizing parents’ concerns is hugely important, so I open the evening by agreeing with parents that the internet is not always safe, but, I reason, neither are roads. I share with parents that the way to help children navigate roads safely is to ensure they are taught properly and have the opportunity to practice under guidance. And I suggest the same principle should be applied to learning to navigate the web.

In the same way that keeping children away from roads would severely constrict their freedom, keeping them from internet access would also be to confine them. I explain the need to resource our students for an exponentially evolving digital world where the jobs of tomorrow don’t even exist yet, where students who are digitally literate will have a huge head start. A world in which the international marketplace can be reached by a single computer programmer. A future that demands global collaboration facilitated by the digital skills taught today. A world where classroom tech is morphing from a simple teaching tool into a mechanism for mutuality.

The second part of the evening is very practical, and I encourage everyone present to engage in challenges that have been prepared beforehand: simple coding activities, collaborating on a Google document, creating a group Padlet, competing in a math challenge, to name a few.

This section is hugely important as it’s very hard to win over minds that haven’t had the opportunity to connect with the skills taught and honed using digital devices.

The evening finishes with a grand finale showcase demonstrating some of the children’s work – often still in progress.

For those who attend, the evening is hugely motivating, and parents become some of my most effective advocates. However, there are many who don’t attend such evenings, so I always reach out further.

To this end, we began conducting iPad 101 workshops for elderly people in our community – delivered by the children. My students had honed important skills and wanted to be able to share them. To prepare, they ran surveys and discovered that elderly...
people value the photographic, video and communication potential stored within their devices, but often don’t know how to use them fully.

The workshops offer lonely people an opportunity to meet with our school youngsters, facilitate genuinely useful learning for both parties and help to rectify the misconception that digital devices are solely for gaming and entertainment purposes.

To further promote the creative learning opportunities afforded by our devices, my students created audio-visual versions of their favorite picture books. QR codes linked to these videos were then stuck inside the picture books so that when younger children scanned the book, one of their favorite role models would pop up on screen and read to them.

These audio-visual story videos were published to a website so children could also access them from home, inadvertently continuing to promote our collaborative learning.

In fact, we began to publish much of our work: websites with book recommendations or topic research, Padlets promoting punctuation pedantry, online book anthologies with our best writing, a collaborative advent calendar using ThingLink, Adobe Spark posters and, via Google Classroom, aspects of every part of our classroom learning.

This level of transparency offered parents a sneak peek into their children’s learning and most were overwhelmingly impressed by their children’s intelligence and creativity.

The icing on the cake for me has been parents reporting back about the revolution in their children’s engagement with devices at home as a result of positive interaction with them in school. Instead of zoning out on games, our students are tuning in with one another as they collaborate on projects, and our learners are becoming socially literate in a world swamped by social media.

Rather than being consumers, our children are creators, writing their own apps, games and puzzles. Far from neglecting their intelligence, students are stretching their brains as they encounter problems to be solved and programs to be debugged.

Although the arrival of digital devices in our school conjured up images of games and distractions for some of our parents, recognizing this concern, addressing it and offering a transparent view of our learning within the classroom has transformed these first impressions.

Amelia Archer is a globally connected educator and a senior teacher at Purley Church of England Primary School. She’s shared practical applications for technology in the classroom and her belief in “The Digital Pencil Case” at Bett, the Education Show, JDJ Global Educators’ conference and with school leaders at conferences in the South of England.

“Rather than being consumers, our children are creators, writing their own apps, games and puzzles. Far from neglecting their intelligence, students are stretching their brains as they encounter problems to be solved and programs to be debugged.”
CHOICE PD

How personalizing professional development helps inspire educators, spread good practice

By Jennifer Snelling
When Kathryn McGrane heard a co-worker describe the concept of flipped learning, the fifth grade teacher at Illinois’ DuJardin Elementary had a feeling it could help engage her students and empower them in their own learning. She followed her instinct, researched the method and began using it in her own classes with great success.

McGrane didn’t stop there. She was so enthused about what she’d discovered that she and Jennifer Eggert, instructional technology coach for DuJardin’s district, teamed up to present a session called “Mixing Up Math,” open to teachers in the district. Based on that interest, they followed up with an edcamp on flipped learning and opened McGrane’s flipped classroom for observation so teachers could get a feel for how it worked. Although the sessions were optional, teachers received some professional development credit.

Remember the old days of professional development where the best thing about the experience was the doughnuts? The most effective continuing education is not an event imposed upon teachers, but rather an active experience around something the teacher wants to learn more about. After all, educators know their students and can tell when an idea comes along that will be effective.

Just as schools are personalizing education for their students, many are encouraging their educators to chart their own learning path. This shift is leading to several changes in professional development for educators, including more learning options that count for credit, more voice and choice in what they learn, and more flexibility around when and how professional development takes place.

“The days of sit-and-get PD are gone, and if they’re still here, they’re not effective or meeting the needs of our teachers,” Eggert says. “The same expectations need to be held for teachers as for students.”

**What makes effective PD?**

Eggert has experimented with lots of modes of professional development in her district. She’s tried edcamps, speed dating, virtual course studies and students leading the teachers – all in an effort to find more effective methods of reaching kids.

How does she know what’s working? Feedback from teachers. Eggert regularly surveys her teachers on their goal, purpose, what they want to learn and how they want to learn it. With that feedback in mind, she designs the PD.

The good news is that in districts such as Eggert’s that provide flexibility in credentialing, the options are seemingly endless. That’s also the bad news. For educators, sorting through those options to find high-quality opportunities that will meet their needs can be a time drain for the already overworked. While finding relevant and applicable professional development that teachers want is key, quality and research-based content is equally important.

Edtech leaders like district librarians, curriculum coordinators or innovation coordinators can be called on to curate opportunities that meet the district’s objectives.

