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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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A new framework for digital age leadership

Sarah Stoeckl, Ph.D.
Senior Project Manager, ISTE Standards

Individual teachers have been using technology to transform education for decades. But to scale those transformations and meet the learning needs of all students requires education leaders who are visionary, adaptable and thoughtful about managing change, and who model lifelong learning.

The question of how to move from pockets of educator innovation – often inspired and supported by the ISTE Standards for Students and for Educators – to systems-wide change drove the initial thinking behind the new ISTE Standards for Education Leaders (formerly the ISTE Standards for Administrators), officially released at ISTE 2018 in Chicago.

The process to update the standards started at the previous year’s conference with open feedback from stakeholders, including a Stakeholder Advisory Council made up of thought leaders in the field of education, education and leadership organizations, and individuals passionate about education and technology. ISTE’s Technical Working Group then reviewed the feedback and helped create a framework for leadership that would serve well into future.

That’s where the hard questions that would guide the creation of the new standards emerged: How can and should an administrator inspire and empower everyone in the system? What does effective change in the digital age look like and how do you communicate it? How can and should digital tools be used to advocate for equity and drive citizenship? What must a leader consider and plan for throughout their technological and learning systems? How can a leader leverage digital tools to extend and model their own ongoing learning?

We sought input on these questions from educators worldwide and, in the end, 1,313 leaders and educators from all 50 states and 36 countries were involved. Participants included school and district administrators, teachers, tech coaches, tech coordinators and higher education faculty.

And we’re proud of what emerged from this highly collaborative effort.

First and foremost, the new ISTE Standards for Education Leaders support the implementation of ISTE’s Student and Educator Standards, and provide a framework for guiding digital age learning.

And as with the Student and Educator Standards, these new standards identify specific personas for education leaders: Equity and Citizenship Advocate. Visionary Planner. Empowering Leader. Systems Designer. Connected Leader.

These standards are all about the knowledge and behaviors that are required for leaders to make student learning possible and for teachers to be empowered. And they’re focused on some of the most timely, yet enduring, topics in education today – equity in both access to technology and usage for learning, the new lens on digital citizenship, visioneering, empowerment, team and systems building, and professional growth. The ISTE Standards for Education Leaders reflect a more modern dispersed leadership model, moving away from the hierarchical models of the past.

In total, the standards point to a leader’s responsibilities in solving for equity, leading and participating in digital citizenship, creating a strategic plan, building a culture of empowerment, striving for continuous improvement and committing to lifelong learning.

Check out the ISTE Standards for Education Leaders at iste.org/education-leaders and take a few minutes to explore the digital unpacking of each indicator. Then stay tuned for additional resources to help you adopt and implement the standards.
Use advocacy, storytelling to exponentially grow learning initiatives

By Mary Wegner, Ed.D.

Advocacy, in education and elsewhere, involves working individually and as a group to influence decisions within political, economic and social systems and institutions. But advocacy involves more than providing testimony to your local, state or federal elected officials to influence legislation or seek funding.

Advocacy is about engaging all audiences in daily actions that make a difference and, in education, that means students, too.

Listening to student voices

It wasn’t that long ago when students at Sitka High School in Sitka, Alaska, went to the school board to express their concern about the lack of functional technology in the school and the lack of a wireless network.

At the time, the district’s technology was inadequate and unreliable, and our internet speed was about 3 MB, while the rest of the country was operating over fiber and wireless technology.

The students shared a story about their desire to be prepared for the life they will live after high school graduation – and the school board listened.

Thanks to the advocacy efforts of these students, funding was dedicated to equip all classrooms with digital tools and resources, and a consultant was hired to design a wired and wireless network.

Iterating and collaborating

With funding in place, we sprang into action, creating professional learning communities for all teachers on topics that ranged from using a computer as a literacy center in primary grades to embracing mobile technology as a learning tool.

We collaborated to meet the school board’s exciting vision for an interactive classroom, a project that was expected to take three years to roll out. However, within nine months, we had full saturation around the district, and nine months after that at least 90 percent of teachers were proficient in all of the ISTE Standards for Educators!

We also listened to sixth grade teachers who had a goal of “turning our school inside out” in order to inspire creativity in...
the students. Before the school year started, we invested in the resources and professional learning our sixth grade teaching team needed to reach its goal.

The teachers immersed themselves in collaboratively learning about the digital tools and restructuring the learning landscape in their classrooms.

Within months, the talk around the kitchen tables of sixth grade students and the talk around the school board table was about the excitement sixth grade students had for learning. They became beacons, lighting the way for others to see what technology integration looks like and why it matters.

Our lighthouse project impacted all sixth grade students and teachers – even those teachers who didn’t know how to use technology beyond email when they started.

Along the way, we were sure to include explicit plans to ensure digital equity and we embedded professional learning into the contracted teacher day. This initial droplet of learning designed to inspire students rippled throughout the district.

And we told their story. We gave the teachers a microphone and worked to amplify their message to others.

Remaining future-focused

Today, we’re embracing the power of creating with our districtwide maker learning initiative. We’re also proud members of the League of Innovative Schools, a collaborative group of 93 school district leaders from around the U.S. who are committed to leveraging the learning potential of technology to solve the challenges in K-12 public schools. Sharing our collective voice to impact change is part of what drew us to the League.

Because advocacy matters. And so does storytelling.

Explicitly telling your story has the potential to exponentially grow your initiatives so that the student learning highlighted becomes an irresistible goal for all teachers. The key to having your message resonate rests in the depth of understanding that’s happening at all levels of the learning environment.

Collaboration and creation were fundamental components of our district’s transformation, as was listening to student voices and acting on their recommendations.

Once you get used to telling your story to grow the impact of your initiative, you’ll be set to advocate for funding and policies! ISTE has some amazing resources to support your advocacy efforts, and your voice and stories make a difference for everyone.

MARY WEGNER, ED.D. (@MARYWEGNERSITKA), IS THE SUPERINTENDENT IN THE SITKA SCHOOL DISTRICT IN SITKA, ALASKA, AND SERVES ON THE ISTE PUBLIC POLICY AND ADVOCACY COMMITTEE AND THE ALASKA STATE COUNCIL ON THE ARTS. SHE’S ALSO A MEMBER OF ISTE’S DIVERSITY ADVISORY COMMITTEE. IN 2010, SHE RECEIVED ISTE’S MAKING IT HAPPEN AWARD FOR HER ADVOCACY WORK.

“Explicitly telling your story has the potential to exponentially grow your initiatives so that the student learning highlighted becomes an irresistible goal for all teachers.”
Kavya Kopparapu
This student’s passion lies at the intersection of computer science, medicine

By Julie Phillips Randles

Today’s young people are changing the way we think about what they’re capable of. They’re catalysts for nationwide demonstrations. They bring home Olympic medals. They run successful businesses, publish books, give TED Talks and even earn the Nobel Peace Prize.

And then there’s Kavya Kopparapu.

This senior at Thomas Jefferson High School for Science and Technology in Herndon, Virginia, invented a life-saving device. It began when she fell in love with the power of computing, building KNX projects with her brother and reading *Scientific American* with her cereal. A National Center for Women and Information Technology workshop sent her home in a fever pitch to learn programming, and in no time, she taught herself Java, HTML, Python, C.

