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3 things I wish I knew my first year of teaching

BY JENNIFER SCHULTZE

Each year, more than 3.7 million teachers step into the classroom. For most, the first day of school marks an annual return. But for thousands of teachers, this will be their first year leading a class of their very own. And standing in front of a room full of students with all eyes on you can be quite daunting—especially in your first year of teaching.

Even after serving as a teacher almost 20 years, I can still recall those first-day, and first-year, butterflies. Over the course of my career I've worked in brick-and-mortar schools and at online public schools, with students and colleagues from diverse backgrounds and experiences.

Regardless of where and who they teach, every teacher can find ways to ensure student



success in their first year of teaching. As the new school year begins, I want to share with new teachers the three things I wish I knew in my first year of teaching that can hopefully help ease your entrance into the new year.

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3 ways AI is changing education right now (and in the future)

BY BILL SALAK

New and creative uses of artificial intelligence are being developed every day. The potential of AI in education cannot be overstated. In edtech, the use of AI has flown largely under the radar thus far, but it has the potential to reimagine the student-teacher relationship and improve student outcomes across the board.

Insights and predictions for the future of AI in education and in edtech from industry experts agree on several overarching trends. Technology, led by an interest in AI-based

AI, page 16

How one district handles student data privacy

BY KATIE ONSTAD

Every school district is faced with a choice about how to protect student data. As districts have implemented more technology to support digital learning, student data privacy in schools has become a critical issue.

It can be a huge undertaking to vet and manage the privacy policies of all of the online resources used in a district. Even with good intentions, most districts do not have adequate protection and are vulnerable to a data breach. These breaches are becoming more common as districts struggle to keep up with technology.

Here is the story of one district that is doing it right by effectively supporting its

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First Year

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Make connections with the whole family

The importance of making connections with parents may sound obvious, but it's often one of the most overlooked to-dos for first-year teachers. It's easy to feel overwhelmed with leading a classroom that you become distanced from making connections with the key stakeholders in your role: students and their families.

When I first began teaching in the virtual environment at Wyoming Virtual Academy, I was surprised at how quickly I got to know my students in the online setting. By using a monthly call list, I talk to every single family at least one or twice a month — not only the students who struggle, but also those who are getting along fine and those who are excelling. All of my colleagues do this with their students, and we're able to reach each family at least once a month for individual check-ins.

These calls are one of my favorite things to do because they give me time to make a genuine connection with families and to hear about their motivations, goals, and challenges. This has a huge impact on student learning and helps to make our parents feel involved and welcome in the learning process.

It's also a reminder for everyone that we share the same goal — to see students succeed. Oftentimes, once back-to-school night or open houses are over, receiving a phone call or email from a teacher is treated with dread. It's up to us as teachers to change this perception, so that parents and students know that they do not have to panic every time the teacher reaches out. You are partners in each student's journey.

Find the right environment

Just as it's important for a student to find the best learning environment for them, I believe it is equally important for educators to find the right place to teach. This is something that's dis-

cussed more and more when it comes to meeting students' needs, but I feel that teachers, especially when searching for their first opportunity, often overlook the importance of finding the "right fit for you" school setting.

Over my 20 years as a teacher, I have had the opportunity to teach at several different schools, and for me, the right place to teach is in the online classroom. As an online educator, I am surrounded by teachers who are passionate about what they do because of the extra steps we take to connect with students and families. My colleagues are self-motivated and creative, designing cutting-edge 21st century skill-centered lesson plans. Working in this type of environment every day has further fueled my passion for education and brought me closer to the personal goal I have of helping students succeed.

Of course, this type of classroom isn't the best fit for everyone, and many teachers find these same types of connections and space for creativity in a traditional brick-in-mortar setting. As the education landscape continually evolves, new methods of reaching our students will emerge and teachers will need to not only lead those classrooms but have a passion and energy for whatever educational option best suits their students and their own career goals.

Now that I'm in an environment that truly works for me, my passion for teaching could not be stronger. This passion reflects in my interactions with students as I conduct lessons and help build a positive virtual learning community within our school culture. I wish the same for teachers in every setting.

Avoid burnout: Practice self-care

While it's important to look after your students, the first year of teaching is often an overwhelming adjustment. It's important that you also practice self-care to avoid burnout. I've seen far too many colleagues run head-first into the new year only to become weary with their new position. Make sure that you are finding ways to de-stress and savor

some moments for yourself.

Within your first few weeks, establish boundaries for balancing work and your outside life. It's important that you know when to stop working at the end of the day and week. I also like to emphasize to my first-year colleagues that it's important to put their friends and family first. One thing that I do is make sure that the weekends are for myself and my family — this means I don't check emails or review papers all weekend. Those tests you need to grade will still be there come Sunday evening or Monday morning — or whenever you set aside the time to get it done.

Another thing that can help you avoid burnout, especially in your first year of teaching, is to find a "Teacher BFF." Finding a colleague at your school can do wonders to alleviate stress and to vent your frustrations. An experienced mentor — even if they've only got a year or two on you — can help you navigate tough situations with students, parents, colleagues and supervisors. Being able to call on someone with shared experiences will empower you throughout your first year and beyond.

I hope that these tips help to alleviate some of the worries first-year teachers may be facing — or worries that some of my returning colleagues are feeling after a restful summer break. There are lots of ways to ensure success and help students grow, while making sure that you are eager and ready to return to the front of the room next year. It can be scary at first, but it can also be the best year of your life. 

Jennifer Schultze has served the last 10 of her 20 years teaching in the virtual classroom. She holds a BA in Music Education from the University of Wyoming and an MS in Curriculum, Instruction and Assessment from Walden University. She has taught with the Wyoming Virtual Academy as a middle school and high school teacher since the school opened in 2008. She is currently working towards her second Master's Degree, in Virtual Education.

Privacy

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student data privacy policy with a comprehensive privacy management tool.

Forsyth County Schools

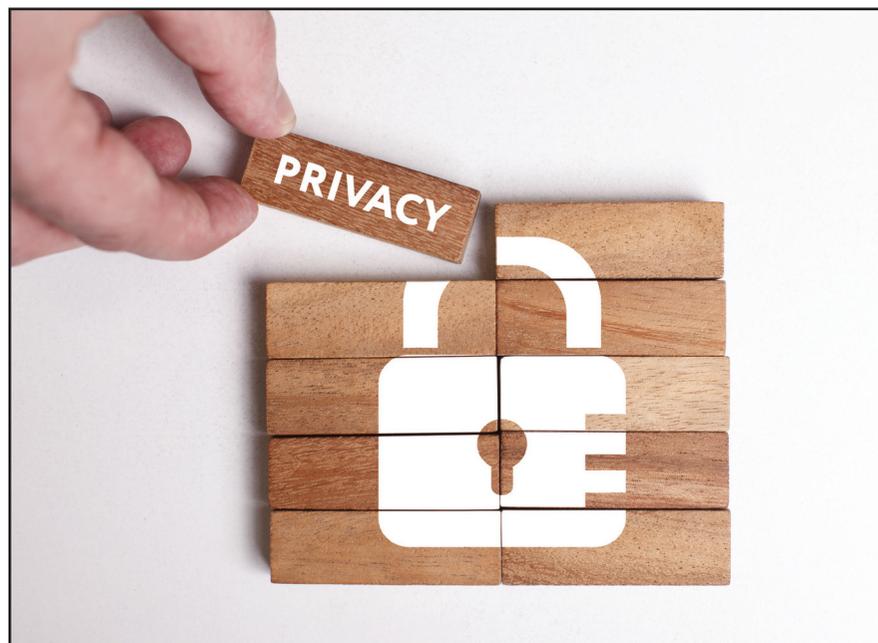
District administrators and school board members in Georgia's Forsyth County Schools were committed to data privacy—and with nearly 50,000 students, the district knew protection was of the utmost importance.