**Room to explore**

Teachers appreciate the opportunity to explore learning they consider relevant to their students. For that reason, a lot of PD is incorporating an explore component, a mini-lesson or goal-based learning activities enhanced by resources like videos or articles, so teachers can be inspired by what
other educators are doing. The additional resources also allow teachers to go back and learn at their own pace or review.

Effective professional development focuses on what educators are trying to do for kids. Rather than an edtech class about what to click on, the use of tools are embedded in learning about higher-level concepts, curriculum and how to help students reach goals.

In addition, teachers are asked to do rather than passively receive information. Instead of watching a slideshow, teachers might be expected to research a concept and implement it in the classroom.

Los Angeles Unified School District (LAUSD) has shaped professional development with the big picture in mind. The district developed its vision by asking how to be relevant to digital age learners and how to create equity for economically disadvantaged kids, says Cynthia Braley, principal at Coldwater Canyon Elementary School.

In 2012, the school had 850 kids and only 90 computers; it’s now 1:1, as is the entire district. LAUSD became 1:1 in 2018, but had laid the groundwork with a district-wide redesign of professional development based on the ISTE Standards for Educators. That’s a big change for a school like Coldwater Canyon.

Braley didn’t wait for the district to direct her to PD; she found classes to learn about the possibilities the new technology offered her school. After learning how to use the technology, she came back and told her teachers that a re-evaluation was coming.

The district now supports the school by offering grade-level support teams with a tech-savvy teacher, an instructional technology facilitator who is available upon request; once-a-month technology PD with school site experts; and visits to practitioner schools. The goal isn’t to pressure teachers who weren’t comfortable with or excited about the technology. Instead, there
are multiple opportunities for continuing development.

LAUSD’s fifth grade English learners improved their fluency by 15 percent after two years of 1:1 devices, the same time period when the district radically redesigned its professional development.

“Everyone here has a growth mindset,” says Braley. “And we are seeing results from what we’re doing, including continuing improvement in math scores.”

The shift to flexible PD

Of course, flexible, personalized PD is a dramatic shift for some districts and educators. Texas’s Lufkin Independent School District didn’t get on board right away, says Rafranz Davis, executive director of professional and digital learning in the rural district.

“The shift we have taken has been a big dose of crazy when you talk about rural schools, which operate very systematically,” she says. “PD happened after school until 6. We found through data and common sense that people weren’t showing up. We were reaching fewer and fewer teachers. When you’re done teaching at the end of the day, even if it’s something you want to learn, it’s a beat down to have to stay to learn it.”

Instead, Lufkin ISD now does a two-day conference before school starts for all teachers. The sessions are 85 percent teacher led, with more than 200 sessions to choose from. While there are some required sessions built in, teachers have lots of choices, most of which honor the expertise already in the district. During the school year, Lufkin shifted to offering PD at lunchtime and offers personalized learning communities, online learning and the option for teachers to use a form to submit any education they participate in outside of district learning.

Of course, there has to be a balance of flexibility and accountability to ensure educators are getting training that continues to grow their practice. Missouri’s Parkway School District offers a lot of online professional development that’s developed in-house, based on the interest of educators.

The district also offers continuing education credit for certifications or micro-credentials that educators seek out, including ISTE U courses or ISTE Certification for Educators.

ISTE U is an online professional learning hub where teachers can take courses on critical edtech topics to build their skills and earn continuing education credits.

ISTE Certification is a competency-based, device-neutral certification based on the ISTE Standards for Educators. The certification combines face-to-face and online pedagogy-focused professional development with a competency-based evaluation to help educators rethink and redesign learning with technology.

“Philosophically, we are in a shift,” says Bill Bass, ISTE board president and innovation coordinator at Parkway School District. “We’re trying to instill that professional development happens through conversations, library newsletters, Twitter chats and professional learning networks.”

The good news is that in districts such as Eggert’s that provide flexibility in credentialing, the options are seemingly endless. That’s also the bad news. For educators, sorting through those options to find high-quality opportunities that will meet their needs can be a time drain for the already overworked.
Parkway’s personalized professional learning system is tiered to ensure the district can verify evidence of learning, not just participation, as well as encourage the sharing of that learning.

Parkway’s personalized professional learning system is tiered to ensure the district can verify evidence of learning, not just participation, as well as encourage the sharing of that learning. In order to receive credit, educators provide, on a case-by-case-basis, evidence of learning, implementation, impact in the classroom and sharing. Some credit is awarded for evidence of learning, generally a 300- to 500-word description of the learning, with the most credit given for evidence of sharing with other educators.

“We strive for a balance of overall goals and personalized learning,” says Bass. There are some things that we want our teachers to know, but we also want to give them the academic freedom and opportunity to make learning their own. We want to make sure they’re walking away with a change in thinking.”

Parkway provided more than 150 teacher hours last summer around technology alone. That included 375 online classes for teachers with a more than 75 percent completion rate.

Share what you know
Training from one teacher to another is emerging as one of the most effective ways to influence professional development. Like Parkway, Sun Prairie Area School District uses a staff-initiated online platform to submit for credit if a teacher wants to learn something specific for his or her classroom.
“It’s about growing networks of people and connecting to make sure they have opportunities to learn at their fingertips,” says Curt Mould, director of digital media, innovation and strategy at Sun Prairie Area School District in Wisconsin. “We don’t say no to anything if you can validate the need and connect it to what the learners in your classroom need.”

These networks can include social media, podcasts, professional learning networks and word of mouth. At a winter celebration a few years ago, Jacquie Gouldthorp, associate principal at Sun Prairie’s Creekside Elementary, had a conversation with principal Jillian Block about their hopes and dreams for students. When the subject of project-based learning (PBL) came up, it sparked a plan to do some site visits at other schools in Wisconsin that already included PBL practices.