Her fire led her to establish the Girls Computing League to hold coding workshops for underprivileged kids. Her brother and fellow high schoolers hold titles ranging from chief technology officer to chief information officer and chief strategy officer.

Kopparapu, of course, is the founder and CEO while competing in and placing in international science fairs for everything from cybersecurity to artificial intelligence.

And then she turned it up yet another notch.

In June 2016, inspired by her grandfather’s health condition in India, she asked an important question: What if there were a way for local doctors to diagnose diabetic retinopathy? She knew the statistics weren’t encouraging: Of 415 million diabetics worldwide, one-third will develop retinopathy. Fifty percent will be undiagnosed. Half of patients with severe cases will go blind in five years.

And she was also aware that, while doctors certainly make visits in India’s villages and slums, the number of patients far outnumber available ophthalmologists.

So she began her research online and emailed her specific questions to ophthalmologists, computational pathologists, biochemists, epidemiologists, neuroscientists, physicists and...
Kavya Kopparapu says her entrepreneurial spirit was fueled by teachers who would take extra time to help her finish a project or answer a burning question.
Kopparapu says her goal is to be part of a world where she is not known as a girl who happens to be a computer scientist, but instead as a computer scientist who happens to be a girl.

gurus in the machine learning field. Her next step: founding another company. Eyeagnosis, which uses a 3D printer to create a camera lens that slides over a smartphone, and, through the corresponding app, diagnoses photos of an eyeball.

She “simply” employed Microsoft’s convolutional neural network off-the-shelf program, ResNet-50, and trained it to spot retinopathy, using 34,000 scans available through the National Institutes of Health. By November 2017, not quite six months after her initial curiosity, she mailed her prototype to Aditya Jyot Eye Hospital in Mumbai for field testing.

To date, the Eyeagnosis has accurately diagnosed all five of the patients doctors have used it on.

But Kopparapu isn’t resting on her laurels. In May, she keynoted at the O’Reilly Artificial Intelligence Conference in New York on her latest invention, GlioVision, a project that earned her finalist status in the Regeneron Science Talent Search – known as the junior Nobel Prize.

GlioVision uses GPU-accelerated (graphics processing unit) deep learning to fight glioblastoma, the deadliest form of brain cancer. The software instantly detects and interprets genetic information from a
biopsy slide, skipping the long analysis typically involved in determining glioblastoma treatment.

The hope is that doctors will then be able to use this information to predict how fast a tumor will grow and what specific drugs and treatments it will respond to. Today, she’s working with a pathologist at the George-town University Medical Center to test her invention’s performance on patient data.

Kopparapu says her goal is to be part of a world where she is not known as a girl who happens to be a computer scientist, but instead as a computer scientist who happens to be a girl. Part two of that goal – making the world a better place. That work will continue from Harvard in the fall.

**Was there a teacher or mentor who influenced you or spurred your entrepreneurial thinking?**

Over the years, I’ve had the fortune of having several amazing teachers: ones who would stay after school to help me finish a science project, ones who would give up their lunchtime to answer the burning question I wasn’t able to ask during class, ones who would accept invitations to attend events on weekends on their own time.

But I think the teacher who has significantly influenced my entrepreneurial thinking is Mark Hannum, my AP physics teacher and neuroscience lab director. Mr. Hannum teaches at the intersection of many fields: physics, neuroscience, biology and mathematics. He always promoted an interdisciplinary mindset, which led me to the integrative thinking that led to projects such as Eyeagnosis and GlioVision. He also emphasized a mindset of learning, that any subject was within my reach if I had the determination to learn it.

**What was your experience with computer science and coding curriculum at school?**

At Thomas Jefferson High School, a STEM magnet, we have access to a plethora of computer science classes, from AP computer science to mobile app and web development to artificial intelligence to parallel computing.

Many of my computer science teachers had Ph.D.s in computational science and still actively publish in the fields of computer science and applied mathematics. Whenever I attempted a research project, I had the support of teachers with vast experience in the field.

**What are adults missing when it comes to getting girls and underrepresented students involved in computer science and STEM? What fueled your interest?**

I think the key to solving the problem is creating a community of support. The most discouraging factor to girls and minorities in computer science is not a lack of passion or interest in the subject, but rather the lack of others in the field who are similar in background. That’s one of the primary aims
“My interest in computer science was mainly based on the fact I could take technology and combine it with any other interest that I had to make a difference.”

My interest in computer science was mainly based on the fact I could take technology and combine it with any other interest that I had to make a difference. My major interest has always been biology and medicine, and integrating this interest with computer science has greatly expanded the scope of my work.

Girls Computing League workshops actually follow this philosophy: that the best way of teaching computer science is relating it to a previous personal interest. Our website development and mobile app development workshops are intentionally open-ended, allowing students to make websites showcasing their individual interests.

How can students who don’t have access to a lot of resources and teacher support still learn computer science?
If you have access to a computer (either a personal one, at school or at a public library), then you have access to countless resources for computer science.

What are some good ways for a student or even a teacher who doesn’t have a lot of comfort with computer science to get started?
Last year, Girls Computing League held teacher professional development work-
shops in collaboration with the Tiger Woods Foundation. It was especially rewarding because most of the teachers who attended were not actually STEM teachers – they were English teachers, history teachers, music teachers and art teachers who wanted to find a venue to incorporate computer science into their curriculum.

The biggest advice I have for anyone looking into learning computer science is to just dive into it. There are many resources online; Girls Computing League has a resource center and there are Youtube videos, Coursera courses and tutorial websites.

A lot of people believe that computer science is too complicated to self-learn, but it’s actually the easiest skill to pick up because of the plethora of information available online.

**How can we as a society do a better job of tapping into the brilliance of young people?**

We need to do a better job of giving students access to resources. My personal philosophy is this: since only about 40 percent of public schools offer computer science, we’re potentially missing out on 60 percent of future innovation.

As a middle schooler, I could have never imagined the world of opportunity available in computer science had I not been introduced to it in eighth grade.

**Which of the ISTE Standards for Students best describes you? Why?**

I think Global Collaborator best describes me and my view on the world.

At the scientific level, I’m at the intersection of two fields – medicine and computer science. I believe this interdisciplinary thinking will advance all of science and technology because it’s the area we are only just now starting to look at.

**What’s next for you? And what real-world problem do you hope to solve next?**

As I continue to work on Eyeagnosis and GlioVision, I aim to start a medical informatics company. Under the umbrella of a company, I will be able to produce and sell the medical innovations I have been working on, allowing more patients to have access to medical innovation.

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Empowering learners is a messy, iterative process

By Michael Graffin

If there’s one thing I’ve learned as an educator, it’s that bringing big-picture ideas to life with students is a collaborative and often messy process. Lesson No. 2: that’s OK, especially when you’re supported by a network of like-minded international educators.

It all started in 2015 when I attended the ISTE conference in Philadelphia. There, I shared my story and immersed myself in the educational trends on the horizon.

Upon returning, I set about establishing one of the first school library makerspaces in Western Australia, creating a Maker Monday after-school program to foster our girls’ tinkering with new technologies and Scratch.

With the help of a local university, I created our school’s all-girl robotics program and helped coordinate an academic research project that explored the impact of hands-on maker activities (such as light-up LED origami flowers) on girls’ engagement and understanding in science.

