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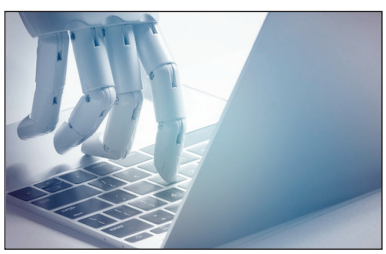

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eSchool News

Technology News & Innovation in K-12 Education

Vol. 26, No. 2 | eSchoolNews.com | April–June 2023

5 ISTELive 23 sessions you won't want to miss

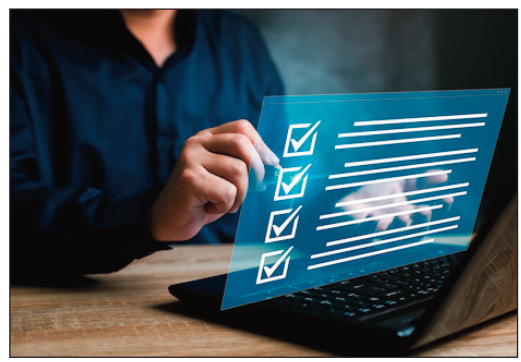
Laura Ascione, Editorial Director, eSchool Media

ISTELive 23 lands in Philadelphia on June 25, and the annual conference promises to be packed with content for administrators, curriculum directors, classroom teachers, and everyone in between.

This year's conference theme, "Discover Your Next," celebrates the ideas, partnerships, teaching strategies, and edtech tools that can take learning to its next iteration. Register here, for in-person or virtual access.

With more than 900 sessions, it's hard to choose a handful to highlight—but here are five sessions that caught our eye:

1. Class Visits: A PD Model for Teachers Growing Teachers



Instructional coaches are frequently asked, "What is everyone else doing in their classrooms?" Learn how our school created a successful PD system for teachers to learn and be empow-

ISTELive, page 2

5 to thrive: SEL resources to help students grow

Jamie MacPherson, Learning Solution Specialist, Van Andel Institute for Education

Every educator hopes to equip their students with the knowledge they need to thrive as a healthy adult. It's a daunting task, especially considering there is so much to teach in such a small amount of time

We want students to fall in love with reading while building up skills in language and grammar. We try to show them that math and science can be outlets of wonder and imagination, while also grounding them in foundations of history and social studies. And yet, out of all the knowledge at our disposal, fostering healthy social-emotional learning (SEL) may be the most important lesson that we impart to our students.

According to CASEL, the Collaborative for Academic, Social, and Emotional Learning, SEL is "the process through which all young people and adults acquire and apply the knowledge, skills, and attitudes to develop healthy identities, manage emotions and achieve personal and collective goals, feel and show empathy for others, establish and maintain supportive relationships, and make responsible and caring decisions."

In other words, SEL is about teaching students how to think and behave like healthy, mature adults. This is certainly a worthy goal, but how exactly do we go about teaching this? Well, there is no one-size-fits-all method for teaching SEL, but there are resources that teachers can draw on to start applying these principles in the classroom.

Every educator hopes to equip their students

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ered by each other by participating in a virtual class visit. Caty Carmendy, the Instructional Coach of Mooresville High School, leads the session.

2. VR and Privacy: Superheroes and Supervillains

Virtual reality technology allows us to engage in futuristic and limitless immersive experiences for education, gaming, collaboration and more. VR devices have an unprecedented superpower setting them apart from previous technologies. Led by Steve Garton, Sr. Manager with the Common Sense Media Privacy Program, session attendees will explore best practices for privacy and security for VR technology for students and children everywhere.

3. You Can Teach Computer Science! A Former English Teacher's Story and Advice

This presentation will highlight the skills that all teachers already have and discuss how to apply those skills to computer science. There is an increasing need for CS teachers. Good pedagogy is applicable to all content areas, and new content knowledge grows with time and experience. Let's recruit more teachers! Danna Pearsall, an ISTE Certified Educator and a new computer science teacher with 16 years of experience in education, leads the session. Pearsall made the switch from teaching English to Computer Science after seeing the need to make Computer Science programs more inclusive and diverse.

4. Chart a New Course: Teaching Essential Skills for Tomorrow's World

The session will share ways to design more purposeful learning experiences to drive student engagement and motivation, promote creativity in learning, model risk-taking and build classroom culture. Walk away with resources to help students develop essential skills through authentic, real-world and personalized learning experiences. The session is led by Rachelle Dené Poth, a STEAM and Spanish teacher, author, consultant, attorney, and presenter. Also an ISTE Certified Educator, Poth is a past president of ISTE TEN, and a recipient of ISTE's Making IT Happen Award.