District tech leaders actively searched for an enterprise data privacy solution that would allow their teachers and schools to be autonomous in finding and selecting safe applications for use in the classroom. They also knew they wanted a tool that would give local school personnel the ability to independently find online resources that are FERPA and COPPA compliant. These requirements led the district team to EdPrivacy by Education Framework.

Like many districts, Forsyth County Schools does not have a large enough IT staff to conduct the labor-intensive evaluation of every digital tool and learning resource used in classrooms throughout the district. District leaders and school board members needed a comprehensive, cost-effective solution to automate this process, and also needed EdPrivacy to integrate with their SSO solution—Classlink.

Education Framework worked with the district and developed the integration needed for Classlink. Forsyth educators now have access to more than 10,000 digital resources in the EdPrivacy database, and can order a privacy evaluation for new digital tools and programs at any time. New evaluations are provided within 24-48 weekdays hours of each request.

Because the EdPrivacy database has an extensive library of approved educational resources, the district has been able to give teachers guidelines and greater latitude in choosing tools and learning resources to support their curriculum, all while protecting student data privacy. Also, the district's profes-



sional development program has spurred adoption and implementation of EdPrivacy throughout the district.

Highlights after EdPrivacy's first year in Forsyth County Schools include:

- 1,112 teachers are using the system
- 8,356 searches have been completed in the EdPrivacy database
- Users are advocates as they help teachers and administrators use the system
- Vendor privacy policies are vetted and continuously monitored for changes
- Quick turnaround on new edtech privacy vetting requests
- 80 percent ROI on Forsyth's student data privacy efforts

Forsyth's ROI for protecting student data privacy

The time spent on vetting the privacy of each online resource varies from 30 minutes for a trained person to multiple hours for an untrained individual. Using 30 minutes as a conservative calculation, Forsyth's 8,356 searches in the EdPrivacy database saved them the equivalent of two FTE, or two full-time employees, using the district's average salaries. If the vetting activity averaged an hour each, then the district has saved the equivalent of four full-time employees. After one school year, Forsyth has

experienced an 80 percent return on its investment in student data privacy and in EdPrivacy.

In addition to this significant savings, Forsyth employees have confidence that they have ensured the ongoing protection of students' personally-identifiable information. Forsyth educators benefit from the expanding database of approved digital resources and the monitoring of privacy policies on an ongoing basis. District leaders are notified via automatic updates of any changes in the privacy policies.

School data breaches are becoming more common, and there is an urgency for districts to do everything they can to safeguard student information. This type of 24/7 protection assures districts and school boards that they are providing the most comprehensive protection available for their students' personal data. **eSN**

Katie Onstad is a K-12 student data privacy management specialist, an engaged parent, and a business entrepreneur. As VP and Co-Founder of Education Framework Inc., Katie helped create an on-demand resource vetting solution that proactively protects sensitive student information and streamlines the privacy management process for schools.

Redefining what it means to be ‘college-ready’

According to research and the 2018 National Superintendent of the Year, preparing students for the future is more about creating a personalized pathway than teaching to a test.

BY DR. DAVID SCHULER

Societal pressures on high school seniors seemingly grow by the year. These days, a student’s level of college and workforce readiness is said to be dependent on their college admission test scores, completing the most rigorous high school classes possible, and obtaining AP credit. But research shows that these are not the sole indicators.

ACT recently released a report that claims only 26 percent of 2018 high school graduates were ready for the workforce, but I believe readiness is dictated by so much more than a standardized test score.

For example, research from the University of California Berkeley found that high school GPA is the best indicator of grades during freshman year in college as well as college graduation. Of course, I don’t presume that everyone should go to college.

Being college-ready vs. post-secondary-ready

When educators say they want students to be “college-ready,” it’s easy to assume we mean a four-year degree. What we really mean is “post-secondary ready.” If an individual wants to earn a family-supporting wage over the course of their work lifetime, they need access to some form of post-secondary education.

For example, if their goal is to become a police officer or a firefighter, they’ll have to learn how to move through the ranks. Though college might not be the path for them, they will need to demonstrate proficiency and take coursework. I did a presentation on this topic in southern Illinois and somebody

asked, “What if I want to be a family farmer?” Before I could respond, three people piped up, saying that farmers need to understand things like crop rotation, agribusiness, and irrigation. Every profession requires a level of expertise in some niche area. Having access to post-secondary coursework is a way everyone can stay relevant and nimble as an individual who wants to support themselves and possibly a family.

To move beyond these generalizations to some hard data, I asked the director of research and evaluation in my district, Township High School District 214, if we could do a meta-analysis revolving around what it actually means to be college and career ready.

Data-backed indicators

The research we compiled turned into what is now Redefining Ready!, a national initiative launched by AASA that provides college and career readiness indicators that are research-based rather than dependent solely on a test score. Our data shows that a student is ready for college if they have a GPA of at least 2.8 out of 4.0 plus at least one of the following:

- 3 or higher on an Advanced Placement exam;
- An A, B, or C in an Advanced Placement course;
- An A, B, or C in a dual-credit college English and/or math class;
- An A, B, or C in a college developmental/remedial English and/or math class;
- An A, B or C in Algebra II; or
- 4 or higher on the International Baccalaureate Exam.



Also, if a student has identified a career interest and meets at least two of the benchmarks listed below, we deem a student career ready.

- 90 percent attendance;
- 25 hours of community service;
- workplace learning experience;
- industry credential or certification;
- a dual-credit career pathway course; or
- two or more organized co-curricular activities.

Whether a student is aiming for college or the workforce, school districts should be able to create a personalized pathway that fits each student’s vision for their future.

Creating a personalized pathway

Our district has worked hard to personalize students’ experiences to make sure they have access to advanced coursework that is relevant to their career goals. To provide students opportunities to pursue their passions, and to ensure that high school education remains a positive, encouraging, and engaging experience, we have implemented what we call the Power of 15 initiative, which allows every student in our district to have access to a minimum of 15 early college credits before they graduate. That’s an entire college semester! In the graduating class of 2018, one-third of our students earned 15 or more college credit hours and 76 percent of students in this class had earned college credit.

Students choose courses based on their desired career trajectory. For example, if a student knows they want

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Building and sustaining a strong math culture

Learn how to shed anxiety around math and instead create a classroom math culture that increases achievement.