These projects helped inspire my dream to offer all our students, and especially our girls, the opportunity to learn, collaborate and problem-solve through meaningful STEM and robotics experiences.

Today, we’re just over three years into our STEM journey. It hasn’t been an easy or straightforward learning process, and we’ve overcome significant challenges and setbacks along the way. Here are some of the key lessons we’ve learned:

STEM is a way of thinking, doing

It took me years to understand that, fundamentally, STEM is a way of thinking and doing – an opportunity for students to engage in hands-on collaborative problem-solving using the design thinking and engineering process. For example, my students can design, build and program robots to complete missions on a simulated planetary surface as part of an integrated science/technologies project.

Ideally, STEM should not be conceived or taught as a specialist subject or teaching responsibility, instead it should be a collaboration between passionate classroom and specialist teachers that bring the curriculum to life.

A whole-school approach

I’m indebted to my school leadership team, past and present, who gave me the time and space to experiment, reflect and grow as a STEM educator through our after-school makerspace and specialist robotics program.

We started small, working with a small handful of teachers. Several years on, following the introduction of John Hattie’s Visible Learning and Carol Dweck’s growth mindset approach within our school learning community, I’m delighted to be part of an ongoing whole-school conversation focusing on the development of authentic hands-on STEM, design thinking and robotics projects for all our students, not just those involved in competition programs.

As we embark on this exciting new phase of our STEM learning journey, I’m proud of our achievements and progress so far. We’re starting to see our girls growing as designers, problem-solvers, engineers, coders and makers.

While not every student will grow up to work in a STEM profession, I’m confident that the educational experiences we’re striving to provide will help them become strong, resilient young women with the aptitude and skills to make our world a better place.
EMPOWERED LEARNER
THE ART of ASKING

In an increasingly digital world, it’s not about what you know — it’s about knowing what to ask

By Nicole Krueger
EVEN BEFORE A RALLY protesting the removal of Confederate monuments turned violent, students in Charlottesville started asking questions.

What was fueling the acrimonious controversy that gripped their community? Why do monuments matter? What’s the purpose of memorializing?

Their curiosity sparked a multidisciplinary project among five area high schools. Throughout the year, English and history students investigated the meaning of monuments in society and the significance of who gets memorialized. After a series of student-led discussions, the teens used an untold story from history as the basis for designing their own physical or virtual monuments.

Funded by a $20,000 grant supported by the National Writing Project, the yearlong inquiry offers a powerful example of how students’ questions can lead to incredible learning opportunities — provided teachers give them the space to follow their curiosity.

“We tend to forget that students have really powerful questions they hold within themselves, and we don’t make enough room for those in the classroom setting,” says Diana Laufenberg, executive director for Inquiry Schools, a nonprofit that helps create and support student-centered learning environments.

“Teachers feel pressured by time, standards and outcomes, and they’re not necessarily allowed to bend toward a kid’s internal questions and curiosity.”
According to Harvard child psychologist Paul Harris, kids ask around 40,000 questions between the ages of 2 and 5. Most reach their inquisitive peak by age 4, after which the volume of questions plummets and their inquiry skills begin to atrophy.

“When they get to third or fourth grade, they’re just asking, ‘What do you want me to do?’ It gets more procedural,” Laufenberg says. “This shutting down is happening across America.”

The lack of student curiosity has alarmed many educators who see inquiry as a crucial starting point for the deeper learning needed to develop students’ digital age skills. Creativity, critical thinking and problem-solving all demand the capacity to ask meaningful questions. Today’s students have a world of information at their fingertips, and the questions they ask will shape the answers technology gives them.

How questions fuel learning

Scientific breakthroughs, technological innovations and movements for social change all stem from the same seed: a driving question that leads the seeker toward a new solution.

A growing body of research suggests questions also play a critical role in learning. They activate prior knowledge, helping students make connections and uncover patterns. They engage learners in critical reasoning. They can even improve students’ ability to remember what they’ve learned.

In one study, two groups of students read six-sentence stories about animals. One group just got the stories. The other read versions in which each sentence was punctuated by a “why” question. Later, when researchers asked them about what they read, the second group answered 59 percent of the questions correctly while the first group scored an average of 48 percent.

The act of asking questions “is probably one of the most important tools we have for learning and understanding,” says Warren Berger, author of the book A More Beautiful Question: The Power of Inquiry to Spark Breakthrough Ideas.

“I like to use the metaphor of the question as a flashlight that we shine into the unknown – the better the question, the more light it shines.”

Questions lie at the heart of some of the most powerful pedagogies educators are using to drive deeper learning. Whether the approach is inquiry-based, project-based or student-centered learning, it all hinges on a student’s ability to ask meaningful questions that impel them to seek answers.

“When you’re organically curious about something and you want to find the answer, it gives you a real purpose,” Lee says. “It doesn’t matter whether or not it’s in the context of the classroom, and it doesn’t matter what the standard or objective is. You have a real purpose in trying to answer that question. It’s powerful that way.”

As educators struggle to engage more students in STEM subjects, the ability to use questions to propel scientific inquiry
becomes even more important. Asking questions, defining problems and carrying out investigations form the core of the Next Generation Science Standards. They’re also embedded in the ISTE Standards for Students, playing a key role in developing computational thinking and innovative design skills.

Yet too many schools continue to focus on memorizing the right answers rather than formulating good questions. Between teachers’ need to maintain control of growing classrooms and state-mandated assessments that require students to learn an exhaustive list of content, many educators feel they don’t have enough space or time to allow students’ questions to drive learning.

That’s something many educators want to see changed.

“In 13 years of schooling, we have to prepare kids to not need us for the next 60 years,” Laufenberg says. “What they need is not information. They need set habits around learning and researching, around being curious, asking questions and knowing how to find the answers. Otherwise, they’ll be woefully unprepared for the world that awaits them.”

Reigniting curiosity

After decades of training the ability to question out of students, reversing the trend may not be easy. Students often stop asking questions because they feel judged by their peers or embarrassed that they don’t already know the answers. It takes a classroom culture committed to inquiry, where student
questions are routinely sought and highly valued, to overcome their reticence.

“Sometimes you have to meet the kids where they’re at,” says Myla Lee, an instructional coach and project-based learning specialist for Novi Community School District in Michigan. “Before you can spark their minds, you have to touch their hearts. Whatever they’re passionate about might not be fluffy, and it might be something that makes the teacher uncomfortable, but you have to give them that voice.”

Too often, teachers are the ones who do most of the asking. By middle and high school, students have grown accustomed to delivering answers while allowing their natural inquisitiveness to wither. They may have questions, but they often haven’t developed the skills to articulate them.

“When students are asking questions, they get better at it,” says Sarah Westbrook, a former classroom teacher and director of professional learning for the Right Question Institute. “Students who aren’t asking questions get worse at it because they aren’t practicing it.”

To help students exercise their questioning skills, a growing number of teachers have begun using the institute’s Question Formulation Technique (QFT) in their classrooms. The six-step process serves as a framework for devising, prioritizing and reflecting on questions to help learners expand their capacity for inquisitiveness.

QFT was further described in a blog post by Drew Perkins, director of professional development at TeachThought, as a “type of rich inquiry that elevates student autonomy and collaboration” while helping create a culture focused on safety in discovery.