5. A11y to the Rescue: A Villainous Escape Room

Can you escape a fairy tale nightmare? Help A11y escape fairy tale villains while experiencing the same obstacles that disabled students encounter in digital spaces. Will you and your teammates successfully solve the escape room puzzles and return to reality, or will you end up as the old hag's breakfast? Presenter Chrystal Trapani is the Lead Instructional Technologist: Accessibility Architect with Digital Innovation, an adjunct instructor, and a doctoral student at Old Dominion University. She is a Google Certified Trainer and Instructure's Educator of the Year (2022). eSN

SEL Resources

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Jamie MacPherson is a Learning Solution Specialist for Van Andel Institute for Education, a Michigan-based education nonprofit dedicated to creating classrooms where curiosity, creativity, and critical thinking thrive.

Are substitutes the answer to the teacher shortage?

Jenny Jordan, Executive Director, TeachStart

California is investing $350 million in teacher residencies, recognizing the need for effective teachers, which too many of our classrooms are missing. But this big bet isn't working. Why? Too many people can't afford to take on the financial liability to train for the position.

If we know the approach isn't working, we need to look toward another solution: Substitute teachers.

The average K-12 student spends one year of their education with a substitute. However, 56 percent of substitute teachers receive no training. Every day in America, there is a need for 250,000 substitute teachers, but 77 percent of school districts report acute substitute staffing challenges. It's a reminder that students don't get do-overs; every day of their education matters.

Substitute teachers are an important part of our school ecosystem. They impact our students, as well as the well-being of our teachers. Not having effective substitutes–or, let's be honest, any additional person with a college degree willing to help–is also impacting teachers unable to pursue professional development without sacrificing their student's learning.

What if we put some of this investment in residencies into professionalizing substitute teachers and giving them a pathway into long-term teaching?

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Jenny Jordan is the Executive Director of TeachStart.

10 powerful practices for new principals

Dr. Marissa Prather, Director of STEM and Fine Arts, Douglas County Schools

As a principal, you have the privilege of leading a school and making a positive difference in the lives of countless students. You have the power to create an environment of education, respect, and integrity. You are also responsible for ensuring that your students receive the best possible education and that their educational and social outcomes are improved through your leadership. Leading with integrity and improving student outcomes is a task that requires dedication, hard work, and a willingness to be open-minded and creative.

The following are 10 strategies for new principals to lead with integrity and improve student outcomes:

1. Establish a Vision: Establishing a clear school vision is the first and most important step for a new principal to lead with integrity and improve student outcomes. This vision should be based on the core principles of integrity, respect, and excellence and should be shared with your school staff, students, and parents. This vision will guide the school and should serve as a rallying point for everyone to strive towards.

2. Build an Inclusive School Community: Creating an inclusive school community is essential for improving student outcomes. This means creating an environment where all students are respected, celebrated, and included, regardless of their race, gender, religion, or any other social identity. This involves actively creating a safe and welcoming environment, such as encouraging open communication and dialogue among staff, students, and parents.

3. Promote a Culture of Respect: Creating a culture of respect is essential for improving student outcomes. This means ensuring that all members of the school community respect each other, and that everyone is treated with dignity and respect. This should extend to all school community members, from students and teachers to parents and administrators. This should include setting clear expectations for everyone to follow and taking steps to ensure that everyone

Practices, page 4

Practices

continued from page 3

is held accountable for their actions.

4. Foster an Environment of Learning: Creating an environment of learning is essential for improving student outcomes. This means creating an atmosphere where students feel safe and supported and where they can confidently explore their interests and passions. This involves taking steps to create a positive learning environment, such as providing resources, establishing clear expectations and guidelines, and encouraging collaboration and problem-solving.

5. Encourage Creative Thinking: Encouraging creative thinking is essential for improving student outcomes. This means providing opportunities for students to think outside the box and explore their creativity. This can be done by providing resources and materials that encourage creativity and encourage students to take risks and think creatively.

6. Embrace Technology: Embracing technology is essential for improving student outcomes. This means taking steps to integrate technology into the school curriculum and leveraging it to enhance the learning environment. This involves providing access to technology resources, such as computers and tablets, and staff training to ensure everyone is comfortable using technology.

7. Provide Professional Development: Providing professional development is essential for improving student outcomes. This means taking steps to ensure that all staff members are up-to-date on the latest educational trends and best practices and that they have the support and resources they need to perform at their best. This involves providing opportunities for staff to attend conferences, seminars, and workshops, as well as providing staff with access to online educational resources.