The two sent staff members to multiple sites, and a community of PBL experts quickly developed. The concept of learner profiles also emerged from those visits – a method that lets students identify who they are as learners and report on their strengths and learning goals.

Students at Creekside now lead parent-teacher conferences using their learner profiles. As a result, kids are excited for the conferences and parents have an increased home-school connection.

“We get people out to schools and outside of our district so they can ask tough questions and look at it through somebody else’s eyes,” says Mould. “We want to inspire the thinking and give people on-the-ground experience for what that looks like. As thinking and learning grows, we have peer-to-peer sessions within our districts.”

Parkway School District also encourages voluntary small cohort groups that focus on a specific topic during six to eight, three-hour early-release days over the course of the year. This allows teachers to build a network of people across schools to come together with a common learning interest. Taking the concept of peer-to-peer support even further, Parkway requires that these teachers share their learning with teachers outside the cohort.

“We’re seeing a lot more transfer and spreading of ideas, making that topic something they own instead of something we as developers are providing to them,” says Bass. “Discovery and exploration are embedded in best practices and design principals.”

Virtual PLNs
Professional learning networks on social media have also changed the PD landscape. Whether a Pinterest board or a Twitter chat, these PLNs are teacher-driven and meet teacher needs.

Eggert, who didn’t have a Twitter account just four years ago and only uses it professionally, can’t imagine her life without it. Now she’s not just working with teachers in her building, she’s sharing ideas with teachers from around the world.

“We’re all here to help our kids grow and that can be in so many different ways,” she says. “Why not share ideas and help each other achieve this super intense and awesome mission?”

The real question is if changing how PD is done results in improved learning outcomes for students. While the evidence is still primarily anecdotal, there’s little doubt that educators who are inspired are more inspiring to students.

“PD is the key to making positive change in schools,” says Bass. “Just like with kids, learning for adults occurs in lots of different ways. Discovery and exploration become a mindset that we take into the classroom.”

Jennifer Snelling is a freelancer who writes for a variety of publications and institutions, including the University of Oregon. As a mother to elementary and middle school-aged children, she’s a frequent classroom volunteer and is active in Oregon schools.
Kids teaching kids – with chatbots

By Nicole Krueger

The client: A second grade classroom learning about nutrition.

The developers: Eighth grade computer science students exploring how artificial intelligence works.

The product: A chatbot capable of dispensing information about local produce.

Today’s students will live and work in a world with artificial intelligence, and computer science teacher Sharon Harrison wants them to be ready. Learning how AI works is a good start, but it doesn’t necessarily prepare kids for the complex decisions they’ll have to make as stewards of this powerful technology.

Instead, Harrison gave her students at University of Chicago Laboratory Schools a taste of what it’s like to be a programmer working with artificial intelligence. Placing students in the role of software developers, she challenged them to create an AI system that meets the needs of a real-world client — in this case, a chatbot that can answer younger children’s questions about nutrition.

“I think it’s important at the moment for students to have an awareness of AI in general and the impact AI is going to have on our future — in the near future,” she says. “For that particular class, I also wanted them to realize it’s quite achievable to make a chatbot yourself.”

While chatbot creation tools make it easy for students to build and deploy their own conversational software, Harrison had her class use raw programming language to code simple chatbots with a command-line interface so they could focus the underlying structure and mechanics instead of the software’s visual components.

“I wanted them looking more at the mechanics of the chatbots, rather than having another level of distraction and not really understanding how it was functioning,” she says.

Many adults interact with chatbots in their daily lives, often without realizing it. But when Harrison’s students encounter this technology in the future, they’ll not only be able to recognize it for what it is, but they’ll understand how and why it’s capable of processing questions and delivering appropriate responses.

Why does it work?

STUDENTS COLLABORATE LIKE REAL-WORLD DEVELOPERS. Breaking into small groups, the student developers worked together to determine what information to include and how their chatbots would respond to basic questions. With a flowchart as their road map, some groups divided the work into sections, with individuals coding in parallel and then merging the parts into a cohesive whole.

THEY DEVELOP A USER-CENTRIC MINDSET. Having an authentic client added an extra layer of complexity to the project as students learned how to design for a specific audience. “They had to consider their menu choices and how to prompt and get information from second graders who might make spelling mistakes or talking mistakes. We looked up interface design, language and how to use
information so that the second graders could understand it,” Harrison says.

**THEY OVERCOME REALISTIC DESIGN CHALLENGES.** Like any software development project, the assignment had its hiccups. The development team met with their clients only once for feedback, and the second graders, whose field trip to the local farmers market got rained out, didn’t come prepared with as much information as they expected. Just like professional programmers, the eighth graders had to do the best job they could with the resources they had. Some of the chatbots were simple, others more complex, but all were functional.

Despite the hiccups, Harrison says, the positive feedback from students was overwhelming.

“They really enjoyed it,” she says. “I most definitely would do it again.”

**Why does it work?**

**STUDENTS DIRECT THEIR OWN LEARNING.** As the sixth graders worked on their VR tours, Bright took a hands-off approach, letting their excitement for the project guide their learning. Students determined which skills they needed to develop, such as coding or animation, to bring their vision to life. Bright let them fail when necessary, stepping in only to help them figure out what went wrong. His advice to other teachers: “Don’t be afraid. Just take a chance, let it go where it goes, and trust that your kids will do the right thing.”

**THEY PUSH THROUGH THEIR STRUGGLES.** Because students were so absorbed in the project, they “forgot” to complain about tasks such as writing, which is typically difficult for the sixth graders, most of whom read below their grade level. “The kids were writing more than I’ve seen them write all year,” Bright says. “They were pumped up. The project was theirs, and that passion led to enthusiasm, which led to higher-quality work.”