Less than a decade ago, when the QFT was first published, just five classrooms were using it. Today, more than 300,000 teachers worldwide have applied the technique.

Aaron Eisberg is one of them. As the coordinator for New Technology High School’s Center for Excellence in Napa, California, he sees its value in developing driving questions for project-based learning.

“It’s a great way to teach kids to structure their questioning and understand the difference between open and closed questions,” he says. “It helps build the idea that more questions are good. More questions help make their work better and help improve the learning itself.”

Writing offers another avenue for formulating driving questions, says Christina Cantrill, associate director of national programs for the National Writing Project. Through the process of writing, students can clarify and explore their questions in greater depth.

“Often, we don’t even know what our questions are,” she says. “If you support inquiry-based learning in the classroom, one of the challenges is just getting to the kernel of what you need to be asking and getting to the questions that lead you to investigate something salient that’s meaningful.”

Technology can be a valuable tool for eliciting and fine-tuning questions, as well. Students who are reluctant to speak up in class can send their questions to the teacher privately. Or they can share their work online and learn from the questions their peers are asking. They can also use online tools to find answers that will lead them to better and deeper questions.

“Technology can spark their curiosity, and it can also help sustain it,” says Lee, whose district uses tech tools to create “curiosity kits” designed to cultivate student’s inquisitiveness. “It can be a tool for posing the question, for the research and process of answering the question, and for reporting out the answers and creating more questions.”

What questions can reveal

When a California math teacher decided to use the QFT with his AP calculus class,
he thought he was doing something wrong. Despite his efforts, students kept asking surface-level questions rather than the deeper inquiries he expected.

“What he realized is that they didn’t have the conceptual understanding,” Westbrook says. “A lot of the students had gotten into the class because they were really good at memorizing and they were really good at doing the equations. But as soon as he was giving them prompts that asked them to apply an equation they already knew, they couldn’t do it. It was really revealing that their math instruction prior to that hadn’t been asking for very much critical thinking, and that they were able to get by on doing the calculations.”

The takeaway? Not only are teachers doing most of the asking in the classroom, but they’re asking the wrong questions.

“Often, as teachers, we ask questions that don’t necessarily help us figure out whether learning has taken place or not,” says Margaret Jones-Carey, assistant professor and program director for the Educational Leadership Program at St. Bonaventure University in Allegany, New York. “They help us understand whether there’s rote knowledge transfer, but we don’t really seem to be able to ask the right questions all the time to get to that.”

When students do the asking, however, the types of questions they formulate can reveal fathoms about what they already know as well as what they want to know, she says.

“Teaching students to ask questions gets us further in understanding where their brain really is in acquiring and applying new knowledge.”

When students ask low-level questions with yes-or-no answers, for example, it shows they’re still at the knowledge acquisition level. Open-ended questions can be a
sign of progress, but they still have a right or wrong answer.

“When they start to ask ‘what if’ questions and hypothesis questions, we see them start to move up on the higher-order thinking skills,” she says.

By using student questions as a type of formative assessment, teachers can gauge where students are and tailor their lessons accordingly, adds Andrew Minigan, director of strategy for the Right Question Institute’s education program.

Educators also need to think about how they respond to students’ questions in the moment. Simply giving an answer doesn’t encourage inquisitiveness, but volleying with another question helps students build an increasingly sophisticated set of queries around their own work, Laufenberg says.

The goal is to not only encourage students to ask questions, but to engage them in exploring the answers for themselves. That’s how they learn to nurture their own curiosity – a quality they’ll need as lifelong learners.

“When you allow a student to ask that question, you’re giving them a voice,” Lee says. “It drives their learning.


“When you allow a student to ask that question, you’re giving them a voice.”

Nicole Krueger is a freelance writer and journalist with a passion for finding out what makes learners tick.

THE GOAL IS TO NOT ONLY ENCOURAGE STUDENTS TO ASK QUESTIONS, BUT TO ENGAGE THEM IN EXPLORING THE ANSWERS FOR THEMSELVES.
Pen, paper, dice – the tools for playing Dungeons & Dragons are as old-school as they come. But the skills players develop are the same ones they need most in today's technology-saturated world.

That's why a growing number of educators, many of whom grew up playing Dungeons & Dragons themselves, have begun using the fantasy role-playing framework in their classrooms.

"It hits all the things we're trying to do in education," says Christopher Bugaj, a founding member the assistive technology team for Loudoun County Public Schools in Virginia. "We're helping kids communicate and collaborate."

From fifth grade math class to after-school clubs to speech therapy for students with disabilities, role-playing games spark creativity while giving students a chance to practice a wide range of skills, from cooperation and team-building to empathy and communication. The games are particularly effective in therapy classes for students with disabilities, where kids typically work on their social skills in group settings.

"It's a fun way to practice those social skills, with the therapist acting as dungeon master," Bugaj says. "You're constantly putting challenges in front of your students. If you know a student has a particular issue, you can set them up with a scenario where they can practice their goal."

Since the basic tools for the game are freely available online, anyone can play. Digital character sheets allow students with dyslexia to use text-to-speech tools, for example, while random number generators allow players with physical limitations to use digital dice rolls.

**Why does it work?**

**IT'S INFINITELY FLEXIBLE.** Teachers can adapt the basic Dungeons & Dragons framework for any grade, subject or ability level. Its cross-disciplinary nature incorporates both storytelling and math, while creative teachers in other subject areas can easily tie in the topic of the day. In science class, for example, players can come across a strange creature or plant life and use their scientific observation skills to investigate it. In math, students can decipher a hidden code, calculate spell-casting ranges, estimate distances and rate of travel to a destination, budget and shop for gear, add up the worth of a pile of treasure or even plot out the dimensions of a dungeon.

**IT INCORPORATES THE FOUR C'S.** Role-playing games require participants to work together to overcome obstacles – and in some classrooms, students even collaborate in groups to manage a single character. As they think critically about their fictional situation, devise creative solutions and communicate their choices to the teacher, they're practicing crucial digital age skills. "There's a problem they need to solve," Bugaj says. "It might not be an authentic problem out in the world, but it's still problem-solving with the resources you have."

**IT ENGAGES STUDENTS IN THEIR LEARNING.** When students are invested in the characters they create, they become eager to "level up" by completing assignments or conquering learning objectives. Tying learning activities to a role-playing game helps motivate them to learn what they need to propel their
characters forward. “They love their characters, and they love playing,” Bugaj says.

Teachers don’t need experience with Dungeons & Dragons to incorporate role-playing games in the classroom, he adds.

“You don’t have to know all the rules. You don’t have to get bogged down in that. One of the principal rules is that you make the rules. Just play and make sure it’s a fun experience.”

District pays teachers to tackle real-world problems

While most students spent the year completing worksheets and solving hypothetical problems, students in Laguna Beach, California, have been busy saving the world.

Over the past two years, they’ve explored solar power as a means for powering their laptops, created an art exhibit from recycled plastic to raise awareness of sea pollution, reduced food waste in their school cafeteria, and interviewed people with bipolar disease to build empathy through a school play about mental illness.

So what’s driving this wave of real-world, project-based learning?

“We’re paying teachers to solve real-world problems with their kids,” admits Michael Morrison, chief technology officer for Laguna Beach Unified School District.

