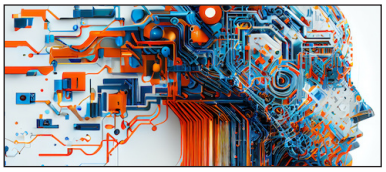
Inside This Issue



eSCHOOL NEWS

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Launching a districtwide computer science program for all grades

Rachel Miller, Supervisor, Digital Literacy and Computer Science, Springfield Public Schools

With 24,000 students, Springfield Public Schools is usually among the three largest school districts in Massachusetts. Our students are spread across 31 elementary schools and a total of 70 schools. It's no exaggeration to say that computational thinking plays a part in all of them. Fortunately, the district earned a grant that allowed us to offer computer science at every grade level, starting as early as pre-K. Because many of our teachers had no background in computer science, though, this large-scale implementation was no easy task.

Meeting standards and managing devices

One of our first challenges was that

Massachusetts has specific digital literacy and computer science standards that are a bit different than the national CSTA standards used by

Science, page 6

How to weave video game principles into the classroom

Sam Baule & Steven M. Baule, Ed.D., Ph.D.

Student engagement is vital for any educator throughout the length of a course. The unfortunate reality is that a great teacher only has control of a student's environment for a short period of time. When a student goes home, they are inundated with many other potentially more engaging activities. In the last few decades, the main attractor for many students have been video games. Video games have become so mainstream over the years that children are just as engaged watching the games on streaming services like Twitch as playing them. The challenge posed to educators is how to gamify coursework that students can play, enjoy, and learn.

The most successful video games have a stratified reward system that rewards players at spaced intervals while the player works towards a goal. The best way to explain this is by looking at a successful game–let's use World of Warcraft as an example. Players progress through levels toward the end objective while, along the way, completing objectives and earning in-game equipment. At the same time, the player can work and collaborate with other players to defeat more difficult challenges. This is analogous to the education system on a much more condensed time scale. There is an end goal in mind, achieving the maximum level or graduation. This is completed by working through objectives that, in education, are various courses: algebra, history, English, etc. Students earn grades as they complete objectives and even collaborate with classmates on projects. Understanding how the education system is similar to games is vital to redesigning

Video Game, page 6

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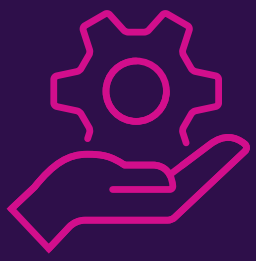

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Science

continued from page 1

many other states. Our department combines digital literacy and computer science, so we have four different strands that encompass digital citizenship and computational thinking concepts.

Springfield Public Schools is fortunate enough to be a 1:1 district that provides Microsoft student laptops for everyone, giving all students access to Office 365. Managing devices for thousands of students requires a substantial time commitment. As a result, computer science teachers need to spend two-thirds of their time teaching and one-third managing the different devices students use.

Hiring new computer science teachers

With so many students to consider, the district decided to hire or reassign one teacher into a computer science teacher role at each school. Educators didn't need to earn an additional license to teach computer science at the time (a Digital Literacy and Computer Science license for Massachusetts came out in the fall of 2023), so candidates were only required to be licensed teachers. Our candidate pool was a mixture of completely new hires and teachers transitioning from other subjects, many of whom had no computer science background. This meant that the district needed a curriculum that would be robust enough to support all of these teachers, no matter their level of computer science knowledge or experience.

Building the right computer science curriculum

The decision to hire computer science teachers for every building was part of a larger "CSforAll Springfield" initiative. Partnering with Sage Fox Consulting and UMass Amherst, we brought together a team of teachers to curate a curriculum that embedded computational thinking standards into lessons that were already being taught. For example, a kindergarten lesson on algorithms is integrated into "how to" procedures for a fire drill.

We had a scope and sequence that met our standards, as well as suggestions for different activities and lesson plans, but we needed something that worked for each grade level individually without taking a one-size-fits-all approach.