**THEY BECOME WORLD CREATORS.** It’s powerful when students express their learning by creating something – but virtual reality takes it to the next level, Bright says. “It’s getting them immersed in a world, whether fiction or nonfiction, and getting them to bring something to life. They love to create their own world and show each other what they’re doing.”

In the process, he adds, they also learned important lessons about “seeing people as people. That we all have a story, and everybody’s story is as important as everyone else’s.”

**Telling immigrant stories in virtual reality**

Before migrating to America, Ewurabena Bondzie remembers climbing coconut trees in Ghana, striking cacao pods with small rocks, and throwing stones at mango trees to knock down fruit.

Years later and thousands of miles away, a group of sixth graders in St. Louis, Missouri, listened to her recollections as they worked to reconstruct her childhood world in a virtual reality museum.

At Hancock Place Middle School, where 100 percent of students receive free and reduced lunch, few kids ever venture outside their community, says social studies teacher Matt Bright. Most will grow up, work and raise their families in the same place they were born. Yet many are also second-generation immigrants whose families fled the Bosnian war.

“A lot these kids didn’t know, ‘Why am I here? How did I get here?’ ” Bright says. “They’re not aware of the world outside their zip code.”

To help broaden their worldview, Bright partnered with an English teacher at his school to create the Gateway Memories Project, a cross-curricular community engagement project designed to encourage students to explore their own immigration stories – or those of others – through virtual reality.
If the digital age has taught us anything, it’s that everything we know is subject to change. No matter what field you work in, today’s best practices could be tomorrow’s bad habits. Fads flare up and fade out. Long-accepted facts become debunked myths.

As teachers grapple with questions about how to prepare students for this world of accelerated change, one thing has become clear: The future of education isn’t in the content students absorb. It’s in the cognitive skills that allow them to keep learning and adapting long after they’ve left the classroom.

At the convergence of neuroscience and psychology, the field of mind, brain and education (MBE) science has generated a wealth of research showing how students actually learn—often debunking many of the long-held beliefs today’s educational practices are based on. Yet despite the transformative potential of these findings, the field of education has been slow to adopt practices based on the latest learning science research.

“We’ve learned more about the brain in the last 20 years than in the previous 200,” says Ian Kelleher, a science teacher and head of research for the Center for Transformative Teaching and Learning. “But when we looked at how it has changed teaching—really, it hadn’t. Teachers were still teaching in the way they were taught or that worked for them when they were in school.”

While teachers and learners alike struggle to find their footing in the shifting sands of content-based learning, learning science offers the promise of solid ground, says Meg Lee, supervisor of advanced academics at Frederick County Public Schools in Maryland.

“When I think about what the next 20 years will bring, I can’t even imagine where we will be in terms of technology,” Lee says. “But what we do know is we’re still going to have a student brain present and an adult brain present. The thing I love about MBE science is it’s not only applicable in any content area or grade level, but it’s also applicable no matter what that frontier is that we can’t imagine. To me it’s a great thing for a school system to grab hold of because it’s not going to expire.”
As educators catch on to the value of developing teaching methods based on learning science research, schools are increasingly looking for ways to distill these findings into actionable strategies and practices for the classroom. But it’s a lot harder than it sounds.

Part of the problem, says University of California, San Francisco, neuroscientist Melina Uncapher, is that “the science of learning isn’t systematically being taught to our teachers, which is terrifying.” At the same time, “research on how people learn is almost exclusively being done in labs and not in classrooms. Our research is not being informed by how kids learn in real-world settings. There’s almost this complete disconnect between research and practice.”

ADAPTING RESEARCH FOR THE CLASSROOM

Although the learning sciences have generated a wealth of findings over the past few decades, there aren’t enough educators working to translate the research, produced and replicated in lab conditions, into practical strategies suitable for the diverse, dynamic and often messy classroom context. While the science may seem relevant, it’s not always clear how teachers are supposed to apply it in the real world.

“We seem to be missing a kind of professional that is like an engineer,” says Bror Saxberg, vice president of learning science at Chan Zuckerberg Initiative (CZI), an organization dedicated to advancing education through personalized learning. “Somebody who stands between the science going on and its application at scale, whose job and training is to keep finding ways to apply what the science might suggest is a good solution in ways that are affordable, graceful, usable and fit into the context they’re in.”

While a study or lab experiment has a finite beginning and end, adapting research for the classroom involves an open-ended process of designing, testing and iterating to arrive at a workable solution – and it’s hard to find educators with the right combination of skills and experience, both in the lab and in the classroom. They need to be highly capable as both teachers and researchers, says Tina Grotzer, principal research scientist in education at Harvard’s Graduate School of Education.

“I don’t think there are a lot of them around,” she says. A teacher-turned-cognitive-scientist, she’s one of the rare individuals who maintains a foot in each world. “I think we really need to invest in those people – not cognitive scientists who spent lot of time in a lab, but cognitive scientists who spent time in a classroom.”

To help bridge the disconnect, the Chan Zuckerberg Initiative has begun supporting “innovation clusters” as one way to fuel the development of new teaching methods backed by learning science. The organization pairs researchers with practitioners to co-define a problem and rapidly iterate solutions.
“Right now the concept is to generate the problem of practice at the site, so that as solutions come out we immediately have a place to test them out where it’s meaningful,” says Jessica Tsang, co-author of *The ABCs of How We Learn* and manager of learning research at CZI.

As concern over the gap between research and practice escalates, a growing number of educators are stepping in to fill the void. St. Andrews Episcopal School in Washington, D.C., has spent the past 12 years advancing its mission to innovate new classroom approaches grounded in mind, brain and education science research. Driven by a desire to improve the quality of teaching within its own walls, the school launched an initiative in 2007 to train all faculty members in the learning sciences. As other educators started taking notice of their work, St. Andrews began partnering with schools around the world to share what they’d learned, eventually forming the Center For Transformative Teaching and Learning (CTTL) as a way to keep research-informed practices front and center.