In an effort to expand teachers’ technology capacity while encouraging deeper learning in the classroom, the district’s leaders have devised a new type of professional learning that doesn’t just deliver information – it also asks teachers to show what they do with it.

Through its unique Rocket Ready training program, the district engages teachers in project-based learning through a series of micro-credentials designed to foster the tech skills, professional networks and moonshot thinking needed to help students change the world.

The program goes beyond the typical “one-day mountaintop” training experience by giving teachers access to coaches who can meet with them virtually to provide assistance throughout the year as they work on their projects, Morrison says. To get paid for the training, teachers must create a video showcasing the real-world work their students did.

“When you ask teachers if they’re doing real-world problems, everybody says yes. But if you ask a few more questions you’ll find out it’s all simulation,” he says. “That doesn’t prepare them very well for the real world.”

So far, 20 percent of the district’s teachers have taken advantage of the optional training program, putting in about 60 hours a year to develop new skills and bring what they learned back to the classroom.

Why does it work?

IT FUELS TEACHERS’ PASSION. Part of the impetus for the training program was to counteract the sobering Gallup Poll results showing nearly 70 percent of teachers don’t feel engaged in their jobs. Those who participate in Rocket Ready get excited about the projects their students are working on. “It wouldn’t be interesting or powerful if it didn’t have this ‘I’m changing the world’ feeling,” Morrison says. “That’s what drives it. That’s the heart of teaching.”

IT’S ALIGNED TO STANDARDS. While teachers get to choose what types of projects they tackle, the program has been carefully tailored to meet both state standards and district learning goals. The micro-credentials align with California’s technology standards, which are similar to the ISTE Standards, as well as the Universal Design for Learning framework and the Buck Institute’s project-based learning methodology.

IT DIRECTLY IMPACTS STUDENTS. With most professional learning, it’s a toss-up whether teachers will actually implement what they learn. But with Rocket Ready, the outcome is the whole point – and the training is just a tool to help them get there.

Rocket Ready’s success has prompted other districts to implement their own versions of the program, and Laguna Beach USD is in the process of creating a nonprofit to help educators replicate the model in their own schools, says education consultant Michael Lawrence. Learn more at RocketReady.org.
EMPOWERED LEARNER
By Jennifer Snelling

The math students in Amy Tran’s class at Quebec’s Collège Beaubois have an unusual classmate. Eri is an artificial intelligence robot that communicates with them as they try to solve a problem. It understands which concepts they struggle with, and intelligently connects them with fellow students who assist. The students then work as a team to solve the problem. Not only do students get to practice working in teams, they’re also learning about artificial intelligence (AI), a technology that will undoubtedly play a role in the future workforce.

Tran, a Collège Beaubois’ computer science and math teacher, is also an education evangelist with EruditeAI. She’s working with the company and the school to pilot its AI-augmented peer-to-peer tutoring program by helping Eri absorb the enormous amount of data it will need to become “smart.” Tran’s students have participated in exchange meetings with EruditeAI’s tech team where they provide direct feedback and share their learning needs and priorities, a research and development experience that few students get until they enter the workforce.

What did Tran, a 2017 ISTE Emerging Leader, do when she realized how working with EruditeAI could benefit her class? She did what every educator would do when they found something that would make a big difference for students. She turned to the modern-day equivalent of shouting it from the rooftop – she retweeted a quote from HarriKetamo, a Finnish AI developer. “#Education is globally broken … and it can’t be fixed without #AI.”
“The world changes very fast,” says Tran. “Education is the only place that is adapting so slowly. Teachers should be at the forefront of preparing students for the challenges that are coming, but somehow, we’re still trying to teach them facts from the 1950s. Working with tech companies creates a sense of urgency to update and gives kids the power to take the initiative.”

ISTE members are well-versed in the ways that technology can enhance teaching and learning, and the mutually beneficial relationship between educators and tech companies has quickly become integrated into the average school day. When educators find something that works, they are eager to share what they’ve learned through social media, professional learning networks, at conferences and through face-to-face conversations with their colleagues.

A matter of intent
A recent series of New York Times articles called into question the relationship between educators and tech companies. Sometimes those relationships, the articles pointed out, can raise ethical concerns if teachers receive gifts in exchange for the promotion of products.

Educators must approach these relationships with clear-eyed intent and full knowledge about ethical standards that guide such interactions. Yet, in a world where education funding is so limited that teachers often buy school supplies out of their own paychecks, it’s easy for educators to cross a line by accepting gifts they know could improve learning and teaching.

“We’ve been trained as educators to have critical thinking, and we have to exercise it,” says Tran. “Do you work for the company first? No. You always have to think about the pedagogical intent.”

Know the rules
Google has taught thousands of students how to use email, share documents, make presentations and store files on one simple operating system. Access to classrooms doesn’t just allow vendors to sell
thousands of products in bulk, it’s a way to introduce your product to a generation of young people.

To get a foot in the classroom, tech companies often make those products available for free on a trial basis. “Sometimes it’s free, but it’s free like a puppy,” says Adam Phyall, director of technology and media services in Georgia’s Newton County School System. “You’re still going to be paying for it in one shape or another.”

While access to products is an obvious benefit for schools that struggle with tight budgets, that access means educators are left with the responsibility of knowing and following outdated and not always well-advertised federal, state and district guidelines.

For instance, is it OK if a company offers teachers a free product in exchange for feedback on the product or an agreement to write a testimonial?

On the one hand, both teachers and companies benefit if users provide feedback that can then be used to improve the product, as in the case with Tran and EruditeAI. On the other, if a teacher is being asked to promote the product, when does it cross a line and become pay for play? What if a teacher does so without being asked and clearly identifies herself as an employee of the company?

Phyall says the best policy is to check with your district’s technology officer if a situation is murky or confusing. A review of your district’s ethics policies is also a good idea. A T-shirt or an iPad cover? Probably no big deal. Covering the costs of a conference trip in exchange for staffing the company’s booth or posting a review on social media? Possibly a problem. If a company asks for any paperwork or a contact, the district should definitely take a look.

Diana McGhee, chief information officer for Fort Thomas Independent Schools and the leader of ISTE’s Technology Coordinators Network, says that, like most districts, hers has a board policy that says no employee shall accept gifts for personal use from vendors. “Do our teachers know that? We don’t preach that to them every year,” she admits. “Our policies are so numerous, you can’t go into depth every year.”

Of course, most of these guidelines haven’t been updated to reflect the current situation where companies have direct access to teachers, and teachers have direct access to social media that can be used to promote products.

Another thorny issue arises if companies ask teachers to upload student information to use the system. Like the pay-for-play rules, the Family Educational Rights and Privacy Act of 1974 (FERPA) requires schools to protect the privacy of student education records, but the law hasn’t been updated since the days when everything was stored in a locked filing cabinet.

The core tenet of the law – keep student information private – applies. But there are exceptions that allow online education services to use FERPA-protected information, as spelled out by the U.S. Department of Education’s Privacy Technical Assistance Center in a best practices report.

One example: “A district may decide to use an online system to allow students (and their parents) to log in and access class materials. In order to create student accounts, the district or school will likely need to give the provider the students’ names and contact information from the students’ education records, which are protected by FERPA.