We chose the curriculum from Ellipsis Education for a few key reasons. The curriculum clearly lays out each lesson in a way that allows teachers to follow it like a script. Ellipsis teaches specific tech skills, such as using the Scratch programming platform, that align well with the skills that are at the core of our computer science standards. The program also provides ongoing professional development support for teachers.

As with any new initiative, professional development (PD) has been key. Recently, for example, we went beyond the usual Zoom PD to offer an all-day, in-person session that gave teachers without a background in computer science more detailed information about computer science pedagogy, as well as a chance to collaborate with their more experienced peers.

Sharing ideas

To provide teachers with the most updated information they need to take advantage of all the available resources—and to show district stakeholders how our computer science initiative is going—we use a number of different communication tools.

With 30 elementary buildings and six secondary buildings that I oversee, linking teachers across the district can be a struggle. Teachers and other staff members use various platforms to share resources, including Microsoft Teams, Schoology, and a dedicated channel for tech duties. Teachers use these channels to bounce ideas off each other, share celebrations, and receive announcements. Overall, our teachers have been delighted with the results and are proud to showcase the great work they and their students are doing.

Advice for other districts

It has been a challenge getting everything in place, but I wouldn't do anything differently. By taking the time to listen to teachers and learn what they need, we've been able to set the right resources in place that align with our curriculum and put us on a path to reach our high-level goals.

If I could narrow down the best advice I can offer to other districts, it would be to start slow, leverage your resources, find partners, and gain administrative buy-in any way you can. We want the next generation to have a comprehensive understanding of everything that's involved in computer sciences. To achieve this, it's crucial to take the initiative and keep students at the center of any new computer science initiative. eSN

If I could narrow down the best advice I can offer to other districts, it would be to start slow, leverage your resources, find partners, and gain administrative buy-in any way you can. We want the next generation to have a comprehensive understanding of everything that's involved in computer sciences.

Rachel Miller is the supervisor of digital literacy and computer science for Springfield Public Schools in Massachusetts. She can be reached at millerr@springfieldpublicschools.com.

Video Game

continued from page 1

an education-based learning system that would be more engaging for students.

People enjoy video games mainly because the games offer a sense of accomplishment that is often not achievable in the real world. The game gives them strong dopamine rushes that are not as easily achieved in real life. That is not to say that players don't learn skills like students. For example, some of the best surgeons have impeccable hand-eye coordination and hand dexterity–this same skill is often present in video game enthusiasts. If a developer were to design an educational video game that students would want to play, one of the most important factors would be consistent dopamine hits to the students, i.e. a steady and tangible reward system. Students would want to see that the time put into the game is worth the effort in terms of achievement. Frustration in the classroom by learning a difficult topic is the same in a video game when a player is trying to complete a difficult level. The difference is that the player knows that after completion, there is a reward, but the same is not true when attempting to master the limit definition of a derivative. One of the best examples is the Reading Counts system. Students read books, pass quizzes, and get a certain number of points attributed to their profile. The number of reading counts points serves as bragging rights among students. This is a tangible reward seen after completing a challenge, reading, and comprehending a novel.

Another difficulty in designing educational games is the need for students to complete cognitive processes like reading and answering questions instead of virtual activities like killing an orc. Reading and answering a question is not usually as engaging as learning how to defeat an enemy. Map out what objective you want the student to master and create the objective in terms of video game mechanics. Let's continue the limit definition of a derivative as an example. To understand this concept students, need to know what a limit is, the notation of a derivative f'(x) = dy/dx, i.e., the change of y over the change of x, and the meaning of the notation within the limit. More is needed to fully master the topic, but not much more is necessary to apply this concept on practice problems.