With a research center embedded in its PK-12 school, St. Andrews joined a small but growing list of organizations that have successfully united research and practice under one roof. In 2013, it became the eighth school to join Research Schools International, a global network of schools led by faculty members from Harvard University’s Graduate School of Education, whose goal is to conduct cutting-edge research in learning science and disseminate its findings to the global education community.

To that end, the CTTL recently launched a beta test of its latest professional learning offering, Neuroteach Global, a gamified micro-course designed to teach educators about mind, brain and education research through a series of five-minute activities they can complete on their mobile device. The micro-course takes a meta approach, drawing upon learning science to teach teachers about learning science through research-proven techniques, such as storytelling, emotional engagement, novelty, spaced learning and formative assessments.

“It’s our attempt to disrupt the current PD model in a way that all teachers can do,” Kelleher says.

As CEO of the Institute for Applied Neuroscience, Uncapher is another researcher working to bring learning science into schools. After spending nearly two decades studying brain scans to understand how people learn, she felt like she was hitting a wall. Her lab research, while revealing, wasn’t telling her how students learned in real-world contexts. She began reaching out to educators and forming partnerships to help take her research into the classroom.

In 2016, she partnered with Santa Clara Unified School District in California for a multi-year longitudinal study on executive function. Using software loaded onto the students’ iPads, she was able to collect data about how they learned in their day-to-day classroom setting.

“Since working with educators, I’ve learned so much that has informed my research,” she says. Her experiences have inspired her to write a primer on how to conduct in-school research, which is in the process of being published.

**FINDING A RESEARCH PARTNER**

Educators offered the following tips for forming research-practice partnerships (RPP):

- Network with faculty at a local university.
- Form a learning science interest group with researchers, practitioners and other stakeholders.
- Reach out to an organization that supports RPPs, such as: Center for Transformative Teaching and Learning; Chan Zuckerberg Initiative; Digital Promise; Institute for Applied Neuroscience.
- Choose a focus and research individuals and organizations working within your area of interest.
- Leverage existing relationships with organizations that have partnered within your community in the past.

**FORMING RESEARCH-PRACTICE PARTNERSHIPS**

Partnerships with organizations like the CTTL or the Institute for Applied Neuroscience can help schools transform their outmoded learning models into cutting-edge practices rooted in learning science research – but availability is limited. For the rest of the education world, the push to translate research into practice often relies heavily on grassroots efforts within individual schools or districts.
To that end, some schools and teachers have begun forming smaller-scale partnerships with researchers to test out research-based innovations in a classroom environment rather than a lab. These partnerships can be mutually beneficial as researchers seek relevant problems to study and teachers seek to determine which practices actually work. But finding people to partner with poses a challenge for both sides.

In an ISTE 2018 session on closing the gap between research and practice, a group of educators and researchers discussed some of the difficulties they’ve faced in their attempts to bring research into the classroom. “It takes time to find each other and figure out what to do, and there aren’t a lot of ways to support that,” says Aubrey Francisco, chief research officer for Digital Promise, an organization dedicated to accelerating innovation in schools. “How do we engage providers and researchers in research-practice partnerships? How do we make it work? What’s the incentive? Practitioners need practical, tangible information they can use, while researchers are interested in more long-term questions. How do we do both?”

Francisco’s questions cut to the heart of the issue, which is that researchers and teachers are, essentially different beasts with divergent interests and needs.

Having walked in both worlds, Grotzer has gained unique insight into the differences between teachers and researchers. A lot of it, she says, comes down perspective. “Researchers are really driven by distinctions – this theory is a little different than that theory – because they have to distinguish themselves in the field,” she says. “But then what you have are teachers who are trying to make a cohesive whole for their students, and their lens is much more one of cohesion than distinctions. So I think
we need to have a lot of humility and respect for each other, and even better, having a foot in each other’s field we would at least know how to talk the language enough to benefit from what teachers are offering us, and vice versa."

If you think of the two spheres of interest as a Venn diagram, the key to forming successful research-practice partnerships is to look for lines of inquiry in the spaces where they overlap, she says. One way to do this is by finding or forming interest groups composed of teachers, researchers, scientists and other stakeholders, either locally or online. These types of discussion groups can generate interesting ideas for study. Reaching out to a local university is another way to find researchers to partner with.

Until there’s a system in place to help like-minded teachers and researchers find each other, forming research-practice partnerships will remain largely a patchwork effort, Grotzer says. “We need to figure out way for people to better match what we want to do. We advertise in local teacher magazines and put it on our website, but there needs to be something else. We need a Match.com.”

TRICKLE-DOWN NEUROSCIENCE

For many educators focused on bringing mind, brain and education research into the classroom, helping teachers leverage neuroscience to inform their teaching practice is just part of the equation. They also want students to learn how to leverage their brain’s capabilities to become more effective learners. Metacognition, or the ability to understand one’s own thought processes, can provide the missing piece students need to not only direct their own learning but also extend it beyond the confines of a formal education.

Lee has worked to establish a framework for embedding a growth mindset within her district’s 67 schools. Rooted in the concept of neuroplasticity, or the brain’s ability to continue to grow over the course of a lifetime, a growth mindset teaches students that their capabilities aren’t fixed and their capacity can be expanded through practice and effort. Research has shown that students learn best when they have to struggle a bit to get there.

“In our district, I’ve been working for five years to turn ‘struggle’ into a positive word so kids will say, ‘Oh, I’m struggling. That means I’m learning.’ So they understand the brain learns best when it’s given a level of challenge that’s just out of reach, but not too hard and not too easy. I think we’re starting to see kids who are able to use their metacognitive skills in the classroom to let us know that.”