8. Foster Positive Relationships: Creating positive relationships is essential for improving student outcomes. This means taking steps to ensure that all members of the school community have positive relationships with each other and that everyone is treated with respect and kindness. This involves encouraging open communication and dialogue, providing training and resources to help staff and students work together, and taking steps to support and celebrate each other's successes.

9. Implement Effective Strategies: Implementing effective strategies is essential for improving student outcomes. This means taking steps to ensure that the school has effective strategies in place to help students learn and reach their potential. This involves establishing clear expectations and goals, providing resources to help students reach those goals, and encouraging collaboration and problem-solving.

10. Evaluate Progress: Evaluating progress is essential for improving student outcomes. This means regularly assessing the progress of students and staff to ensure that the strategies being implemented are working. This involves conducting surveys and interviews, reviewing student data, and monitoring the school's performance over time.

Leading with integrity and improving student outcomes is a challenging but rewarding task. It requires dedication, hard work, and a willingness to be open-minded and creative to make a positive difference in students' lives.

Leading with integrity and improving student outcomes is a challenging but rewarding task. It requires dedication, hard work, and a willingness to be open-minded and creative to make a positive difference in students' lives. By implementing the above strategies, new principals can take the important first steps toward leading with integrity and helping their students reach their full potential. eSN

Dr. Prather is currently the Director of STEM and Fine Arts for Douglas County Schools in Georgia. In this role, she is responsible for developing and implementing innovative learning strategies to engage students in STEM and Fine Arts subjects. She advocates for integrating technology into the classroom and believes that the future of education lies in preparing students for the ever-changing world of technology.

4 tips for creating an elementary esports program

An elementary esports program that meets young learners' needs should include considerations for learning space design and high-quality furnishings

Dr. Christina Counts, Vice President of Education, MiEN Company

Scholastic esports is rapidly growing, and many schools are starting to incorporate esports programs into their curriculum. The benefits of esports make a compelling case for creating a program: Research shows that students who participate in scholastic esports experience social and emotional benefits, increased academic achievement, and higher graduation rates.

These positive learning outcomes make esports popular in secondary grades, with both students and educators advocating for the addition and growth of scholastic esports in their middle and high schools. But esports isn't just for the older kids, and starting an esports program in early elementary school can be an effective way to lay the groundwork for esports participation as students make their way into higher grade levels.

When young students have opportunities to engage in game-based learning and online games, they are able to build a foundation of skills and interests that can connect them to future esports opportunities in middle school, high school, and beyond. However, creating an elementary esports program isn't quite the same as creating a secondary program, because younger learners have different abilities and learning needs than their older peers. It's key that the program is tailored to meet these young learners' needs, and learning space design and quality furnishings play an important part in supporting program goals.

To ensure the development of a successful elementary esports program, here are four helpful tips:

1. Simplify the Tech

The technology used in an elementary esports program should be user-friendly and simple to operate. While today's young children are digital natives, they still may struggle with complex technology, so it's essential to choose devices and software that are easy to use and understand. An easy game to start with is Minecraft: Education Edition, which can run on most networks and devices and is simple and intuitive for students to play. Selecting a game like Minecraft removes the need for expensive and complicated gaming computers, controllers, and keyboards, which can be challenging to learn and have high upkeep costs. Instead, focus on technology that is durable and reliable—such as tablets and desktop computers—as young children may accidentally damage equipment if it's not designed to withstand their usage.

2. Ensure Comfort

The learning space you utilize for your elementary esports program should reflect the physical needs of young learners. Furnishings should be convenient and comfortable, with chairs and tables that are appropriately sized for the children who will be using them. Adjustable desks and chairs can be helpful to ensure comfort and function across grade levels, so that students can easily alter their gaming space to get their monitors and keyboards at a comfortable height. If your esports space will be hosting students who are not always actively playing or are just observing, tiered modular seating can also be a practical addition to the space. Finally, make sure the space is well-lit and ventilated, as children are more sensitive to environmental factors than adults.

3. Focus On Skills and Collaboration

An elementary esports program should be focused on developing skills and team-building. Esports can be an engaging way to teach children critical thinking, problem-solving, and strategic