“Conversely, other types of online educational services may not implicate FERPA-protected information. For example, a teacher may have students watch video tutorials or complete interactive exercises offered by a provider that does not require individual students to log in. In these cases, no personally identifiable information from the students’ education records would be disclosed to (or maintained by) the provider.”

Georgia districts can provide parents with student information that is saved electronically, but it becomes difficult to track information once it has been shared, says Phyall. He says the state is developing a common language about student information sharing and asking vendors to guarantee they follow the rules.

Likewise in Kentucky, says McGhee. The Kentucky Department of Education has passed House Bills 5 and 232, both of which target the idea of student data privacy and safety. Further, her district asks teachers to check the Student Privacy Pledge website (studentprivacypledge.org) that identifies vendors that have pledged to keep student data safe before uploading student data into any app.

Additional privacy resources are available through the U.S. Department of Education at tech.ed.gov/privacy.

Let teachers lead
As long as everything is aboveboard, working with vendors is a win-win for most educators. Schools and districts get to test drive technology and even make recommendations to companies and vendors get valuable intel, says Phil Hintz, director of technology at Illinois’ Gurnee School District.
“We get the product fine-tuned to what we need. The vendor then has a product that is more compatible for more customers down the road,” Hintz said. “We look to partner and sometimes that includes getting access to a beta version of an app or hardware so they can run clinical tests. We get to try it out and see the pros and cons of the product.”

Gurnee School District has been 1:1 iPad district for six years. All the schools in the district are Apple Distinguished Schools and the district was an ISTE Distinguished District last year. Hintz says the district has also developed a close working relationship with NWEA, a nonprofit that provides assessment and mapping software. Gurnee has been a map test customer for 15 years.

“We give them feedback and they improve the product based on our feedback,” he says. “Because of our relationship, we have the opportunity to get their ear and dive deeper into their tech support than the 1-800 number people typically get.”

Andrew Smith, chief strategy officer for Rowen-Salisbury School System in Salisbury, North Carolina, relays a similar experience working with Tiggly, an iPad manipulative kit.

His district has an Educators’ Playground, where teachers can try out the latest technology before they buy it. Located in the district’s central office, the playground offers a creative space that encourages teachers to explore new tools that have been vetted and approved by the district’s tech department.

At the playground, teachers provided feedback on Tiggly, including one suggestion to move the button down an inch to greatly improve functionality. “When that happens,” he says. “There’s some real power in that.”

This type of thought partnership is what DreamBox Learning is built upon, says CEO Jessie Woolley-Wilson. One teacher working with DreamBox, an online adaptive math learning program, could tell that the software understood what students knew and what they needed to learn next, but she wanted to know why the program couldn’t share that information with her, the teacher. DreamBox adapted it to give teachers more control and assigning capabilities.

“We didn’t get everything right out of the gate, but our best product innovations were birthed through discussions with teachers,” says Woolley-Wilson. “Our inspiration for the technology was
to mimic the best teachers with the best resources and an adequate amount of time."

Like many companies, DreamBox has its own forum, called DreamBox Nation, for educators who are happy to share best practices, frustrations and professional development around the product. Woolley-Wilson says these evangelists for DreamBox are the very reason it is a for-profit company.

“It’s really hard on learning communities when they train all their teachers and the company is gone two years later,” she says. “Being for-profit, I’m able to attract the best minds and the best hearts. The best thing I can do to shape the future of learning is make sure DreamBox is a sustainable company year after year.”

**Procure with a purpose**

Keeping up with the onslaught of email solicitations from various tech companies, new and established, is something every educator is familiar with. Many of these inquiries may lead to benefits in the classroom, but how to thoughtfully research and test each one?

It’s common for edtech leaders to attend conferences, look at all the shiny new technology presented by the vendors, who are often excellent resources but even better salespeople, and decide that their district needs that product – only to find that it doesn’t exactly fit the bill. Like Amy Tran, Rowan-Salisbury’s Smith says it has to start with pedagogical intent.

“We’re not good stewards of our taxpayers dollars when we let tools gather dust in a closet,” he says. That’s why Smith advocates starting with a needs assessment.

Rowan-Salisbury conducted a needs assessment and determined that the district should focus on ways to improve literacy. Smith and his team of educators developed a rubric around literacy and sent 250 teachers on buses to the ISTE Conference and Expo. Each teacher was asked to talk to 20 vendors and rank them according to the rubric.

“We bombarded them,” says Smith. “But we brought back a rich set of data from a diverse set of educators. We used that rubric to identify the top two or three companies we would partner with.”

Districts can’t always afford to send staff to edtech conferences, but still they must sift through reviews and information to find the tools that are the best fit for the district. A new ISTE product, Edtech Advisor, helps ISTE members find and share which education tools, technology and apps to purchase or implement to meet learning objectives. Product ratings and reviews are crowdsourced from ISTE members so that other members can learn from their experiences at no charge.

In similar vein, Rowan-Salisbury vets edtech companies who want to attend the district’s annual edtech camps. The district asks vendors to complete a comprehensive application to ensure that their products align with the district’s strategic plan and integrates with the existing technology.
The database helps Smith’s team narrow down the sheer volume of requests they get from vendors. Those who make the cut are invited to an edcamp where teachers use a rubric based on the district’s needs assessment and/or strategic plan to identify products that are a good match for specific classroom needs.

Even with a rubric, it can difficult to ensure a product will fit the bill without trying it out first. That’s why Rowan-Salisbury created the Educator’s Playground, where teachers can play with virtual reality tools, 3D printers, all sorts of coding tools. The technology is set up around the room like an exhibit. There’s an explanation for what the tool does and the teacher’s job is to figure out if the tool offers instructional value for his or her classroom.

“A 3D printer may seem like the best thing ever, but until you put the product in the same room with your instructional needs, you won’t know that,” he says. “Play before you pay.”

Tool-specific trainings can help, but these trainings don’t always keep the focus on the pedagogy.

“A certification plus ineffective teaching equals ineffective teaching,” says Eric Patnoudes, director of strategic initiatives at Otus and a Microsoft Innovative Educator Expert. “Vendors are getting better, but usually the certifications are based on your competency with their products. They rarely provide teachers with opportunities to improve their instructional strategies alone. At the end of the day, if we don’t change the way we teach, all the certifications and technology in the world will not have a positive impact on teaching and learning.”

A new competency-based, vendor-agnostic certification based on the ISTE Standards is designed to solve this problem. ISTE Certification trains and recognizes educators who understand how to use technology for learning in meaningful and transformative ways, regardless of the tool.

Dell is one company that advocates keeping the big picture in mind with a strategic technology plan based on pedagogy and desired outcomes. Dell’s Education Academy was designed to guide districts through the development and assessment of that plan, before procurement. Of course, the hope is that districts will eventually become Dell customers, but the team doesn’t show up with a Dell catalogue.

“It’s important to understand the way students learn today and the role technology plays in that process,” says Adam Garry, a former elementary school teacher and Dell’s director of global education strategy. “It doesn’t matter if it’s HP or Apple. If kids aren’t learning, it looks bad for the whole industry.”

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.
Innovative approaches inspire students to be creative communicators

By Kristin Harrington

In my role as an edtech coach, I see student-created projects and authentic learning taking place in our schools every day. While collaborating with teachers to facilitate lessons, I’ve learned that the process is often considered more important than the product because this is where most of the learning occurs. Students are usually given an abundance of time to work on their brainstorming, research and project creation, with less time devoted to preparing the presentation itself.