In video games, there are various objectives that tend to build to a larger contest. Typically, there will be around five gathering/fetching quests prior to a player being able to attempt a final challenge. These are simple quests that require the player to talk to a non-player character (NPC) who explains some situation; the player then helps the NPC by collecting in-game items and returning them to the NPC for a reward. This serves as a means of improving the player's status prior to attempting a final challenge. In terms of an educational game, it would be structured so that the NPC provides the necessary snippet of information–say, what a limit is, and the student would run around the virtual environment applying this concept. Rinse and repeat until all the prerequisite information is mastered and the student will be able to attempt the final challenge: an objective that requires the completion of multiple practice problems to complete. At the end of the challenge the student would receive some sort of reward for their accomplishment. Ideally this objective can either be mastered faster this way than in a traditional setting or be more engaging. One potential reward is a badge or another sort of microcredential that the student can use to display their progress towards mastery.

The integration of gaming mechanics into educational content offers a promising avenue to enhance student engagement and learning. The key lies in understanding the compelling elements of video games, such as a stratified reward system, collaborative challenges, and a sense of achievement, and effectively weaving them into educational frameworks. By creating an educational environment that mimics these aspects, educators can provide students with a learning experience that is educational, enjoyable, and rewarding. This approach can help bridge the gap between the engaging world of video games and the educational objectives of the classroom.

The goal is not just to compete with the allure of video games, but to harness their power to foster a deeper, more meaningful educational experience. By carefully designing these educational games to reward cognitive achievements and promote collaborative learning, educators can create a more dynamic and effective learning environment that resonates with the digital generation, ultimately leading to greater student success and development. eSN

Sam Baule is a medical student at Marian University and a lieutenant in the US Army. He graduated in May 2023 with a bachelor's degree in biomedical engineering from the University of Iowa. Dr. Steve Baule is a faculty member at Winona State University (WSU), where he teaches in the Leadership Education Department. Prior to joining WSU, Baule spent 28 years in K-12 school systems in Illinois, Indiana, and Iowa, and two years teaching in the University of Wisconsin System. Fdiversity and equity certificate while in the UW system. He holds a doctorate in instructional technology from Northern Illinois University and a doctorate in educational leadership and policy studies from Loyola University Chicago.

2024: The year of generative AI

The rise of Gen AI in education signifies the potential to shift towards more dynamic, inclusive, and personalized learning experiences

Lindy Hockenbary

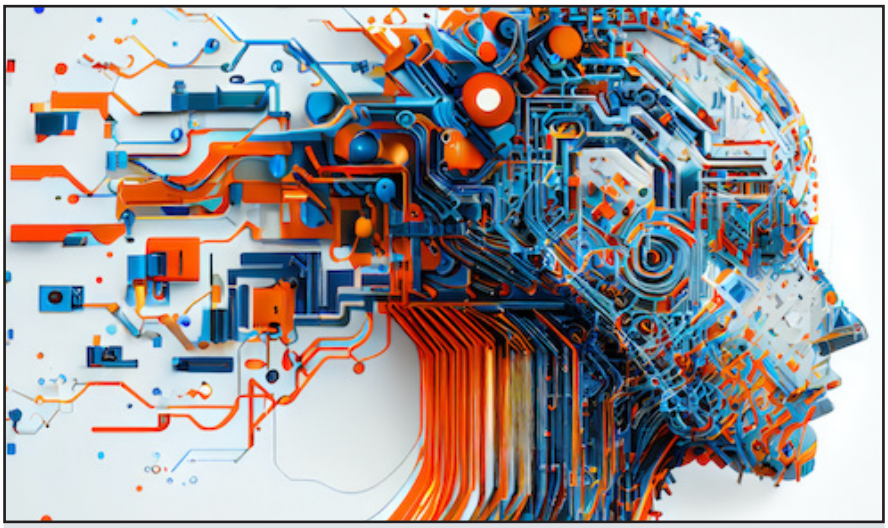
As we step into 2024, the educational landscape is just beginning to feel the transformative shift brought on by generative artificial intelligence (Gen AI). This year marks a significant milestone in integrating advanced AI technologies into educational practices, heralding a new era of teaching and learning. Gen AI is set to revolutionize the way we approach education.