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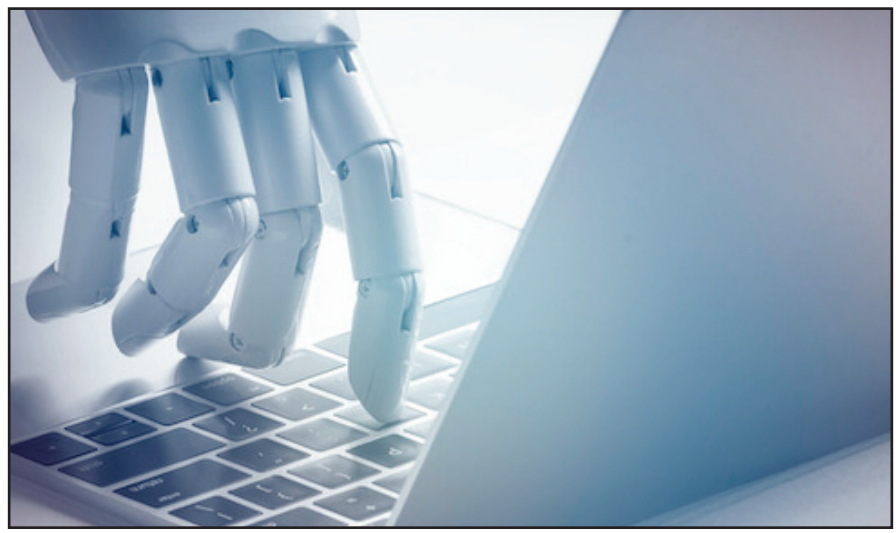
The importance of teaching generative AI

Many schools are not doing enough to prepare students for a future where AI will have an increasingly significant role in everyday life

Abhishek Bahl, Founder, Jet Learn

The era of the textbook isn't dead, but it's important to start looking forwards rather than backwards when addressing education for school children. Whether we like it or not, it is becoming increasingly clear that generative AI will play a pivotal role in shaping the future and, with the workforce demanding greater expertise in AI, it is crucial to equip the next generation with the knowledge and skills required to thrive in this rapidly-evolving landscape.

School leaders must recognize the importance of incorporating generative AI education into curriculums to prepare students for the jobs of tomorrow.



AI in different mediums

Relying on traditional textbooks alone is insufficient for teaching these vital skills. Instead, curriculums must be innovative and age-appropriate, offering students a comprehensive introduction to generative AI. Tiered learning opportunities are essential, enabling children to build a robust foundation that then adapts as they grow older. Exposure to generative art, music, stories, games, and coding concepts allows students to explore the boundless possibilities of AI and its applications across numerous industries.

The rising popularity of generative AI tools such as OpenAI's ChatGPT, Google Bard, and MidJourney demonstrates AI's capacity to generate creative ideas and tackle complex problems. Unfortunately, many schools are not doing enough to prepare students for a future where AI will have an increasingly significant role in everyday life. Introducing AI concepts to school children is crucial to fostering a generation of capable leaders and developing indispensable critical thinking and problem-solving skills.

The key is to offer a fun, engaging, and personalized learning experience, which will help educators inspire and motivate young minds to delve into the world of AI. Providing expert guidance from experienced teachers allows students to develop a strong understanding of AI and its potential applications and, coupled with real-world exposure to the tools mentioned above, there is a real opportunity to democratize the use and access to generative AI at an early age.

Generative AI beyond the workforce

Of course, teaching children about generative AI is not solely about preparing them for future careers; it has numerous benefits that extend beyond the workforce. It can enhance creativity by offering fresh ideas, designs, and artistic expressions and, as children learn to harness this technology in various creative fields, they develop innovative and imaginative thinking. Generative AI also fosters interdisciplinary skills, combining computer science, mathematics, statistics, and domain-specific knowledge, making children versatile and well-rounded in an increasingly interconnected world.

There is also potential for generative AI education to encourage essential ethical discussions surrounding AI technology, privacy concerns, and potential biases. This dialogue will cultivate a generation of ethically conscious leaders who consider the broader implications of AI advancements. Generative AI also serves to improve problem-solving abilities, as it is designed to tackle complex issues and generate innovative solutions. With these skills, children can develop advanced problem-solving skills that they can apply to real-world challenges. Introducing children to generative AI can also promote collaboration and effective communication, both of which are vital for success in an AI-driven world.

It is time for education systems worldwide to review what they are teaching children. Every subject has its place in the school curriculum, and I'm not suggesting that generative AI should be prioritized over anything else. However, just as subjects like art and design are valued skill sets for schoolchildren to be taught, generative AI should have its place in the classroom. eSN

Abhishek Bahl is the CEO and Founder of JetLearn.

4 ideas to consider when designing a STEM lab

A STEM lab is an environment where students, irrespective of grade, can come together and actively participate in hands-on STEM learning

Catherine Ellis, Educational Specialist, Avantis Education

Science, technology, engineering, and mathematics (STEM) education is focused on developing students' skills and connecting these subject areas, preparing them for future careers and the real world. It's a key area of teaching worldwide and thousands of schools are now investing in learning spaces specifically designed to support STEM–called STEM labs.