The process is important because students need to know their content well in order to express themselves clearly and feel confident speaking without index cards or bullet points. But it’s equally important that students learn how to deliver high-quality presentations. After all, professional keynote speakers practice for dozens of hours to prepare for an hour-long presentation.

Presenting is a real-world skill and relates directly to the Creative Communicator standard, one of the seven ISTE Standards for Students. Creative Communicator asks that students “communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.”

This goes beyond students reading bullet points from their PowerPoints or Google Slides. Students need to be able to use a variety of tools to meet their purpose and audience, and present in a variety of formats as well.

As we consider the types of presentations students will create and deliver in their careers, we need to make sure we’re not just preparing them to present slideshows, but also videoconferences, online trainings, video tutorials and other interactions.

Challenge creative communicators with improvisation

A couple of years ago, I had the opportunity to attend an Edcamp Organizer Summit in Atlanta, and learn from Anthony Veneziale of the Improv group Speechless. At the end of the session, Veneziale asked participants to summarize content by connecting topics to random photos he displayed. To make...
It more challenging, participants had to consider how they would use the entire collection of random photos in a slideshow about a specific topic.

That gave some of us in attendance an idea. What if we used this same approach to have students present their research? I recently explored this idea with Christine Brink, an AP biology and AP computer science teacher at Matanzas High School in Palm Coast, Florida.

We decided to try this approach for a unit on the systems of the human body. Students would do their research as usual, but their presentations would be like nothing they’d experienced before. They would present the content live and connect it to random photos being displayed for about 60 seconds each. Students had to apply their knowledge and use creative thinking to make connections to photos they hadn’t seen before without the help of index cards or slides.

The morning of these presentations, there was a high level of excitement in the classroom and, unlike most presentation days, not one student was absent! The presentations kicked off with a picture of two elderly adults in a washing machine. The audience laughed, which threw the presenters off for a few seconds. But in no time, they made connections to the excretory system.

One student explained, “You put your clothes in the washing machine to clean things off of them. This is how the excretory system acts, to remove wastes we don’t need from our bodies.”

This continued with students jumping in and elaborating on points their co-presenters made, correcting each others’ statements and filling in missing science vocabulary words when their team member wasn’t able to recall a term.

Some students embraced the improv more than others, but they all said they’d like to do it again. When asked about the project, Mackenzie, a ninth grader, said:

“It strained us to think about the concept in different ways, process it more and compare and apply it to different things. I feel better about how well I know the concept after having to learn and then explain it to others.”

This approach proved to be a great way to get the listeners more engaged in the content, too. Joshua described his experience as an audience member:

“It was more exciting to see students improvising, rather than reading a script. I definitely paid attention more to see where people slipped up.”

To ensure that misconceptions and errors in reasoning weren’t communicated during the presentations, Christine and I wanted students to “fact check” the presentations.

I came up with this idea after listening to the podcast, “Tell Me Something I Don’t Know,” hosted by Stephen Dubner. On the show, guests compete to see who can provide the audience and host with information they didn’t know, as well as useful information that is factual. The podcast features real-time fact checkers who verify the information, while expanding and adding additional facts about the topic.
We knew that the improv project would be a perfect opportunity for students to practice verifying information. But real-time fact-checking would be a challenge and require lots of practice, so we opted for a variation.

Each presentation was recorded and placed in the Schoology learning management system, giving the student audience the opportunity to watch the videos, conduct research to determine the accurateness of each presentation and describe any errors they found. What an engaging way to address the Knowledge Constructor indicator 3.b. that asks students to “Evaluate the accuracy, perspective, credibility and relevance of information, media, data or other resources.”

At the end of the first class period, several students told their teacher how much they liked this presentation style, how it challenged them and that they hoped she would do this again. I overheard a couple of girls saying they liked the stress and felt empowered and accomplished after learning they were able to talk freely about the concepts.

This type of presentation also helps prepare students for their AP exam, which requires making connections to topics they know little about and quickly recalling information they may have learned at the beginning of the year, or even in prior years.

More importantly, improv presentations allow students to practice a skill that’s essential for a variety of live presentations, be they webinars, tutorials or question-and-answer sessions: thinking on your feet.
Another important skill embedded in the Creative Communicator standard is the ability to adapt content for a specific audience.

webinars, tutorials or question-and-answer sessions: thinking on your feet.

This lesson can be adapted for many content areas and grade levels, providing much-needed practice with communication and critical-thinking skills. Inspiring students to think outside the box, collaborate and learn that it’s OK to try new things, take risks and make mistakes are great life skills these students will carry with them to a wide range of careers.

Customizing the message, choosing the right tools

Another important skill embedded in the Creative Communicator standard is the ability to adapt content for a specific audience. In Andrew Hutcheson’s AP and honors physics classes at Matanzas High School, students use the Feynman Technique to create science content for elementary students. Richard Feynman was a Nobel Prize-winning physicist who believed that you don’t really know something until you can put it into simple enough language to teach it to a child.

The project is a great example of the ISTE Creative Communicator standard because students have the opportunity to “Choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication” (6.a.), as well as “Publish or present content that customizes the message and medium for their intended audiences” (6.d.).

We began this project by working with students to select grade 2-6 science standards. The students then brainstormed ways they could teach these concepts to their
younger peers. Ideas ranged from live presentations and experiments to using videos, websites and online games. Several groups created iBooks.

Students were required to incorporate content from their own AP and honors physics coursework, so they needed to adapt the content to engage and hold the interest of elementary students.

While creating these elementary lessons, students also engaged in ISTE Creative Communicator indicator 6.b., by “Creating original works or responsibly repurposing or remixing digital resources into new creations” and 6.c. by “Communicating complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations.”

Several groups received permission to use existing YouTube physics videos, modified them by slowing them down and added voiceovers and annotations to explain the content. This reflects ISTE Digital Citizenship indicator 2.c.: “Students demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.”

Others used live models and visuals to communicate ideas, such as a group that created a hovercraft from a leaf blower. Students also learned about the importance of considering instructional design and multimedia principles when designing content.

One of the greatest rewards in teaching is seeing students exceed your expectations and go beyond where you thought they could go. Through projects like these, students have the opportunity to showcase their talents and practice valuable communication skills that will benefit them well into the future.

Kristin Harrington is an EdTech Coach for Flagler County School District in Palm Coast, Florida. She has a Master’s Degree in Educational Technology and Instructional Design from the University of Florida. Harrington is also a PLN Leader for the ISTE Learning Spaces Network and a contributor to the ISTE Standards Community and EdTech Coaches Network. Follow Andrew Hutcheson (@sciencehutch) and Christine Brink (@brinkc93) on Twitter.

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When a group of high school journalists from a wealthy Los Angeles suburb landed in Cuba, they looked around in puzzlement.

“Where are the homeless people?” they asked. They were surprised to learn that despite the country’s troubled history and limited budget, its leaders had somehow managed to provide housing, health care and education for its citizens.

By upending their expectations, the trip to Cuba triggered what Michael Hernandez hopes will be a profound shift in how they see the world.