The rise of generative AI in education

Gen AI is a type of AI that can create new content, from text to images, audio, video, code, 3D models, and more. It is a game changer for all industries due to its ability to produce original outputs.

Gen AI is revolutionizing education by offering a range of capabilities that cater to diverse learning needs and styles. Here's a non-comprehensive overview:

- **Text generation:** From drafting lesson plans to creating formative assessments, Gen AI can produce a wide range of written content and aid educators in curriculum development.
- **Visual content creation:** Gen AI can design images, graphics, and diagrams, useful for visual learning aids. Canva has a host of AI features in their Magic Studio that assist with graphics creation.
- **Audio production:** Beyond text, Gen AI can create spoken audio content, music, and sound effects, enhancing auditory learning experiences. SpeechKi turns any text into audio with realistic AI voices.
- **Video production:** AI can produce videos, making multiple means of representation possible for a teacher to provide learners. I have had great luck with Pictory for creating quick and easy visual representations of content.
- **Personalized learning materials:** Gen AI makes it easy to tailor educational content to individual student needs; it can adapt materials based on difficulty levels, interests, and learning styles. Try asking a Gen AI chatbot such as ChatGPT to customize text to a specific reading level.
- **Language translation:** Gen AI can translate educational materials for diverse language needs, making learning more accessible and inclusive.



The rise of Gen AI in education signifies the potential to shift towards more dynamic, inclusive, and personalized learning experiences. However, due to the original outputs, it also presents a challenge to traditional educational methods with focus on memorizing content.

In essence, the rise of Gen AI in education signifies the potential to shift towards more dynamic, inclusive, and personalized learning experiences. However, due to the original outputs, it also presents a challenge to traditional educational methods with focus on memorizing content. Students often demonstrate their learning through written explanations in the forms of short answer questions and essays. Gen AI is flipping this on its head.

Demonstrating learning in the AI era

The advent of Gen AI in education is reshaping the way we assess and demonstrate learning. The traditional methods of testing and evaluation must evolve to accommodate the capabilities of AI. Demonstrating learning needs to move from testing memorization to showcasing transferable skills. This shift has the potential to make assessments more engaging and more reflective of real-world skills and knowledge application.

In this new era, educators are exploring innovative assessment methods that

AI, page 26

5 ways to create an inviting, engaging multipurpose learning space

The rise of Gen AI in education signifies the potential to shift towards more

Courtney Billig and Lisa Moretti

We always knew that it would be great to have a dedicated space for students who needed pull-out testing, different accommodations, and/or more individualized instruction. We also knew that by creating a modern, multipurpose space from an existing facility we'd be able to meet those needs while also using the space for staff meetings, academic clubs, Bible study, and other uses.

Using funding from our Parish Picnic and donations, we picked the perfect place for our new multipurpose room: a common space that was central to the gathering area near the entrance to our church.

The facility was previously used as a meeting space for adult faith formation and is part of the school's building. The space itself didn't need much renovation other than the removal of an aging mini kitchen and countertop.

Here are five steps we took to get that space modernized and ready to use:

- **Brainstorm your wants and needs.** We needed a space where we could have multiple grade levels in a space at once, with up to 15 children in one space and 15 in another at any given time. We needed a large enough space for that, and we wanted it to be something that was inviting, welcoming, and modern.
- **Fill it with modular furniture options.** We wanted to make sure all of the furniture was able to be moved and reconfigured in different ways. That was important because after school we have larger meetings that have to be held there, so we need greater flexibility to be able to move the tables and chairs around.
- **Get creative with tables, chairs, and fixtures.** We wanted students to be able to stand or sit at different heights. We have two study carousels, which are one-person units where a student can sit and have a quiet space. Also, we wanted everything to be able to be wiped down so that it could be cleaned easily because we knew that there would be a lot of students in there utilizing the space.
- **Work with a flexible partner that provides a variety of options.** MiEN and its designers worked with us both in person and remotely. They would present their initial renderings; we would suggest revisions because we weren't sure at the beginning what we wanted. After we'd throw out ideas, they'd go back to the drawing board and provide a new rendering. Having that kind of collaborative partnership and flexibility was very nice.
- **Check out similar spaces.** We looked at spaces in two other schools and took pictures of a similar space at the high school level. We looked at how the space was being used, but we still couldn't quite visualize how that would transfer here. It was very helpful to see how other schools used their space to help us finalize our plans and move to installation.