What is a STEM Lab?

A STEM lab is a learning environment where students, irrespective of grade, can come together and actively participate in hands-on or practical STEM learning. These educational spaces encourage active learning and problem solving. In these STEM laboratories, students can develop their science, engineering, and mathematics skills by using technology to create, collaborate, and complete projects–learning and applying knowledge to find new solutions.

Imagine a technology-enhanced learning environment where everything is student-centred and supports theme and project-based learning–that's a STEM lab!

Designing a STEM Lab – What Equipment Should You Include?

It's important when selecting the equipment to include in a STEM lab that the focus is on what can help students develop their mathematical and problem-solving skills. Consider how different technologies can be used in collaboration. This can be anything from simple wooden blocks to 3D printers and virtual reality headsets.

Every STEM lab will also include devices such as interactive whiteboards, PCs, laptops or tablets. These devices can provide access to a whole suite of online STEM resources to support 3D model creation, develop coding skills, control robotics and more.

1. Basic Design Materials: Let's start with the basics of STEM. This can include anything from wooden blocks, cardboard, glue, paper, scissors, Play-Doh and LEGO sets – basically any objects that students can use to construct and build structures. Although simple, learning with these materials can encourage students to grow their critical thinking and engineering skills.

2. 3D Model Creation Software and 3D Printers: To take these engineering skills further and develop design skills, students can use computer-aided design tools such as Paint 3D, Blender or Tinkercad to get creative and design 3D shapes and objects. These models can then be turned into physical prototypes with the help of a 3D printer (and virtual reality headsets, but we'll get to that later!).

3. Coding and Robotics: For older students, or those who want to progress beyond the basics of design materials, a great technology to build problem-solving skills is STEM lab robotics. Using solutions like Shape Robotics, students can easily construct their own robots using clickable technology, and then develop their coding skills by getting these robots to move using code. Another great example of a software that allow students to create virtual spaces and even virtual worlds is CoSpaces. Here students can get creative, practice their critical thinking and work collaboratively with others to create their spaces which their peers can review as a whole class.

4. Virtual Reality & Augmented Reality (VR & AR): Virtual and augmented reality integrate with all the technologies in a STEM lab, enhancing the technology-based learning experience. Using solutions like ClassVR, educators can truly take their STEM teaching to the next level. Teachers can provide additional context, capture students' imaginations, and ultimately develop the teaching & learning experience. Whether students are traveling the world with virtual field trips, examining AR models to check for mistakes before 3D printing, venturing through virtual worlds they've created in CoSpaces, or simply exploring incredible STEM resources – the possibilities really are endless!

Benefits of Learning in STEM Labs

STEM labs are designed to help students learn how to work as part of a team, solve problems, and apply their knowledge in advanced and creative ways. STEM labs can benefit students in some incredible ways, including:

- Encouraging creativity and innovation
- Promoting teamwork and collaboration
- Facilitating the use of technology to support projects
- Providing new opportunities and skill sets
- Improving critical thinking skills

On top of all of these benefits, STEM labs are exciting and fun! By actively participating in lessons and learning with inspiring edtech, students are more engaged and motivated in learning science, technology, engineering and mathematics. eSN

Catherine Ellis is former teacher and currently serves as an Educational Specialist for Avantis Education

How to make secure K-12 digital transformation a reality

Bob Turner, CISO for Education, Fortinet

The pandemic was a massive shift for school districts across the country, and even as we move out of it, we're still feeling the impact. On the technical side, it prompted quick transformation to enable virtual schooling–and these changes were made as districts were already challenged by legacy technology, reduced budgets and understaffing. Existing problems were exacerbated.

In parallel, we've seen a rise in ransomware and other cyberattacks in the education sector. What's needed is a digital transformation strategy that also prioritizes security.

A challenging landscape

There's nothing mysterious or shocking about the rise in cyberattacks against the education sector. Today's 21-century education requires up-to-date technology, but that's a bigger risk for school IT teams. For instance, educational institutions are witnessing growth in the number of students, professors, and administrators who link personal devices to the network. A school district's attack surface is expanded by this increased connection, making it more vulnerable to new threats.

And most schools are not equipped to deal with these threats; the Nationwide Cybersecurity Review (NCSR) risk-based assessment rates the cyber maturity score of K-12 schools at 3.55 out of 7. In fact, according to 29 percent of those responding to the K-12 Report, a cyber incident occurred in their district last year. Malware and ransomware were two of the most prevalent occurrences. According to the report, ransomware attacks pose the greatest cybersecurity risk to K-12 schools and districts in terms of overall cost and downtime.