BY ROBERT LOW

Current employment trends and future projections all point towards continued growth in science, technology, engineering, and math (STEM) jobs, as well as the need for STEM-related skills in other fields. Yet, recent math proficiency levels among American students remain low, at just 44 percent in fourth grade and 33 percent at the eighth-grade level, and the math score trend lines are not showing significant improvement.

The attitudes of many students toward math are also not positive, and in order to improve those attitudes and actual math performance, David Woods, a senior director at Dreambox Learning, explained during a recent edWebinar how developing a strong math culture can engage students in authentic and effective learning, and result in increased achievement.

Using a problem-solution approach, Woods outlined a number of the challenges educators face when teaching math, and he explained training and planning strategies designed to address those issues. He also identified classroom techniques teachers can use to help students improve their math performance and attitudes.

Preparing to build a strong math culture

Surveys have shown that it's not only the students who may have a negative attitude toward math. Many K-5 teachers perceived themselves as being "bad" at math, and therefore may have their own "math anxiety" when trying to teach the subject. This can impact the effectiveness of their instruction, as well as the cues they may transmit to students, thereby perpetuating the same feelings, attitudes, and achievement levels.

In this way, teachers are a product of

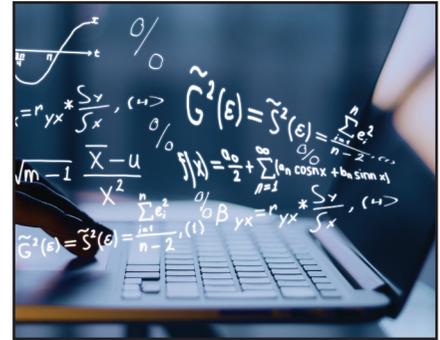
the system they now need to change, especially if they have been taught that math is a series of steps and procedures, and the focus should be on memorizing one right way to determine the correct answer. Instead, Woods recommends a professional learning and planning approach that engages educators in active learning, which they can then share and perpetuate in the classroom to improve overall math culture.

Key aspects of this approach to math instruction include recognizing that mathematicians explore and discover solutions, rather than just follow directions, and there can be more than one way to come up with the right answer. Math educators need to be allowed to experience these types of processes for themselves, so they are comfortable with them and can guide students through similar processes.

The planning for math instruction also needs to leave room for firsthand experience with diverse students' learning patterns, not just high-stakes test scores and textbook-driven pacing calendars. By including strategies and activities that engage students in authentic learning and leave time for creative problem solving, educators are likely to find that understanding of the subject matter improves, along with achievement levels.

Sustaining a strong math culture in the classroom

By getting to know their students as math learners, teachers can identify individual strengths and weaknesses, and provide more targeted learning experiences that enable diverse students to succeed. This includes establishing a collaborative classroom in which students are encouraged to discuss, experiment, and take risks when trying to



solve math problems, without fear of being demeaned by the teacher or fellow students.

To make the learning meaningful and relevant, Woods recommends celebrating a diverse collection of historical figures and sharing anecdotes related to math and other STEM topics. Working on problems based in the real world also engages students, especially if there are potentially useful applications that can have a genuine impact.

And in order to build on what students already know and then enable them to make continued progress, educators should be intentional with their use of numbers and processes. Problems can be constructed so that students are guided to solutions by first activating prior knowledge and then applying strategies to increasingly complex subject matter.

Noting that "what gets measured is what gets discussed," Woods recommends including students' questions, ideas, discussion points, and effort in their evaluations, which can then be used to inform further instruction. And he recommends thinking first about the big ideas students should understand and then working backwards from there, so that students develop a deeper understanding of math they will then be able to apply in new ways during their future careers.

About the presenter

David Woods is the senior director of curriculum and reporting at DreamBox Learning. He earned a BA in elementary education with endorsements in reading and middle-level mathematics and a

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This program is determined to support girls in STEM

One educator uses the FlexFactor program to show girls and underrepresented student groups how they can pursue STEM careers.

**BY BARBARA SCHREMP,
BRANHAM HIGH SCHOOL
INSTRUCTOR**

Few girls choose engineering classes because they aspire to be engineers. Many choose their classes because their friends do. The sense of belonging is important to them, and girls in STEM want to feel as if they belong. When Marsha* was young, she had no plans to be an engineer.

As she entered high school, many of her new friends joined the robotics club that met after school. Marsha initially decided to not join her friends. However, after a few weeks she started to feel left out of the daily conversation that usually revolved around robotics and their after school meetings. Consequently, Marsha found herself starting to attend every robotics meeting in order to keep up with the conversation and her new friends' interests.

Ironically, Marsha realized how interesting engineering actually was, and eventually decided to join the competitive girl's robotics team that year. With Marsha's help and with the guidance of a female robotics mentor, the team qualified for an all-girls robotics competition. Marsha's love for engineering was set.

When Marsha's peers were selecting electives for the following year, she heard that the 2nd year of engineering would be a continuation of what she had already learned in the robotics club, and the same female teacher was again the robotics mentor. Marsha continued in engineering her junior and senior year, and has now decided to major in computer science.

Marsha's story illustrates some of the key components required to recruit and

retain girls in STEM: community, focus on soft skills like written and verbal communication as well as technical skills, the appeal of problem solving in the real world, and relatable mentors or role models. These components are an integral part of the FlexFactor program, and they are why I am a strong supporter of the initiative for its appeal to students like Marsha.

I've been teaching our school's junior and senior engineering classes for five years, and this is our third year participating in the FlexFactor program. The 5-week program introduces students to an industry they might not know about, and motivates them to pursue an education and career in engineering and advanced manufacturing for the future.

FlexFactor prepares students for a career in these fields by challenging them to work in teams to identify a real-world problem and a solution. It has great appeal for me, because it helped my engineering classes learn a bit more about the business aspects of product development, and it also gave them an opportunity to practice their presentation skills in a formal setting. It supports my goals to attract female students and retain under-served populations in engineering. When assigning the teams, I give girls the choice of working in teams with other girls to support community building that keeps them engaged.

For many girls, the appeal of learning about technology for technology's sake is not inspiring. These students search for a career that has a deeper connection to solving society's problems. FlexFactor highlights how technology solves critical human problems



today. The real-world focus inspires students to connect STEM areas of study and their compassion for others.

In addition, written documentation and verbal communication are critical soft skills for any engineer. FlexFactor allows students to practice their communication skills describing a technical product. This balanced emphasis on technical knowledge and communication skills helps develop talents not emphasized in a more typical engineering class. High school girls with strong communication skills are encouraged by this aspect of engineering.

In her senior year engineering class, Marsha learned that group presentations to a variety of audiences were required and a significant part of her grade. Because she had good speaking skills, this gave her confidence in her ability to succeed. Her group was the top performer in the FlexFactor program and won a place to compete in the regional competition representing her school.

Students in the FlexFactor program can take on different roles to learn how marketing, finance, and manufacturing and design are all critical parts of a company. For some, this is the first glance at how areas of study like STEM can be split into different job functions within a company.