Our new space was available for use for the 2023-24 school year, and we've received a lot of positive feedback on it so far. The kids love going in there and using it. Our principal takes families on tours that are interested in coming to our school and they have been astounded by the new space. Most of the Catholic schools don't have a space like that, so that's also been a wonderful selling point. eSN

Courtney Billig is the Director of Student Achievement for PreK-4 and Lisa Moretti is the Director of Student Achievement for grades 5-8 at Holy Trinity Catholic School in Louisville, KY.

3 data management considerations for district leaders

DaaS platforms incorporate seamless collaboration and data sharing in school districts that can drive student learning like never before

James Stoffer

As data analytics comes of age for the K-12 sector, educators are increasingly turning to data insights to help identify students' learning abilities and areas of opportunity, enhancing operational efficiencies, and helping teachers' professional development. Naturally, administrators are often enticed to engage powerful, enterprise-grade solutions like PowerBI or Tableau. After all, if it's good enough for a Fortune 500 company, it's good enough for a school district, right?

Not so fast.

While there's no arguing that enterprise-grade data analytics solutions are powerful, administrators need to consider how the approach taken to harness their data's potential can significantly impact outcomes in the long-term. For example, enterprise-grade solutions often come with expensive seat licenses and overbuilt software that make it costly and complex when it comes to extracting insights from data.

Instead, school district administrators should consider real-time data analytics platforms specifically designed and customized for K-12 education. These platforms are typically customized for student data and provide real-time information that can make a real difference in a student's education.

Here's what school administrators need to know about making an informed decision when it comes to implementing a data solution.

Legacy enterprise platforms: A mismatch for K-12

Besides being expensive and overbuilt for education, there are a few reasons why legacy data platforms are ill-suited for K-12. Cost and scalability are two major factors. Enterprise platforms are expensive, and scaling beyond 20 users will exponentially increase costs that are not feasible for even large school districts. In effect, it would limit data access to only a few administrative employees.

School administrators considering legacy data platforms might also be

underestimating the technical expertise needed to operate these systems. Typically, legacy platforms require skilled data scientists to manage complex data warehousing, integration, and to extract actionable insights from the data. Few districts possess the in-house expertise–or have the budget to hire a team of data scientists–to make the data work.

Finally, consider the limited focus of legacy data platforms. Data analysis delivered by legacy systems is often limited to assessment and accountability, such as grades, test scores, and attendance. They are not built for providing holistic student performance evaluation, and they certainly do not have the ability to provide "whole child" data, such as emotional health and behavior.

The power of real-time data analytics

On the other hand, real-time data analytics platforms built for K-12 school districts are everything that their legacy counterparts are not. Affordability and scalability are the biggest advantages. Instead of needing an expensive team of data scientists to customize a platform, education data as a service (DaaS) will usually outsource data management to experts who enable scalability at a reasonable cost. Built-for-education DaaS platforms can also accommodate all users in a district—administrators, teachers, counselors, students, families, and even members of the community who work with students.

DaaS systems can automate data movement and make data accessible to the people who need it without expensive licenses. This enhances education decision-making by ensuring the right people at the right time have access to the latest data.

Real-time data analytics also delivers valuable holistic insights that can help educators make the right decisions for students. By centralizing data on academics, behavior, attendance, and teachers, stakeholders gain valuable insights that promote a better understanding of the "whole child."