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As for malware, attackers have been opportunistically targeting K-12 districts over the past few years using certain strains, such as Shlayer and Coinminer. Consequently, K–12 schools must make sure their network connectivity is safe so they can protect sensitive student data and their critical digital assets.

What makes that harder is the fact that cybersecurity in K-12 districts is often under-funded.

School IT teams–many of them lacking proper staff levels–continually juggle a variety of tasks, from maintaining a wide range of devices to making sure the campus is outfitted with physical surveillance systems to keep children safe. Many IT workers find it challenging to set aside time to improve cybersecurity measures due to their expanding list of duties. To make matters worse, the typical school district spends 8 percent or less of its annual IT budget on security; 18 percent of districts spend less than 1 percent, according to the K-12 report.

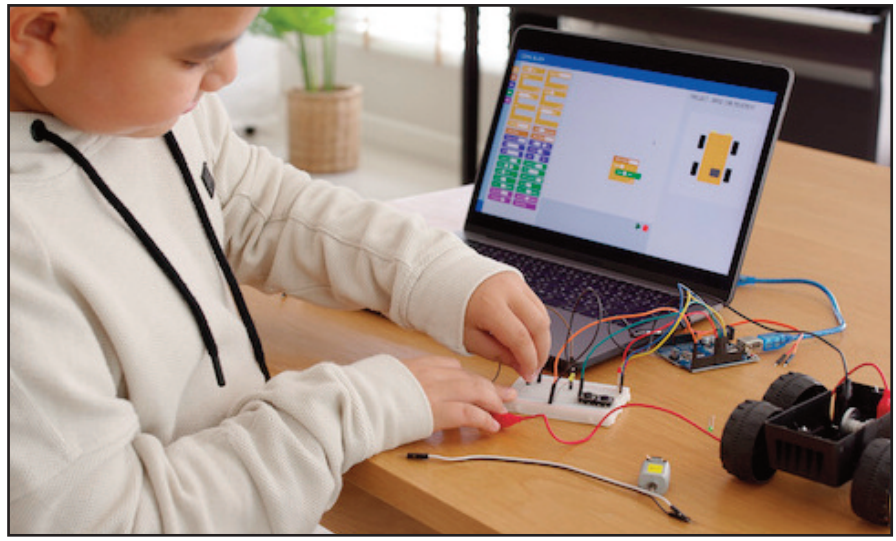
One district's digital transformation win

Let's look at the example of one east coast district that recently declared it a top priority to equip all of its students with devices and implement a next-generation education platform throughout all of its campuses. But because of the rapid network edge expansion brought on by this transformation, the district's aging systems and management infrastructure acquired serious security holes. Aging infrastructure was resulting in problems such as wireless access

Digital Transformation, page 12

4 ways to build engineering into your curriculum

By bringing engineering into our classrooms, we encourage our students to see the mechanics of the world around them



Jon Oosterman, Learning Specialist, Van Andel Institute for Education

Engineering is arguably one of the most useful and relevant subjects in our schools today. Its impact on our world cannot be overstated. Engineers are the ones who help humanity reach the moon, explore the depths of the ocean, assist in the treatment of serious illnesses, and even design many of the games our students play.

Unfortunately, engineering can often feel like a separate unit or idea that teachers need to explain. With many of today's educators already feeling overwhelmed with the responsibilities of teaching, finding ways to seamlessly integrate engineering into the curriculum is essential for both teacher and student success.

Engineering is all about creating and practicing solutions to human problems. It can branch into chemistry, biology, and all fields of science. So, what does that look like in the classroom?

Here are just a few strategies that teachers can use to build engineering into their classroom curriculum:

1. Start Simple: Engineering doesn't have to be complex to challenge student creativity and critical thinking. Simple activities such as building a glider out of paper and plastic straws or designing ways for a plastic diver to stay afloat in a pool of water can do much to spark student imagination. They are also a good method for promoting soft engineering skills like collaboration and communication.

2. Engineer with a "Hook": To make content meaningful, students benefit from personal experiences to help "hang" their newfound knowledge on. Use an engineering challenge to create a class-wide experience that all students can relate to as you dive deeper into a specific content area. For instance, if you're doing a lesson on pollinators, challenge your class to build a pollinator that will have the maximum effect on an environment. Not only does this create practical knowledge, but it also creates a touchstone for future activities.

3. Engineering as Assessment: Without thinking about the science behind engineering, a STEM activity may just turn into craft time. By crafting criteria and constraints to a particular engineering challenge with scientific principles in mind, engineering can become a great form of assessment. For example, if you are studying forces and motion, use the "Heavy Lifting" activity to assess students' understanding of balanced and unbalanced forces.