One of the areas she’s focusing on now is the transition from grade 5 to 6 – a time that provokes intense anxiety among both parents and students. She asked middle school teachers to suggest some high-level learning strategies their sixth graders commonly lack, then shared those strategies with fifth graders preparing to enter middle school. Once the students have become integrated into their new environment, she plans to conduct a follow-up survey to discover whether the intervention made a difference.

Bringing learning science into schools, she says, is all about making incremental changes. “I liken it to how do you move a ship,” she says. “You don’t take the big wheel and spin it to turn in a different direction. You make a series of very small moves all in the same direction.”

“We look for areas where we can infuse the research so we move the whole system along without creating a disruptive environment.”

Nicole Krueger is a freelance writer and journalist with a passion for finding out what makes learners tick.
In 2015, the Los Angeles Unified School District embarked on a mission to re-imagine instructional practice in the digital age. As part of that effort, the district created the Instructional Technology Initiative (ITI) with the aim of ensuring that schools use technology to differentiate and personalize instruction, increase academic rigor and build student ownership of learning using a variety of student-centered school models.

Crucial to this shift was ensuring that professional learning would bridge the gap between content and application, and connect theory to practice. Serving as the foundation for that professional learning were the ISTE Standards.

The ITI team has been inspired by the ISTE Standards for Education Leaders to cultivate empowered leaders across the district. In addition, the ITI team has leveraged change-management strategies and adult learning theories to inform its work.

If you’re embarking on a school or district technology initiative, the ITI staff recommends three ways to begin creating systemwide change founded on the ISTE Standards for Education Leaders.

1. Create authentic, personalized professional learning content.

   Visionary Planner, 2.b.: Collaboratively create a strategic plan that articulates how technology will be used to enhance learning.

   We recommend three ways to get started on creating authentic, personalized professional learning content:

   1) Get to know your audience by establishing collaborative interdepartmental partnerships.

   2) Be intentional about tending to your own learning by reading research, attending conferences and reviewing key resources.

   3) Deliberately carve out time for brainstorming and planning as a team.

   ITI collaborates with six local districts and various instructional departments and offices within our district to offer professional development that leads with instruction.

   Embedded in the ITI professional development design is the Adaptive Schools’ strategy of triple tracking, where the emphasis is educator learning, how it applies to other adult learners and how it applies in the classroom.

   Content is the primary focus and the digital tools are secondary to the learning. However, this would not be possible had we not been intentional about cultivating our own knowledge by attending conferences, such as the ISTE Conference & Expo, or keeping a pulse on the latest research about learning and theory. More importantly, we make every effort to dedicate time to our own calibration as a team to ensure our focus remains on instruction and how technology can enhance quality teaching.
2. Design for a continuum of learners.

*Empowering Leader, 3.a.: Empower educators to exercise professional agency, build teacher leadership skills and pursue personalized professional learning.*

All educators are on a continuum as learners, so it’s imperative that you leverage the ISTE Standards strategically. Make sure you offer multiple entry points for a learner whether they’re individuals, teams or school community learning opportunities. To do this, we create professional learning sessions that range from simply creating awareness about a topic to advanced sessions that further develop and/or reinforce key skill sets.

**Individual learning opportunities**

We invite all PK-12 educators from across the district to attend PD sessions that highlight specific instructional strategies that address the ISTE Student Standards. Our individual learning opportunities include:

**ISTE Standards Suite:** These seven professional learning sessions offer a deep dive into each of the ISTE Student Standards. Some sessions span multiple days because they require more time to explore and process.

**Teacher Leader Network:** This professional learning option was designed with emphasis on the ISTE Computational Thinker standard and the K-12 Computer Science Framework.

**Team and school community learning opportunities**

The focus of this PD is on transforming educator behaviors through visioning, planning, coaching and implementation. At the core of this work are the ISTE Standards for Education Leaders that highlight the skills and dispositions we are aiming for. On an ongoing basis, we provide a three-day cohort training for school leadership teams to learn about our key initiatives and develop their instructional technology plans, which they adapt for their school context.

The Practitioner School Program, now in its third year, trains leading-edge school instructional leadership teams to embed...
With the ISTE Education Leader Standards, you, too, can leverage digital tools and resources to not only accelerate student learning, but also cultivate innovative practices among school and district leadership so they are empowered to effect consistent systemwide change.

With the ISTE Standards into their instructional practice.

In the first year, schools piloted a learning management system to demonstrate the Empowered Learner standard. During the second year, they learned about the Computational Thinker standard and its implications for interdisciplinary instruction. This year, the emphasis is on using the Innovative Designer standard to facilitate the work around innovative practices in solving schools’ most pressing problems of practice.

Practitioner Schools are assigned an instructional technology facilitator (ITF), or coach, who guides them in implementing the school’s goals. The ITFs receive weekly professional learning support by the main ITI staff to ensure they are up to date on instructional practices, research and resources. Our ITFs provide coaching and PD facilitation support informed and guided by the ISTE Student, Educator and Education Leader Standards.

3. Provide opportunities for contextual application and practice. Empowering Leader, 3.b. Build the confidence and competency of educators to put the ISTE Standards for Students and Educators into practice.

Lastly, your district will need to connect professional learning with concrete tangible next steps through a plan of action.

In all models of professional development, the ITI team ensures that participants are engaged in experiential learning connected to their roles and personalized to their school context.

For individual learning opportunities, such as the ISTE Suite, ITI uses a 2+1 approach that involves two consecutive days of content and lesson planning, after which
participants go back to their classrooms and have a week to try out the lesson they planned. During the third session, participants reconvene to reflect on the lesson and engage in a Critical Friends Protocol, where each participant gives and receives feedback to refine their lessons.

Team learning opportunities, such as the Instructional Technology Planning Cohort, support participants in developing their school’s instructional technology plan. This plan is based on ITI’s PD content that includes instructional technology vision, personalized learning, digital citizenship and change management, among others.