So instead of a counselor submitting an IT help ticket to download data that is already months behind, the DaaS system will provide real-time data that can enable the counselor to provide better student guidance. Or teachers can look at a student's historical MAP score data to see which areas that student might need help with so they can provide tutoring or other support.

Successful integration strategies

A successful implementation is an ongoing process because school districts consistently gather data from multiple sources. Whether it's at the behest of their board, teachers, educators, or

Data, page 12

Classroom tech: The new and the tried-and-true of 2024

Nadav Avni

It's 2024! Chalkboards, heavy textbooks, and other analog tools of the past have no place in today's schools. Over the last few decades, applied technology in the classroom has grown by leaps and bounds. This dovetails nicely with the fact that today's students are full digital natives who instinctively know their way around smart devices.

Of course, there's more to education technology than allowing computers in the classroom. School administrators should be continually on the lookout for emerging technologies that can increase student engagement, retain knowledge, and make learning more accessible.

What new technology is out there and being tested in the classroom?

Once upon a time, the school computer lab was a mysterious room frequented by tech enthusiasts and hobbyists. Today, teachers and students have complete access to smartphones, tablets, or laptops in all classes. As a result, we're seeing a variety of new technology being tested and used in the classroom to support different learning styles.

Cloud technology

Cloud-based software means computers take up less space than they once did. It also enables schools to trade desktop computers for more portable devices like tablets and laptops.

In addition, students can open cloud-based apps on any school computer and retrieve their saved files by logging into their accounts. If permitted by the school IT administrator, students can even work on their projects at home via remote web logins.

Finally, cloud technology fuels remote learning, which helped save education during the shutdown days of the COVID-19 pandemic. It continues to reduce missed days and downtime due to inclement weather or other disruptions. Instead, students and teachers can meet online and continue their work through files available on the cloud.

Hybrid classes

Before COVID, remote learning was an option for college students who couldn't attend classes in person. Online and offline learning were two distinct systems: one was entirely remote, while the other was in-person and attendance-based.

However, advances in computer and network technology have enabled educational systems to adopt a hybrid learning model. Those who are able will meet in person, while others attend virtually through the class videoconference portal.

Hybrid classes offer numerous benefits. For instance, it gives teachers the flexibility to create a customized approach to learning. Both teachers and students who have health issues can safely attend class. And for students, it makes school more accessible and affordable and reduces absenteeism.

Active learning

Lectures and memorization are taking a back seat to active learning. Classroom technology such as tablets, virtual reality (VR), and interactive whiteboards make learning more engaging.

For instance, VR headsets offer unique hands-on training without the cost or risk. By modeling real-world scenarios, students can get in hours of practice time under strict supervision. The virtual environment also gives them unlimited opportunities to get a procedure right.

Tablets and interactive smartboards also encourage active learning through games, competitions, and role playing. To be successful, active learning depends heavily on the student's participation. New technology enables students to participate in the way that's most comfortable for them.

What existing tried-and-true technology delivers the best learning experience?

A critical part of the modern learning process relies on the hardware used in the classroom. Chalkboards and dry-erase markers are alien to preschoolers who already know how to use touchscreens. Similarly, a bulb projector and a VHS player are far more distracting than the HD-quality video screens kids have at home.

Students need classroom devices that reflect what they see in the real world, such as smartphones, tablets, and laptops. Modern technology in the classroom demands advanced equipment that digital natives are familiar with.

The continued drop in prices for LED and touchscreen technologies has led to the popularity of smart TVs and interactive whiteboards in the classroom. Aside from their relative affordability, interactive touchscreens offer the best learning experiences for students who grew up using smartphones and tablets at home.

Touchscreen technology lets teachers and students engage in active learning to the fullest. Multi-touch capabilities allow the entire class to participate in group activities that promote collaboration and cooperation while fostering competition. More importantly, students are far more attentive when they use touchscreen technology. Better engagement means they'll learn more and retain the knowledge longer.