4. Integrate Engineering as Practices: Engineering isn't just building and designing things! An important part of engineering and implementing it in our classrooms is getting students to THINK like engineers. There are several ways this can be accomplished, from having students construct their own criteria for specific problems to using peer evaluations as a way of helping students optimize or improve their solutions. Additionally, this is a great way of encouraging students' social-emotional development.

***Bonus Point:** Engineering challenges can often require a lot of material. While seeking out grants and funding is one avenue to obtaining materials for your classroom, there is another possibility if you happen to live in the state of Michigan. Contact the Michigan Department of Transportation to receive free materials for engineering challenges.*

By bringing engineering into our classrooms, we encourage our students to see the mechanics of the world around them. Something as simple as a passing car or a light switch can become a source of curiosity and creativity, while pushing them to consider solutions for many of today's pressing problems. It's education like this that changes the world – so let's make sure it has a place in our classrooms. eSN

Jon Oosterman is a Learning Specialist for Van Andel Institute for Education, a Michigan-based education nonprofit dedicated to creating classrooms where curiosity, creativity, and critical thinking thrive.

4 ways to use ChatGPT in your STEM classroom

AI isn't going away—educators must helps students understand how to use these tools to enhance their learning experiences

Allen Antoine, M.Ed., Director of Computer Science Education Strategy for EPIC, University of Texas at Austin's Texas Advanced Computing Center

"If we teach today as we taught yesterday, we rob our children of tomorrow." – John Dewey

Back in 2007 when I was teaching Algebra I at the local middle school, the biggest question for mathematics teachers on our campus was whether students could use their calculators while doing classwork and on standardized tests. A few years later, the discussion changed to an argument about the pros and cons of using a Desmos calculator on their classroom iPads. Using Desmos was seen as being particularly egregious, as educators feared that students may have access to the internet and may surf the web while they should be learning or during summative assessments.

Each of these technologies paled in comparison to the impact of one of our students discovering Wolfram|Alpha and sharing the link with his classmates. While using the calculator allowed students to quickly compute answers and a device with internet capabilities added the possibility of researching formulas and explanations, Wolfram|Alpha used the most current artificial intelligence (AI) to accurately solve mathematics problems using natural language processing.

Teachers were faced with the idea that 21st-century technologies would fundamentally alter the way students learn and just as importantly, adjust the way teachers would need to facilitate instruction.

The ChatGPT Dilemma

In schools across the nation, educators have, once again, had to call into question how technology meshes with teaching and learning with the advent of ChatGPT.

OpenAI's ChatGPT is a language model for dialogue that can interact with end-users and provide answers to diverse inquiries using AI. In its first 5 days of existence, it had accumulated 1 million users. The solutions provided by the program are so varied and detailed that students have begun to use ChatGPT to get guided solutions to mathematics equations, draft poetry, write essays, and code computer programs.

This has caused many institutions to find third-party applications to detect when ChatGPT is being used and have lengthy debates on the appropriateness of programs like this for our students. I thought it would be an interesting exercise to ask ChatGPT itself if students should be able to use this type of technology in schools, and it gave an insightful response. In short, ChatGPT recognized that it is a powerful tool for language understanding and generation that can be used in a variety of educational contexts but mentioned that factors such as student privacy and plagiarism should be considered. Its final consideration was the most poignant for me as it stated that the program's use should be balanced with other teaching methods and strategies to ensure that students are developing their own critical thinking skills.

Artificial intelligence and STEM

This idea of balancing teaching methods and strategies to incorporate new technologies stood out for me, so I made a point to discuss this idea with other STEM educators. I got feedback about traditional teaching approaches and brainstormed ideas for using AI models, like ChatGPT, to proactively introduce these tools and enhance student experiences in the classroom. Here are some ways that ChatGPT can be used across the STEM spectrum:

1. Science: Many science teachers that I spoke with advocate for a flipped classroom approach. I love using chatbot technology for this approach because it allows students to ask unlimited questions to formulate their own understanding of core subject matter before they ever enter the classroom. I tested this out by asking ChatGPT question after question about genetic combinations, Punnett squares, and dominant/recessive genes to get a feel for how it would respond. It gave me a great deal of useful information and even explained things in simpler language when asked to modify the responses for a middle school student. The applications here are endless.

2. Technology (Computer Science): A colleague of mine, who is a software engineer, was telling me about how he uses ChatGPT to help optimize his code. This feature is highly transferable to computing courses. If students are asked to complete coding assignments in their normal IDEs and then ask ChatGPT to enhance what they created, teachers can not only assess students' ability to write their own methods but also can assess if students understand exactly why the optimization tool made the suggestions that it did.