One of the most difficult parts of recruiting and retaining under-served populations is finding successful examples of people in that career. As part of the FlexFactor program, Industry Day is a field trip to a local high-tech company. Our students toured Jabil's Blue Sky Center, which displays some of the world's cutting-edge technologies and

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How STEAM prepares students for the global economy

It's critical to ensure students are equipped to navigate the ever-changing global economy and the future of work.

BY EILEEN BELASTOCK

“We have students who are passionate, engaged and comfortable with technology, yet students are living in silos and not equipped with the 21st century skills which they genuinely need to be part of the global workforce of tomorrow.”

This statement by Amy McCooe, CEO of Level Up Village, during a recent edWebinar hit home with her two co-presenters, Esra Murray, a fifth-grade teacher at International School Dundee (CT), and Fran Kompar, director of instructional technology and digital learning at Wilton Public Schools (CT).

Kompar expressed her frustration: “We are now 20 years into the 21st century, and we should be preparing our students for the work of their time, not the future—because the future is now.”

The presenters emphasized that the global skill most vital to students is learnability: the desire, passion, and capacity to learn, the ability to synthesize and evaluate information, and the willingness to take on new challenges. The impact of developing learnability skills will ensure that our young learners apply their knowledge and skills to the global economy and become lifelong learners.

The Four As

We live in a volatile, uncertain, complex, and ambiguous world, and it is critical to prepare our students to navigate this world and the global economy.

Kompar identifies trans-disciplinary learning as learning that can provide students with navigational tools embedded into the school curriculum and involve everyone in the school.

Four “A” elements should be part of any trans-disciplinary learning: authenticity where students explore essential and relevant questions that are mean-

ingful to them; the agency that empowers students to have a choice, whether it be the topic, how they solve a problem, or how they express themselves; action where students are allowed to take action to solve the problem; and authentic audiences—both locally and globally—where solutions are shared broadly.

Global STEAM education

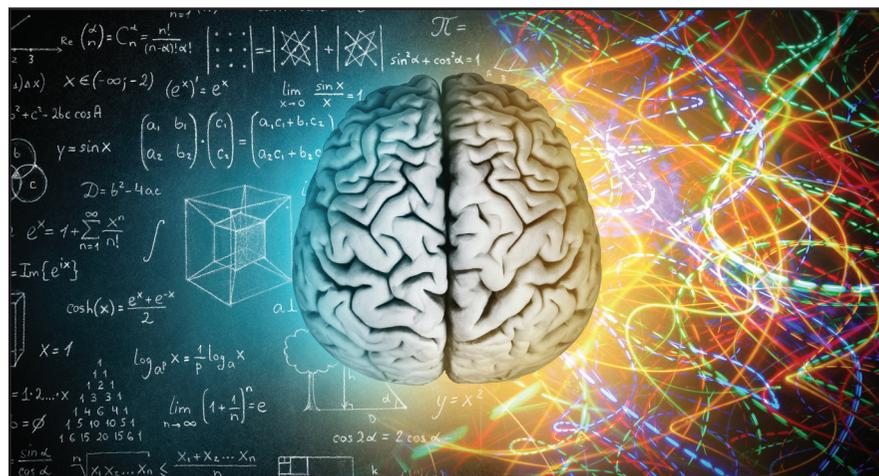
The question is how to prepare students for the global economy? The good news is that students are way ahead of us. Today’s young citizens have a greater awareness of global issues, such as water scarcity and pollution, than any other generation.

how to work effectively in teams locally and globally and teach them to solve global problems through STEM.

Support and develop critical skills such as collaboration, communication, and critical thinking to help young global inventors gain agency over their learning and find solutions to global issues that will be wide-reaching and impactful.

About the presenters

Amy McCooe brings a wealth of business experience and her lifelong passion for education to the global STEAM arena. Amy co-founded and is CEO of Level Up Village (LUV), a



To create a generation of problem solvers for the global economy, Murray identifies steps for incorporating global STEAM into classrooms:

Ask students to define the problem and give them time to synthesize and evaluate. Provide them with global collaborative opportunities.

Using the ISTE standard for Global Collaborator, plan how students can use digital tools to broaden their perspectives.

Enrich their learning with skills on

global STEAM education company that was recently acquired by Language Testing International, a Samsung Subsidiary. Level Up Village is globalizing the classroom and facilitating seamless collaboration between students around the world through global STEAM courses. Fueling her passion for project-based learning and design thinking, Amy created and developed the LUV STEAM curriculum and collaboration methodology LUV incorpo-

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showcases examples of automation, product design, intelligent digital supply chains, the Internet of Things, and more. On this trip, students interacted with a diverse panel of younger employees and met the workforce first hand.

It is important for students to be able to see themselves in their career choice. Knowing that people with similar backgrounds are succeeding in a variety of STEM disciplines encourages students to consider it as a career. Marsha questioned one of the female engineers on the panel about her aspirations to be in STEM. She wanted to know the panelist's choice of major in college and how that enabled her to work as a critical part of a team in this very innovative environment.

As an educator, I'm very excited to be able to offer my students the FlexFactor program. I have seen the numbers of the under-served populations, particularly girls, in the program expand as positive "word-of mouth" about my class and this program inspires the next group of students to explore engineering. 

*name changed to protect privacy

Barbara Schremp has been a math and engineering teacher at Branham High School in San Jose, CA, for over a decade. Passionate about teaching math as a gateway to STEM careers, she was instrumental in starting the engineering program. Today the program has grown from 100 initial students to over 300 students. As a Robotics Club adviser, Barbara has supported the growth from 15 initial members to over 50 students. She championed the addition of computer science classes and now is also the adviser for the Girls Who Code Club. Barbara graduated from Cal Poly San Luis Obispo with a degree in Electrical Engineering and enjoyed her initial career in semiconductor marketing. She was also awarded Teacher of the Year for 2016-2017.

STEAM

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rates to achieve authentic communication and collaboration between teachers and students across the globe. LUV has run programs in over 600 schools internationally creating global STEAM connections between more than 50,000 students. Before Level Up Village, Amy worked in management consulting and investment banking and has her BA from Trinity College in Connecticut and an MBA from The University of Texas at Austin.

Esra Murray is a lifelong learner loving her journey in the pursuit of creating

"We are now 20 years into the 21st century, and we should be preparing our students for the work of their time, not the future—because the future is now."

the most desirable conditions to cultivate lifelong learners, compassionate citizens, conscious innovators, and connected individuals. Recognized as a Distinguished Teacher in her district, her expertise and passion intersect at designing, implementing and evaluating innovative approaches to teaching and learning. Esra's collaborative work with the classroom teachers earned the 2019 Connecticut Educators Computer Association (CECA), an affiliate of ISTE, Educator Award for supporting the vision to transform learning and teaching in developing creativity and openness to new ideas through technology integration. She is a frequent presenter of her journey both locally and at international conferences. Her collaborative work has been highlighted in teacher | librarian and The International Dyslexia Association Perspectives, peer-reviewed journals, along with contributions to TechRepublic, EdSurge, International Baccalaureate Organization, and Level Up Village. Esra shares her journey in her blog, esramurray.com.