Considerations for managing technology in the classroom

Interactive touchscreens and other edtech hardware are significant investments for school districts. As such, they require care and maintenance like any

Classroom tech, page 12

Data

continued from page 10

families, there will inevitably be additional data needs or requests to fine-tune the district's approach. That's why administrators should maintain an open mindset and follow a long-term strategic approach that includes:

- **Data ownership:** Take ownership of the district's data—after all, it's the school's data, not a vendor's. The right vendor will collaborate with districts to centralize data for better analysis and action.
- **Gain leadership buy-in:** Superintendent and board support ensures successful district-wide adoption. Engage decision-makers early-on to secure resources and begin driving cultural change. On the operational side, engage teachers to act as early-adopters and evangelists for the data solution—they are on the frontlines and know what approaches will serve students best.
- **Acknowledge data challenges:** Start with knowing your pain points—recognize where you currently have limitations and gaps in data utilization and work toward finding a solution that can solve those challenges. This is not the time to compromise, so keep interviewing partners until you find the one who can meet your needs.

Harnessing the power of data

DaaS platforms present a revolutionary approach to incorporating seamless collaboration and data sharing in school districts that can drive student learning like never before. By arming administrators, teachers, counselors, students, families, and even members of the community with the same data, DaaS solutions can reshape the landscape of K-12 education by providing actionable insights into the whole child. To harness this potential, administrators need to work with partners who understand K-12 education and understand the importance of purpose-built, real-time data analytics. With this approach, educators can get the most out of their data and help students get the most out of their education. eSN

James Stoffer is CEO of Abre, a leading education management platform that delivers software solutions designed to be easily adopted and used by everyone in the learning community. With a passion for leading and scaling social impact companies, James has spent nearly 20 years in education technology.

Classroom tech

continued from page 11

other piece of equipment. At the same time, smart devices are prone to hacking attempts by both bored students and outside parties. Acquire reliable device management software to safeguard this investment and secure your classroom technology.

Software-driven devices require constant updates to the operating system (OS), firmware, and installed applications. But updating and maintaining every device in every classroom can prove inefficient and time-consuming. Instead, device management software can perform updates and maintenance remotely to just one or two devices or the entire fleet. It can also schedule updates after class hours to minimize disruptions. This means units are always updated and ready to serve.

In addition, a robust device manager can secure each device from unauthorized users by assigning varying access levels to end users. For instance, students can only run and operate official learning apps and will have no access to the OS and student files. Instructors can access the content management system and edit student performance reports. Meanwhile, administrators can check student and teacher profiles, monitor learning modules, and gather data on device use. These are valuable sources of insights that can help improve school performance in the future.

More importantly, device management software can protect devices from unwanted attention. Reports of unauthorized attempts to log in will be met with bans and device shutdowns. When threatened with data theft, admins can simply shut down devices remotely or initiate data wipe procedures. If devices go missing, admins can use geolocation services to find them.

Education technology in the classroom is here to stay

Today's students deserve modern technologies that suit their learning styles and tendencies. Digital natives in particular need an educational system that uses their natural medium of instruction. This means using smart devices like tablets, laptops, and interactive whiteboards to encourage participation and boost engagement.

For schools and school districts, upgrading learning facilities and equipment is a matter of making wise investment choices. When acquiring smart education technology equipment, make room in the budget for proper device managers to keep everything in order. Doing so will ensure that teachers and students alike get the most out of the classroom technology. eSN

Nadav Avni is Chief Marketing Officer at Radix Technologies. Nadav has been at Radix Technologies for the past four years, originally joining as a marketing director. He has extensive experience in marketing from technology and advertising companies, having previously held roles at VBox Communications, Leverate and Nokia.

The 3 biggest misconceptions about AI

A trio of experts share the most common misunderstandings they've heard–and reveal the truth behind them

Misconception: AI will encourage students to cheat.

Truth: Educators need to reconsider how they assess student work.