3. Engineering: While having students solve problems using the engineering design process, there are several

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places where natural language models can aid teachers in facilitating instruction. ChatGPT can speed up the process of research problems and give potential solutions that students they hadn't considered. Additionally, once students have tested designs, they can ask ChatGPT to give suggestions for improvements and redesign. Another interesting usage could be to ask the model to assist in coming up with the actual questions they want to investigate from the lens of another culture that they aren't familiar with.

4. Mathematics: Just as important as showing students what ChatGPT can do, is the idea of exploring what it cannot. ChatGPT is not perfect and sometimes gives answers that are outright incorrect. This fact can be leveraged by providing students with a collection of responses to mathematics word problems that were generated and having them determine which ones are correct. A discussion about the specificity of prompts and reading word problems thoroughly has always been a focus in mathematics. We can further explore this concept using ChatGPT.

It is important to understand that tools like ChatGPT aren't going away, and companies like Google are developing similar products that will continue to refine the way artificial intelligence models are used in our society. It is incumbent upon educators to understand how they work and redefine the way we integrate technology, assess knowledge, and facilitate instruction to our students who will live with tools like these for the rest of their lives. eSN

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Esports

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planning skills, while also introducing them to STEM ideas and concepts. Students won't learn these skills in-depth, but the foundations they build will carry them into future esports opportunities in middle and high school, where they can further develop their knowledge.

Competition has been shown to have some negative effects on elementary-aged students, so collaboration is an important part of building a successful program for young learners. While scholastic esports is traditionally a competitive activity, working collaboratively is a key part of joining an esports team at all age levels. An elementary esports program should emphasize the importance of teamwork and sportsmanship, so it's important to incorporate activities and exercises that promote collaboration and communication.

4. Find Ways to Engage Young Students

To create a successful program, it's crucial to find ways to make esports fun and engaging for young learners. Elementary students have short attention spans, so it's important to keep the program interesting and exciting. This can be achieved through the use of games, rewards, and incentives, alongside regular encouragement and recognition of achievements. For example, a "Player of the Week" award or a point system can encourage children to work towards personal goals and improve their skills, while also highlighting their accomplishments to their peers and helping them feel proud of their work.

Scholastic esports can be a great opportunity for elementary learners to build and expand upon valuable skills and interests at a young age. Through an elementary esports program, children are able to develop a foundation in esports that can set them up for future success in middle school, high school, and college esports programs. eSN

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Digital Transformation

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point failures, and service support agreements were about to expire.

With just one engineer serving as the district's sole IT support for all its schools, a large portion of their time was taken by resolving problems with network infrastructure point products. The engineer saw the need for an integrated network platform for simple management, mitigation, automation and control. That led the district to start seeking a unified infrastructure that included switches, access points and security systems to enable its digital transformation.

Their approach combines SD-WAN and next-generation firewall capabilities with sophisticated routing and zero-trust network access (ZTNA) enforcement; it is quick, scalable, and adaptable. An endpoint detection and response solution is integrated into the network to provide cutting-edge endpoint security with real-time visibility, information sharing, analysis, defense and remediation. A network operations center (NOC) is responsible for centrally managing the district's network and solutions. As a result, integration has improved and there is more control.

This is in line with what CoSN's 2023 report has found: "Connecting systems or digital environments can form powerful digital ecosystems for enabling student learning and/or supporting education administration."

The importance of ongoing training

Introducing regular security awareness training for teachers and staff is one of the simplest ways to improve cybersecurity. Though IT staff are crucial to safeguarding a school's assets, everyone is accountable for cybersecurity. However, this is only achievable if they are aware of and are able to recognize the typical techniques employed by cybercriminals. All employees can and should be a solid line of defense.

Plotting a more secure course

By enabling novel experiences and enhancing communication and collaboration among students, parents, and instructors, digital technology has the potential to transform learning in American schools. The digital transformation process for K–12 education is essential in light of attackers' increasing focus on this sector. Education IT leaders should consider security and networking as equally important with awareness training as the connection to safe operations and the path to the future. eSN

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eSCHOOL MEDIA INC.

eSchool News covers the intersection of technology and innovation in education. We focus on how technology can help educators improve learning and deliver instruction more effectively, enhance the student experience, and transform their schools.

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eSchool News ISSN: 1098-0814 is produced 4 times a year.

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POSTMASTER SEND ADDRESS CHANGES TO
eSchool News, Circulation Department, 9711 Washingtonian Boulevard, Suite 550, Gaithersburg, MD 20878

Co-Founder Larry Siegelman 1954–2002