What makes this learning session unique is that schools now align their specific instructional goals and priorities by focusing on the action steps to achieve them. Our schools are required by the state to have a Single Plan for Student Achievement (SPSA), where school leaders outline how they will meet English language arts, mathematics and other content standards. The ITI helps school leaders create their SPSA with an ISTE Standards lens. School leaders can then articulate how digital tools and resources aligned with ISTE Standards practices can help meet their instructional goals.

This plan also helps schools complete the responsible use policy, parent acknowledgement and social media policies for both educators and students, and the Common Sense Education digital citizenship certification for educators and the school.

For the Practitioner Schools Program, school Innovative Designer (ID) teams create a plan for addressing a problem of practice (POP). The POP is then translated as the design challenge for the school to solve throughout the year using a design process. Some examples of design challenges that have surfaced from our schools include:

- How might we leverage digital tools and resources coupled with strong first instruction so that we don’t have after-school intervention?
- How might we reimagine our PD to incorporate everyone’s talents, skills and abilities and to create a community of shared learning?
- How might we incorporate the district’s free enterprise apps and tools in lesson design to promote access and inclusion of students with disabilities in standards-based, rigorous instruction?

Based on these “How might we” statements, ITI supports the ID teams by mapping out action steps for the year in collaboration with the ITF. All Practitioner Schools collaborate on design challenges to foster a collaborative and communal approach to solving common educational challenges by leveraging digital tools and resources.

**Exemplars Model**

To share promising practices, ITI launched the Exemplars Model, a dynamic curation of instructional examples from across the district featuring school leaders engaging in personalized learning. In this model, educators explore instructional practices that demonstrate key frameworks, such as the ISTE Standards, the SAMR model and the ITI Leading with Instruction Progress Report.

The key takeaways of the ITI experience is to lead with instruction through ISTE Standards-based professional development. With the ISTE Education Leader Standards, you, too, can leverage digital tools and resources to not only accelerate student learning, but also cultivate innovative practices among school and district leadership so they are empowered to effect consistent systemwide change.

For more information on ITI’s approach to designing personalized professional learning experiences, please see our latest progress report, Leading with Instruction (bit.ly/2FPIAE). Follow us on Twitter @ITI_LAUSD.

**Sophia Mendoza** is the Director of LAUSD’s Instructional Technology Initiative (ITI).

**Allison Jonas** is the Readiness and Integration Coordinator for the ITI.

**Dominic Caguioa** is the Readiness and Integration Specialist for the ITI.
Caitlin McLemore
Technology meets the humanities in this tech specialist

By Nicole Krueger

Step into a school makerspace, and you might expect to see science students programming robots, tinkering with circuits or accomplishing miniature feats of engineering.

While there’s plenty of that going on in Harpeth Hall’s Design Den, you’re just as likely to see English students emblazoning meaningful literary quotes onto bookmarks or geography students recreating ancient Egyptian artifacts using upcycled materials.

Finding ways to authentically explore the humanities in a high-tech makerspace can be challenging, but connecting technology to the curriculum is what Caitlin McLemore does best. As the academic technology specialist for the all-girls school in Nashville, Tennessee, she has helped teachers and students alike try out innovative approaches to traditional content.

“I truly believe that technology shouldn’t be used for technology’s sake. It should be used to help the learner and the teacher do something different – do something more,” says the 2018 winner of the ISTE Outstanding Young Educator award.

“For McLemore and the 700 girls in grades 5-12 who show up each morning with their 1:1 laptops, technology isn’t a standalone phenomenon but rather a common thread running through their daily lives. With no separate tech classes to speak of, the school has chosen instead to embed technology into the fabric of its curriculum. Working in a place where STEM and the humanities peacefully co-exist has been a natural fit for McLemore, whose love of reading matches her passion for technology.

“I love that I get to walk through stacks of books every day to get to my office,” says the Harry Potter fan and doctoral candidate at Johns Hopkins University, where she conducts research on information and media literacy.

Her dual passions also inspired her to co-author an ISTE book, Stretch Yourself: A Personalized Journey to Deepen Your Teaching Practice, with edtech coach Fanny Passeport. Located on opposite sides of the world, the two educators relied on a smattering of tools, such as Skype and Google Docs, to collaborate on the book, which uses yoga as a motif to encourage teachers to deepen their teaching practice through technology integration.
The experience served as a reminder that the tool itself isn’t as important as what it can do.

“Sometimes we met on Google Hangouts, sometimes on Skype. Really it didn’t matter so much which tools we used, as long as we had some sort of tool that allowed us to occasionally talk to each other,” she says.

Growing up in Florida, McLemore had a natural interest in technology, fueled by the fact that her family always had a computer in their home. She never intended to make it the focus of her career, however. After completing the University of Florida’s teacher prep program, intending to become a public elementary school teacher, she moved to Nashville with her husband and got a job at a child development center, where she started a monthly electronic newsletter. That led to her first position as a technology integrationist at Currey Ingram Academy, where she developed a schoolwide digital citizenship curriculum as well as a popular game-based professional learning program.

McLemore credits her teacher prep program with giving her the pedagogical understanding to unite technology with learning goals in a way even reluctant teachers can get excited about.

“I think when they work with me, they see that technology isn’t scary, and they get excited about the possibilities,” she says. “That’s why it’s so important to connect what we’re doing in the classroom to student learning outcomes. When they see the value technology can add to the learning experience, that’s when teachers say, ‘This is a really good thing. We should be using technology.’”

Now that teachers at Harpeth Hall have embraced technology’s possibilities, McLemore is ready to move on to the next chapter of her career. After having a baby in August, she accepted a similar position at a school closer to home, in Tampa, at the end of the calendar year. Despite the hailstorm of recent life changes – buying a house, moving states, becoming a mom – she doesn’t see herself veering from her course as a technology specialist anytime soon.