Fran Kompar is currently Director,

Instructional Technology and Digital Learning, Wilton Public Schools in Wilton, CT. She also serves as an educational consultant for Cooperative Educational Services (C.E.S) where she implemented a multi-year program entitled Re-Imagining the School Library (14 districts, over 133 schools represented). She has presented on various topics, most recently on the LMS in a digital transition, open educational resources and co-teaching strategies. The Wilton Public Schools Library Learning Commons Program was awarded the "Bunny Yesner" Library Media Program of the Year by the Connecticut Association for School

Librarians (CASL) for excellence and innovation in programming. Fran is also a columnist for the national publication, Teacher Librarian, and invites edWeb members to follow her on her journey on Twitter @fkompar.

Join the community

STEM Learning: Full STEAM Ahead is a free professional learning community on edWeb.net that provides educators, curriculum leaders, and industry members with a place to collaborate on bringing more science, technology, engineering, and mathematics into the classroom.

This edWeb broadcast was hosted by Level Up Village. The recording of the edWebinar can be viewed by anyone at <https://home.edweb.net/webinar/stem20190821/>. 

Eileen Belastock, CETL is the Director of Academic Technology for Mount Greylock RSD in Williamstown, MA, and also works with edWeb.net to write articles on their professional learning edWebinars. You can follow Eileen on Twitter @EileenBelastock.

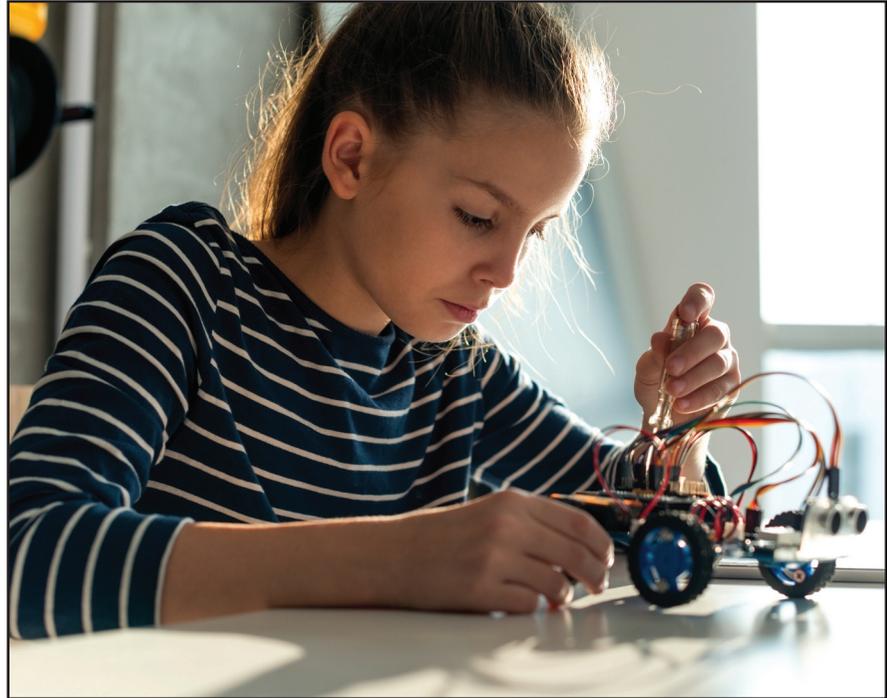
Three key trends in robotics education

Spending on K-12 robotics is expected to more than quadruple in the next four years. Here's why—along with key trends to watch.

BY DENNIS PIERCE

Robots are hugely popular with kids. Want proof? Four of the 20 best-selling toys on Amazon during the 2018 holiday season were robots, robotics kits, or other electronic circuitry kits. So it's not surprising that K-12 educators would turn to robotics as a way to get students excited about science, technology, engineering, arts, and math (STEAM) education.

Worldwide, schools spent \$146.5 million on robotics products and curricula in 2018, and this figure is expected to grow annually by 28 percent through 2023, reaching \$640.5 million by that time. Some of the many companies that sell robotics kits to schools include LEGO Education, Pitsco Education, Sphero, Ozobot, Modular Robotics, VEX Robotics, and BirdBrain Technologies.



Reasons for this surge

Why is the K-12 robotics market exploding? Educators are finding that robotics is a great way to introduce STEAM skills and concepts to students of all ages.

For one thing, robotics helps bring STEAM concepts to life through engaging, hands-on learning opportunities. Students enjoy being creative, and building and programming their own robot to do simple tasks allows them to flex their creative muscles. Along the way, students are learning key concepts in math, physics, coding, and engineering, and they're seeing how these principles apply within real-world scenarios—so their learning is more likely to stick.

Another reason for the surge in robotics education is that robotics is a rapidly growing industry. Integrating robotics into the curriculum exposes students to practical skills that could lead to a promising career.

The research firm McKinsey & Co. predicts that automation will have far-

reaching consequences on the global workforce, with about 50 percent of current work activities becoming automated by 2030. An article in *Forbes* says robots soon will become increasingly commonplace in homes, from robotic companions for the elderly to robots designed to feed, play with, and care for pets when their owners are gone.

As robots replace a growing number of workers, there will still be plenty of career opportunities for those who know how to design, develop, and program them.

But even if students have no interest in an engineering or coding career, robotics teaches them essential skills that are broadly applicable. Designing, building, and programming robots helps students learn logic, problem solving, perseverance, computational thinking, and a host of other skills that are invaluable regardless of what career path they choose.

At the Dwight-Englewood School in New Jersey, third through fifth graders

use EV3 and WeDo robotics kits from LEGO Education in science classes, and sixth graders complete a full robotics unit in science using the EV3 kits.

“I want my students to dive deeply into how things work,” says Technology Director Trevor Shaw. “I think that’s empowering for a lot of kids. Technology becomes something that they master and control rather than something they are dominated by, which is so often the case with kids and technology. Our goal is for kids to learn how to learn ... and to doggedly figure out the information they need to imagine something into existence. That’s a really powerful experience for a student.”

Trends in robotics education

With tremendous growth in the marketplace, this is an exciting time for K-12 robotics. Here are three important developments in robotics education over the last few years.

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Robotics

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Robotics instruction is now reaching early learners.

Research suggests that early exposure to STEAM learning is a key factor in whether students choose a STEAM-based career later in life. What's more, young children are innately curious; with their propensity to take things apart and reassemble them to see how they work, they make natural scientists and engineers.

With these ideas in mind, several companies have come out with age-appropriate robotics kits that target students in the very earliest years of their education.

For instance, KinderLab Robotics' KIBO is a screen-free robotics kit that

Edison is one of many companies that offer supporting materials to teachers free of charge, such as lesson plans and guides that help teachers integrate the robots into instruction. BirdBrain Technologies also offers free tutorials for teachers, as well as a loaner program in which teachers can borrow classroom sets of the company's Finch robot free of charge.

Putting actual robots in every student's hands can pricey. Introducing students to robotics in a more easily scalable manner, the CoderZ platform gives students a cost-effective way to learn about coding and robotics without needing expensive equipment. Students use a game-like interface to program virtual robots as they aim to solve various challenges.

Because the program is offered

Society for Technology in Education (ISTE) conference earlier this year, Pitsco Education and SmartGurlz announced the launch of Smart Buddies, programmable robotic dolls (both male and female) that are accompanied by a curriculum focusing on increasing diversity awareness for third through fifth graders.