“They got to see how people live firsthand,” he says. “They got to look people in the eye and have conversations and share meals with them. They got to smell the air they breathe and live among them.

“It was transformational for the kids.”

These types of mind-expanding experiences have become a matter of course for Hernandez, a journalism adviser and chair of the award-winning media arts department at Mira Costa High School in Manhattan Beach, California. After returning from his fifth student trip to a developing nation – a travel roll that also includes Cambodia and Vietnam – he’s more convinced than ever that storytelling, and the empathy it engenders, are the keys to navigating an increasingly disconnected world.

“One of biggest advantages to having students tell their stories and seek out the stories of others is that we can build empathy,” says the 2017 winner of the ISTE Digital Storytelling Network Award. “One of the struggles we all face, especially at this point in time in our country, is the disconnect between people of different geographical regions and of different racial, gender-identifying and religious groups. We don’t get each other because we don’t know each other’s story.

“The advantage of encouraging students to tell their story is that they also start to listen. They can see what’s different, but they also can find what’s universal.”

While Hernandez acknowledges that few classrooms have the opportunity to travel to a foreign country, he also sees technology as a powerful tool for connecting students digitally to the wider world. A filmmaker with a master’s degree in film production from Loyola Marymount University, he’s watched with interest as technology has empowered individuals to bypass the traditional publishing gatekeepers when creating and sharing their own content.

Back in 1999, when he first launched Mira Costa’s film journalism program – a job that was supposed to buy him time while he figured out what to do next – publishing content was a one-way pipeline not everyone was connected to. Nearly 20 years later, technology has changed everything.
Michael Hernandez says having students tell their own stories and seek out the stories of others helps build empathy.
Where film students once needed access to specialized equipment, they can now use their phones to capture and edit footage on the fly. And instead of relying on their school’s closed-circuit TV network to share their work with a limited audience, online platforms such as YouTube, Snapchat and Instagram allow them to connect, collaborate and exchange perspectives with people from around the world who also have a story to tell.

“Technology lowers the barriers to accessing information, and it lowers the barriers to being able to tell our own stories,” he says.

While that’s something to celebrate, he also sees the pitfalls his students will face as they prepare to enter a field that looks nothing like it did when he started his own career. In the age of YouTube and Twitter, teaching students to distinguish fact from hype has become more important than ever, he notes.

“For a couple of years, I thought I had taught a journalistic mindset of skepticism, searching out primary sources and vetting sources of information. But I still have trouble with some of them wanting to believe hype, wanting to question what would normally be considered reliable sources, because they’re presented with information that feels good.”

That’s one of the reasons he’s determined to broaden their perspective by exposing them to diverse stories.

For teachers who can’t take their students overseas, there are plenty of other ways to do it, he adds. It could be as simple as using Skype or Google Hangouts to connect with another classroom elsewhere in the world – or even taking a field trip across town.

“When was the last time a teacher took a trip and spent more than an hour in a different part of the city, meeting people who live there and talking with them?” he asks.

“To truly understand, you have to interact with people who are different than you are. You can’t deny what someone is telling you when they look you in the eye and you can hear the passion in their voice.”

Nicole Krueger is a freelance writer and journalist with a passion for finding out what makes learners tick.

“One of the biggest advantages to having students tell their stories and seek out the stories of others is that we can build empathy.”
Partner to amplify advocacy efforts at the highest levels

Daniel Downs, Ed.D.
Director of Digital Learning, North Reading Public Schools
Board Member, MassCUE

When efforts to streamline teacher licensing in Massachusetts recently took an unexpected turn, a cadre of organizations, led by ISTE affiliate MassCUE, united to support educators. This effort is an amazing example of how partnerships in the education community can have a real and lasting effect at the school site level, and on teaching and learning.

It all started in 2017 when the Massachusetts Department of Elementary and Secondary Education (DESE) attempted to streamline teacher certification. One aspect of that update was the elimination of the instructional technology specialists (edtech teaching) license. The net effect: Classroom teachers would no longer have onsite assistance with tech integration.

As you might imagine, widespread panic ensued.

That’s when MassCUE stepped in to create a partnership among education organizations, including the Massachusetts Association for Supervision and Curriculum Development (MASCD), the Massachusetts Educational Technology Administrators Association (METAA) and Lesley University to head off what all agreed would be a terrible outcome.

MassCUE’s Influence and Advocacy Committee, along with the Massachusetts Teacher’s Association (MTA), drafted a letter outlining the importance of the instructional technology specialist license and describing the impacts the loss of this license would have on the state’s educational technology initiatives, including 1:1 learning and personalized learning. The letter also explained the role the license plays within higher education preparation programs.

This letter became the basis for speaking points sent to the Massachusetts Board of Education and was posted to multiple websites and shared through social media.

As the sharing and discussion evolved, MassCUE and METAA created a survey to gather data on the role of instructional technology specialists and to crowdsourced potential questions about the changes to the licensing.

The data from the survey and the crowdsourced questions became the focus of an advisory day in April, hosted by MassCUE, where DESE responded to concerns and answered myriad questions.

As it turned out, in advance of the planned advisory day, DESE had already decided to preserve the instructional technology specialist license instead of changing it into a teaching license.

In the end, thanks to the collaborative efforts of all of the education organizations, the license was saved. Over the past year, an updated version of the license was rolled out that bridges the role of instructional technology specialists with computer science teachers, benefitting all learners.

The effort to save instructional technology licensure in Massachusetts is proof of the strength in numbers that emerges education organizations partner for the common good.
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COMMUNITY VOICES

ISTE members share a few of their favorite things.

What’s the one thing you know now that you wish you’d known as a first-year educator?

You don’t have to be the expert! Students love sharing what they figure out on their own.

Angie Gould, instructional technologist, St. Agnes Academy - St. Dominic School, Memphis, Tennessee

Mistakes are common and a launching pad for learning – not just as a student but as an educator as well.

Carol Coutts-Siepka (@MrsCintheLRC), library media specialist, Plum Grove Junior High, Palatine, Illinois

I wish I knew that I didn’t have to be an expert. I wish I had known how powerful it was to let students create and collaborate so they can be experts also.

Allison Sansom (@Allison_Sansom_), technology integrationist, Alabama Christian Academy, Montgomery, Alabama

Never eat your lunch in the staff lounge. Instead, casually eat your lunch with students. And spread it out and sit with students that aren’t yours sometimes, too. Sharing a meal builds rapport and mutual respect.

Brian O’Connell, library media specialist, Mitchell Middle School, Racine, Wisconsin

I wish I had realized back then that how kids feel every day is MORE important than the content I want to teach them. Making them feel valued opens the door to connecting them with the content.

Kari Ewoldt (@senora_ewoldt), teacher, De Pere High School, De Pere, Wisconsin

I wish I would have known that it’s OK to let go. Let the students have ideas, make choices and take responsibility for their own learning.

Chantell Manaha (@leadlaughlearn), technology director, MSD of Steuben County, Angola, Indiana

Find rock star teachers, get connected with them and develop a professional learning community (PLC). If you don’t know where to start, use Twitter. Search with hashtags. For example, in Alabama we use #ALedchat.

Vinny Chiaramonte (@VinnyCSed), teacher, Milken Educator R.F. Bumpus Middle School, Hoover, Alabama
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