“I get to be in lot of spaces and make an impact in a lot of classrooms,” she says. “Because I work with all classes and teachers, I get to have broader perspective. I’m pretty happy doing what I do.”

Nicole Krueger is a freelance writer and journalist with a passion for finding out what makes learners tick.
Advocacy gives voice to those who need it most

By Jorge Valenzuela
Lead Coach, Lifelong Learning Defined Inc.; National Faculty, Buck Institute for Education

In its purest form, advocacy aims to guarantee that the voices of the underrepresented are heard when decisions directly impact their rights, lives and best interests.

When it comes to education, all advocacy efforts should focus first on securing what’s not available to students but is critical to their immediate educational needs – curriculum, professional development and educational technology.

If you’re new to edtech advocacy, start by asking yourself what you as an educator need to know, do and have in order to effectively teach your students. Also consider what the children in your classroom need in order to become academically and technologically prepared for the world they live in.

Next, follow these three steps to become an effective edtech advocate:

1. Join your ISTE affiliate. Joining an ISTE affiliate (iste.org/affiliates) is critical for collaborating and learning with colleagues and other edtech leaders who live near you. In matters of advocacy, we must be able to work with others effectively and strategically.

State and regional affiliates also offer professional development and mentorship, and they help by increasing local impact.

2. Know your legislators. Understanding what issues are important to your Congressional representatives and knowing how your state Legislature works is critical. Tailor your personal, local and regional stories to align with what’s important to each lawmaker. Make sure you provide concrete examples of how you’re using edtech in the classroom and illustrate how this helps push their agenda forward.

ISTE developed the State Legislator Scavenger Hunt as part of its Advocacy Toolkit. The scavenger hunt asks pertinent questions that allow educators to craft stories around their responses. I highly recommend that teams of educators (either within your school or ISTE affiliate) complete one scavenger hunt for each of your state and federal lawmakers and practice how you will convey your message.

3. Know the issues – inside and out. Showing how edtech has helped develop the academic and technical and career needs of your students is very important as your team begins to draft advocacy stories. Also, make sure you know the funding sources that provide the tools and training, and keep track of when lawmakers will vote for reauthorization of that money.

I witnessed an excellent example of why knowing the issues inside and out is so important when I accompanied colleagues from my Virginia ISTE affiliate, VSTE, to the offices of Virginia Sens. Tim Kaine and Mark Warner last year.

Educator Patty Gilham from Manassas Park City Schools began by showing videos and pictures of students learning from some of the edtech tools purchased using Title IV Part A flexible block grant funding. Gilham knew that the senators were preparing to vote on the reauthorization of these and other educational funding sources, and she immediately impressed staffers by demonstrating how this money was benefitting her students.

I believe advocacy is a civic duty, critical for helping our profession grow, developing new educational leaders and providing students with relevant learning experiences. Doing this work requires educators to devote some of our personal time to the task, but the practice is essential for giving voice to those who need it most.
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Community Voices

This question was asked and answered in ISTE Connect (iste.org/connect), home of ISTE’s Professional Learning Networks.

What are the best picture books for teaching digital citizenship to students?

Digital citizenship resource list created by Kristen Mattson

amzn.to/2y7MCBX

As the director of library and digital literacy at a PK-12 school, I am constantly looking for resources that support our digital citizenship initiatives. I had the privilege of meeting Kristen Mattson at the Future Ready Librarians Leadership Summit, and I love the picture books that Mattson recommended for our younger learners. I think the earlier we begin using the language surrounding digital citizenship, the better, and this list provides great resources for digital citizenship picture books.

Angela Mackenzie, director of library and digital literacy, St. Margaret’s Episcopal School, San Juan Capistrano, California

Blog post: 6 Books That Teach Children to Be Global Citizens

bit.ly/2oiQI4B

Because I like to think of citizenship as both digital and global, I recommend this blog post by Madison Killen. After listening to Make Your Mark, a voice thread (bit.ly/2A3F6t9) created by a group of second graders, I would like to add a seventh book to Killen’s list: Peter H. Reynolds’ The Dot (peterhreynolds.com/dot). Reynolds’ story of a caring teacher who convinces a reluctant student to “just make a mark and see where it takes you” has grown from an award-winning picture book to a global event: International Dot Day (thedotclub.org/dotday), an opportunity for students to celebrate their marks on a global scale.

Gail Desler, tech integration specialist
Elk Grove School District, Elk Grove, California

Bully by Patricia Polacco

amzn.to/2Og64qi

The picture book Bully is very useful for teaching upper elementary and middle school students about the personal effects of cyberbullying. It can help students realize how their actions affect another person and help them discover who their real friends are.

Lynde Roberts, librarian, Cumberland Middle School
Cumberland, Virginia

Blog post: Picture Book for Teaching Digital Citizenship

bit.ly/2CweWSm

For schools looking for picture books that help teachers discuss digital citizenship skills with students, Shannon McClintock Miller created a Padlet of suggested titles and shared thoughts about using books as a gateway to conversations about digitc. In addition, a link at the bottom of the blog post leads to an extensive list in the Titlewave system from Follett that is especially useful to librarians looking for more information about each book.

Jenny Takeda, district librarian
Beaverton School District, Beaverton, Oregon

Piano and Laylee Go Online

amzn.to/2zYyDjh

This book by Carmel N. Curatola Knowles is a great one to use with first graders. It has endearing characters who model good behavior both in the world and online. Two dogs meet and want to play together on the computer; these characters show how easy it is to engage with people you do not know online and why you should not. The story line is educational but not alarming.

Amy Eagle, technology integrator
Solomon Schechter School of Westchester, White Plains, New York
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