Many companies are also paying close attention to how their robotic devices are perceived and are trying to develop gender-neutral solutions. For instance, BirdBrain's original Finch robot was designed to resemble a bird so that it would engage both boys and girls. Wired reports that Wonder Workshop tested the design of its gender-neutral robots, Dash and Cue, on boys and girls to make sure the devices appealed equally to both genders.

Worldwide, schools spent \$146.5 million on robotics products and curricula in 2018, and this figure is expected to grow annually by 28 percent through 2023, reaching \$640.5 million by that time.

enables children ages 4-7 to design, create, decorate, and bring their own robot to life. Edison is a programmable robot designed to teach coding and computational thinking skills to kids as young as four as well. And Eduscape's Photon is a robot whose five visual apps allow even non-readers to start learning to code at age five.

"Now more than ever, it's critical that we provide kids with an early on-ramp to STEAM learning—even earlier than we may have once thought—to prepare the workforce of tomorrow," says Don Bossi, president of FIRST (For Inspiration and Recognition of Science and Technology).

Companies are trying to make robotics as accessible as possible for students—and teachers.

Two key barriers to integrating robotics into the general curriculum are cost and teacher capacity. Robotics manufacturers are taking several steps to reduce these barriers wherever possible.

online, students have access from any internet-connected device either from home or at school. And the threshold for introducing it is minimal. A survey of teachers whose students took part in the finals of last year's Cyber Robotics Coding Competition organized by Intelitek, the company behind CoderZ, showed that more than 40 percent of teachers had no formal coding or robotics training.

New programs aim to reach underrepresented populations such as girls and minorities.

According to the National Center for Women and Information Technology, young women make up 56 percent of Advanced Placement test takers but only 19 percent of those who take the AP Computer Science exam—and just 18 percent of undergraduate computer science degrees are earned by women. Many robotics companies are trying to change this by engaging girls and other underrepresented populations in robotics.

During the 2019 International

"It's encouraging to see organizations take steps to reduce inequalities in access to STEM education," Bossi says.

Robotics isn't going to spark a passion for learning STEAM-based concepts in all students, Shaw concludes—"but it definitely will for some."

Editor's note: During the month of October, we'll take a look at robotics trends in K-12 education. As this piece points out, the skills students develop from learning robotics will follow them throughout their lives. We've put together a variety of content for you, including robotics grants and funding opportunities, teaching resources, a look at how educators incorporate robotics in classrooms, and more. Check back each day for new content—don't miss it! eSchoolNews.com 

The former editor of eSchool News and eCampus News, Dennis Pierce is now a freelance writer who has been covering education and technology for more than 20 years.

3 keys to a successful community literacy initiative

A chief academic officer shares how collaborating with local and national partners for a literacy initiative helped her district offer free books to everyone in the three cities it serves

BY DR. JOVAN WELLS

Finding a school district that doesn't have a literacy initiative extending beyond the walls of the classroom would likely be quite a challenge these days. And that's as it should be! Reading is, as the cliché goes, fundamental. It's a basic academic skill that helps students learn any other skill they will need to develop.

Building a strong, effective literacy initiative takes more than just asking students and community members to read together and planning a party to celebrate success at the end (though the parties are great, too!).

At Garland Independent School District, we've found that there are three keys to a successful literacy initiative: establishing clear goals, ensuring equitable access to reading material for every student, and building community partnerships from day one.

By focusing on those elements, our program has seen amazing results in its first year. While the program is still ongoing, between May 31 and September 1, participants have read more than 109,000 books in more than 784,000 minutes. More than 59,000 students had access to myON in that time and each student has so far spent a whopping 1,326 minutes reading on average.

Establishing clear goals

When you have targets to reach, your initiative is more purposeful, more strategic. When you know what your goal is, it's easier to see the barriers to achieving it and address them. Without goals, it's harder to monitor progress or even determine if the completed initia-

tive was a success or needs a little more work before round two.

We started down the path for our summer reading program, the Literacy for Life initiative, when our new superintendent decided to launch a single-focus initiative. We created a list of goals we wanted to achieve. Among the top 10 were four goals focused on raising literacy outcomes across the district. To achieve that, we made our overarching goal to encourage everyone in the community to read.

Ensuring access for every student

For our literacy initiative to get off the ground, we needed to ensure that every student had access to reading materials. This was a bit of a challenge in Garland ISD, because more than 100 languages are spoken in our district and more than 60 percent of our student body is economically disadvantaged. When an initiative goes beyond the district to be truly community-wide, as ours is, the issue of access could become a real stumbling block.

We addressed these barriers by partnering with Renaissance to provide all our students and every citizen access to myON through its Community of Readers model. Through myON, a digital literacy platform, we've made nearly 7,000 books available at no cost to everyone who lives in the three cities we serve: Garland, Rowlett, and Sachse.

We're a 1:1 computing district at the middle and high school levels, so many students have the devices they need. Community members and students can also download books on phones. They can download books anywhere they



have internet access, such as school or the library, to read later, so access isn't a barrier to participation. Regardless of socioeconomic status or the number of books in a student's home, they all have access to reading material.

Books are available in a variety of languages, and the program can even read out loud to the students using professionally recorded audio, so if a child is struggling or a parent is unavailable to sit and read, kids can still access reading material.

And our numbers thus far reflect that these online books are being read. More than 135,000 books have been accessed, and students have read close to 1 million minutes! Our students are actively engaged with literacy, and the numbers continue to rise.

Building partnerships

Community partnerships are often important in education initiatives, but when your goal is to focus the community to achieve a common goal, as ours is, they are absolutely essential. One of our earliest partners was the Garland Community Multicultural Commission. The group was a huge help in bringing other organizations in to collaborate with us early in the process. Getting a community group like that on board helps spread the word to community members who might be interested in participation.

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3 ways educational data improved outcomes in this district

Discover how this district outlines clear priorities that emphasize educational data use to improve the school culture for students and educators

BY DR. DONNA WRIGHT

In the Wilson County School District, using educational data to inform our decisions has reinvented the way students learn, and it has given educators a newfound confidence in their teaching practices.

In August, we were recognized by the state as an exemplary district, and we've achieved level five status, meaning our students are growing at a rate that's two years beyond what's expected.

We've achieved these results through the hard work of our faculty—and by using educational data to support how we instruct and evaluate our students. Other district leaders hoping to achieve similar results can follow three essential steps to creating a data-centric culture.

1. Get teachers on board

The first thing to consider when incorporating educational data into student evaluation seems simple, and it's critical: how are you going to use it and who is going to be using it? One year ago, I presented to our district's teachers that we want to grow our students, and data is going to support that mission.

In Wilson County, every administrator and teacher uses data to some extent, so it's imperative that they understand how to evaluate it and put it to good use. Confidence is critical. For every new teacher that comes through our doors, we make it a priority to understand their comfort level and ability to work with data.

For those who need some additional training, we provide professional development opportunities. For example, this summer, we held a literacy summit attended by more than 400 educators. During the three-day workshop, we focused on how to dig deeper into data to drive literacy achievement, and how to identify student trends and

possibilities for intervention.

We've also realized the benefit of using assessment in a positive—not punitive—way to measure student growth. We use data to create our district's assessments, focusing on the subject areas where improvement is needed. Faculty then uses the results to evaluate student achievement, and to forecast growth. We also compare the results to state standards to ensure that students are on track, and intervene where necessary.

One tool that our district uses to assist with this is Achieve3000, a differentiated literacy platform. The benefits of the platform are two-fold, it provides differentiated materials to meet students at their individual levels, and provides in-depth data to teachers.

2. Avoid the 'herd technique'

One year ago, I tasked our administrators and teachers with one objective: to truly get to know our students. Students each have their own unique skillsets, life experiences, and interests. These factors all impact how they are performing in school, and how they should be taught. Teachers need to know their students – it's not something that they are going to realize within the first day or month of a school year.

Building relationships takes time, but the results are more than worth it. My advice to administrators and teachers alike is to dig deep, use data to discover where a student excels and where they struggle, and from there address the student's needs. It's imperative that you avoid the 'herd technique' when using data – it should be used in conjunction with your knowledge of a student and their background.

To build teacher confidence in using data, I have three tips: training, support, and positive reinforcement. We offer

professional development and resources on how to work through data, support through educational technology, and celebrate teachers by rewarding the work that they put in. As we do with our students, we recognize our educators for showing determination, a desire to learn and growth.

3. Discover the story

I've had more than one faculty member approach me with the fear that they aren't able to dig into educational data because they aren't a mathematician. My advice is always the same: it's not about the numbers, it's about the story that the numbers tell us. It's the story about every child and what's taking place in the classroom.

Thanks to data, we've identified some interesting trends within our district. For example, we found that flexible grouping was a huge benefit to our elementary and middle schoolers, and that closely examining literacy achievement from an early age can help to identify potential learning disabilities. We also recognized that many students were entering high school without foundational literacy skills. Through these discoveries, we've been able to intervene where necessary, and use positive findings to inform instruction in other schools. It's a group effort.

Data builds confidence and inspires growth in students. We can make strong decisions on what needs to be addressed, and ensure that students are prepared for state assessments with internal measurements. Data drives everything we do, it's a part of our culture and is a major support to students and faculty alike. 

Dr. Donna Wright is the Wilson County Director of Schools.

How our district cultivates a healthy student mindset

BY KATHLEEN TUCK

Challenged by high youth suicide rates and an ongoing need to support youth behavioral health, Nampa School District has taken these five steps to identifying and addressing the problem on a daily basis

Here in Idaho, you might say that the odds are against us on the behavioral health front. After all, suicide is the second-leading cause of death for Idahoans aged 15- to 34-years-old. According to the Department of Health and Welfare, there were a total of 393 suicides in Idaho in 2017 for all ages.

These tragic events touch many educational institutions—and their students and families—every year in a state where the suicide rate is 58 percent higher than the national average.

Not willing to stand by and let our students become statistics, our district has taken some very deliberate measures to help support youth behavioral health and support positive outcomes. We've been working on these initiatives for years in a region of the world where certain school districts have experienced multiple suicides within a year's time. We've experienced such losses ourselves, most recently when a school resource officer and a teacher both died by suicide about two years ago.

Here are five ways we're effectively identifying and addressing the issue while ensuring a positive educational experience for our students:

1. Put a student safety platform in place. Using Gaggle, we can quickly identify students who may be in trouble and then intervene appropriately. In place for about two years, the platform helps us identify students who might be in trouble and in need of help by monitoring their online activity. Gaggle uses a robust combination of technology and trained safety experts to provide real-time analysis and review of students' use of school-issued online collaboration platforms such as

Google's G Suite for Education and Microsoft Office 365. It also alerts us 24/7/365 to issues related to school violence. Our counselors and administrators are all trained on what to look for and have intercepted several communications and secured help for the students who were involved. One of our main uses of the platform involves listening to a lot of the digital chatter that prompts us to intervene and stop suicides.

2. Get everyone involved. Student safety requires a multifaceted effort, so our community partners in healthcare also have a number of child psychiatrists on board and a partial hospitalization program. In concert with our community partners, we do a lot of work around youth behavioral health, and suicide prevention is one area of concern. It's been a real group effort that's focused on coming together to try to figure out what to do from a multi-sector, multifaceted approach. For example, we have a youth behavioral health trauma crisis team that's led by our public health department. About 80 volunteers and mental health professionals came together and received training. These individuals handle surge capacity within our district if there's another incident or there's some sort of crisis that requires youth behavioral health professionals.

3. Tap into grants and other resources. The Blue Cross of Idaho Foundation for Health is a statewide non-profit dedicated to addressing the root causes of Idaho's most pressing health issues. The organization had a multi-year grant with the city of Nampa and is now working on a multi-year grant with our district. The purpose of the grant is to build partnerships with schools and community entities to address trauma and support student wellbeing. Part of the work done so far involves understanding access, resources, challenges, and opportunities that exist from the perspective of the school district to influence youth



behavioral health. The district will use grant funding to pilot programs and projects in various schools focused on school culture and adult-student relationships.

4. Partner with private entities. Our district has also invested heavily in the Healthy Minds Partnership, whereby a behavioral health provider (i.e., private entities) partners with a school to provide clinical counseling services onsite. In this arrangement, the district doesn't have to pay for the services, because they are reimbursable by Medicaid and/or private payers. This type of partnership is an excellent example of how a district can reach out and partner with business entities in their communities. This creates a win-win-win for the school, the district, and the business.

5. Leverage the strength of your community. Nampa is a growing community, but it still has some pretty old-fashioned values. It's a community where high school sports are still a big deal, and where a lot of graduates stay here in the community. We leverage these connections and remind people that it's not just the Nampa School District and the city of Nampa; we're all one. What happens in our schools is really an issue for the whole community.

Ultimately, what we'd like to see is everyone coming together to recognize that youth suicide is our problem as a community, and then working to find ways to join together and solve it. It has to go beyond the schools and become a community effort to reach out and make some real changes. 

Kathleen Tuck is Director of Communications and Community Relations at the Nampa School District in Idaho.

Teaching writing one word at a time

One writing teacher's experience with an English language learner demonstrates the power of modeling to overcome the language barrier

BY KYLENE REED

As the writing facilitator for my district, I model writing instruction for other teachers all the time. It gives them an opportunity to see effective instruction in practice, of course, but modeling writing itself is an important component of how we teach our students to communicate effectively.

I didn't always appreciate the power of modeling. It's something I began to focus on after adopting the Empowering Writers (EW) approach to professional development a decade or so into my career, and these days I'm a big advocate of teaching by example. A recent experience with one of my 6th-grade students really brought home the power of modeling for me.

Plenty of access to language—but no English

This little girl had just moved to our district from Europe with incredible language skills. She spoke 15 different languages, but none of them were English. She was extremely smart and she walked around with the sweetest smile on her face all day, but she didn't really know what was going on around her.

Bushland Independent School District is a small district with very few English language learners. She was the only one in her grade that year, and maybe even in the whole middle school, which meant that we didn't have many resources for students facing the particular challenges she faced.

Modeling language

After six years of using the EW approach to writing instruction, modeling is something I do in my classroom every day, whether it's writing or something else. If I expect my students to do something, I model it for them first.

With writing in particular, I believe



With writing in particular, I believe in letting my students borrow from my sample. They can copy from me directly if they feel they need to. They can change a few words or just snatch some of the ideas to use in their own writing.

in letting my students borrow from my sample. They can copy from me directly if they feel they need to. They can change a few words or just snatch some of the ideas to use in their own writing. In my experience, I've found that as students grow, they become less dependent on my examples and increasingly use their own words and ideas.

This little girl would come in and would not understand anything that I was saying out loud, but she would copy word-for-word everything that I put in my model sample. This went on for at least a solid month. One day I was monitoring, walking the room, and I happened to look down at her paper and she had changed one of the words. It was a color word. She had just changed the one I'd chosen to another color of her own.

I said, "Oh my gosh, look at you!" and she nodded her head and gave me a

big smile.

Every day after that I would see her trying, or she would ask me, "What is this? What is this?"

Maybe two weeks after she changed her first word she began changing sentences, and then she started changing multiple sentences. It just was contagious for her, and for me as well.

Her speedy progress opened up my eyes to the power of modeling. Even though it's my ideas that I'm putting on paper, I'm still laying a solid foundation for the kids in my classroom, even if they don't understand all the elements of writing—or even the language. **eSN**

Kylene Reed teaches 6th grade and serves as the writing facilitator at Bushland Independent School District. She can be reached at kylene.reed@bushlandisd.net.

Culture

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minor in Spanish from Whitworth University, as well as a master's degree in integrating technology in the classroom from Walden University before joining the DreamBox Curriculum team. Throughout his teaching career, David reviewed new curricula, interpreted assessment data, and was a leading member of his professional reading community of math teachers. For the last six years he has been a curriculum

designer at DreamBox Learning, currently serving as the senior director of curriculum and reporting, where he can apply his passion for building an effective individualized math curriculum.

Join the community

Building Understanding in Mathematics is a free professional learning community on edWeb.net that provides a platform, advice and support in helping educators learn methods that help students build understanding in mathematics.

This edWeb broadcast was sponsored by DreamBox Learning. The recording of the edWebinar can be viewed by anyone at <https://home.edweb.net/webinar/math20190930/>. 

Robert Low has worked in educational publishing for more than 30 years. His experience ranges from editing and product management to online advertising and content development. He also works with edWeb.net to write articles on their professional learning edWebinars.

Literacy

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Because Garland ISD serves three different cities, we were also able to bring those cities' leaders and their libraries into the project for support and to help spread the word. We've even had city council members jump in to support our community reading model personally.

Businesses from each of our communities have been eager to get involved, with Kraft Foods donating

different organizations in these towns are already a big part of it.

If I could give a single piece of advice to anyone planning a community literacy initiative, I would tell them to involve community partners as early as possible. It's hard enough to communicate a message to the stakeholders in your own organization. If you want to go beyond that and get your message out to every corner of your community, you need a lot of soldiers on the ground. Community partners can go a long way—much further than

Community partnerships are often important in education initiatives, but when your goal is to focus the community to achieve a common goal, as ours is, they are absolutely essential.

snacks and backpacks full of supplies to give away during the celebration at the end of the program. Other local businesses are also donating goods to the initiative—but just as importantly, they're donating time to spend with the students reading and talking about books.

We're already excited about the future of this initiative and the potential that it could become a part of the culture in these three communities. That hope is realistic because so many

your district alone—toward filling those boots.

In the end, there's no great mystery to building a successful community reading initiative. Once you've decided what your district needs to achieve, the key is finding the right partners and working together to make it happen.

Dr. Jovan Wells is the chief academic officer at Garland Independent School District. She can be reached at JCGrantW@garlandisd.net.

'College-ready'

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to pursue a STEM-related field, taking a college-level calculus 3 course makes perfect sense. Throughout their elementary and secondary schooling, they have been told what to do and how to do it. By giving students this opportunity, we are allowing students to take control of their future. That sense of responsibility is something students need to have in college and the workforce.

A crucial aspect of being career-ready is identifying a career interest. Many students struggle to dream beyond their current context. It is our job as educators to plant new dreams in the minds of our students and their families.

Taking a broader view of college-readiness benefits our educators, too. Our educators teach because they love to teach and their hearts fall when you tell them to teach to a test. It is wonderful to unleash the power and joy of educators. They get fired up about work because they see the relevance and the engagement in their students' eyes.

David Schuler, PhD., is superintendent for Township High School District 214 in Illinois, 2018 Superintendent of the Year, and founder of Transeo, a data-driven community service tracking and postsecondary readiness software.

AI

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solutions, will produce a completely new educational system, and these are some of the trends I see impacting the work that is being done in the industry.

1. AI will lead to even better personalization.

The primary trend is personalization and it's easy to see why. Not all students learn the same, and hence they shouldn't all be taught the same. For a very long time, the education system has followed the one-size-fits all approach to student learning. However, the truth is that every student is unique. The future will see AI systems customize the learning experience for students based on their strengths and weaknesses.

This will enable all students to enjoy the learning process. With the advent of AI in education, the students-to-one-teacher model is ripe for reinvention. AI will allow for students to access information along their own unique learning curve, positioning teachers to best advise students in a personalized way, rather than a way that works for all 30 students in a class.

2. Teachers will have more time for teaching.

AI can help reduce or even eliminate mundane administrative tasks like grading assignments, opening up more time

to create bespoke lesson plans for each student.

An interesting and emerging trend that I think will continue to gain traction this year and for the next several years is in the area of teacher assistance applications. Improving OCR and NLP techniques, alongside lowering costs and

AI will produce novel and powerful new forms of learning, well beyond what we think of as education today.

greater availability to these sophisticated technologies, will enable a number of products aimed at helping teachers with administrative work like grading homework and classroom assignments. As these automated review and data collection systems roll out, we will start to see teacher assistance applications that act like recommender systems for teachers to improve outcomes in their classroom.

3. AI will help teachers get more powerful results.

Teachers will be able to augment their own experience, training, and instincts with sophisticated data from AI applications to create a more efficient

learning environment and curriculum predicated on the needs and pace of the student.

The education system of the future is based on individual pace and progression with highly-adaptive content, and the testing that we know today will be replaced with interactive proof-of-knowledge mastery and the ability to apply the mastered knowledge in a meaningful simulation. We will no longer have grades like K-12, or standardized testing, and the role of the teacher will be much more aligned with that of an expert facilitator or education coach.

AI will produce novel and powerful new forms of learning, well beyond what we think of as education today. The concept of school will transform into systems of life-long learning that we will use from early childhood learning through occupational training and beyond.

The future of AI in education is only limited by our imaginations and the speed of how technology is developed. It's an incredibly exciting time to be in the education space as AI will continue to make advances and leaps that we could have never predicted. Here's to the bright future of education. 

Bill Salak is the chief technology officer of Brainly.

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