By Carl Hooker

One of the biggest misconceptions about AI in education is that it will encourage students to cheat and cause academic integrity concerns. Did students cheat before AI was around? Yes. Could students use generative AI tools like ChatGPT to cheat and cut corners on an assignment? ABSOLUTELY. However, there are a couple of major problems with this line of thinking.

The first is an equity concern. Educators find it socially acceptable for a student to hire a tutor to help them write their college admission essay. We also accept the fact that, many times, a parent helps build their 4th-grader's science fair project. In both of these instances, we don't consider it cheating. However, if a student uses generative AI to help them edit their college admission paper or brainstorm a science fair idea, there's a belief that it is dishonest. By considering human-assisted help fair but computer-assisted help not fair, we create an equity gap.

The second reason why cheating with AI is being mishandled is the belief that it will encourage students to cheat. This is akin to saying that a vape will encourage students to smoke. If you take the vape away, you still don't address the behavior. The same is true with AI.

Rather than focus on students using technology to cheat, educators should reflect on what they are assessing. Are they truly measuring student learning or is it a compliance-based assignment or worksheet? Is the "process" being evaluated with the same or greater care than the final "product?" By focusing evaluations on the process of learning instead of the product, educators can not only prevent AI-assisted cheating, but they can also better evaluate a student's understanding of a particular topic.

Misconception: AI will eliminate jobs.

Truth: It will create more jobs, with different requirements.

By David McCool

The simple misconception is that AI will eliminate jobs, but really it will create more jobs, with different requirements, than it will eliminate. These new jobs will disproportionately require durable skills like critical thinking and collaboration, making it more important than ever for people to learn these skills and, if they can, display them for employers by earning microcredentials.

As we continue into an AI-driven world, students, employees, and jobseekers need to stay agile and competitive in the marketplace, so upskilling is essential. Microcredentaling your durable skills will demonstrate your abilities for future jobs like Sentiment Analysis, Content Creators, and AI roles that require durable skills and cannot be automated. In many industries, AI will simply change the nature of available jobs. For the most part, those transformed jobs will be more engaging than the menial tasks they're replacing. Manufacturing workers, for example, may be freed from the production line where they used to watch for defective products all day to instead spend their time improving processes using insights gained from AI systems.

AI's role in education has changed, and not everyone understands what it can do. A discovery we made during the pilot of our durable skills course SkillBuild by Muzzy Lane is that learners were unaware that AI was guiding them to improve based on their input. They were appreciative when they found out that, in our microcredential courses, AI helps learners by providing the extra assets and feedback they need to perfect their durable skills—pushing them to the top of today's changing job market.

Misconception: AI is a static tool.

Truth: AI is constantly evolving.

By Wilson Tsu

What I see people getting wrong the most about AI is thinking that what it is now is what it will be in the future. Take Open AI, for example. Going from

Misconceptions, page 15

The second reason why cheating with AI is being mishandled is the belief that it will encourage students to cheat. This is akin to saying that a vape will encourage students to smoke. If you take the vape away, you still don't address the behavior. The same is true with AI.

AI: Can it think like your students do?

The true revolution lies in using AI to empower and elevate the minds of our students

Dr. Steve Ritter

2023 was a breakout year for artificial intelligence, with explosive growth of generative AI tools.

Since researchers at Carnegie Mellon University helped invent AI in the 1950s, AI has been transforming how we learn, work, and play–and that change is now happening at breakneck speed.

Over the last 30 years, I have witnessed the evolving landscape of AI in education. Many early AI efforts were focused on using computers to model human thinking as a way of confirming our understanding of how the human mind works. For example, Herb Simon and others studied how chess masters played the game in order to understand problem solving. They discovered that much of their skill involved developing perceptual abilities that allowed them to look at a chess board and immediately see potential moves, rather than searching all possible moves.

Over time, AI diverged into two tracks: replicating human intelligence, and expertly accomplishing tasks thought to be unique to humans. AI chess programs, like much of AI, focused more on playing the game well and less on playing it the way humans do.

In education, AI retains its focus on cognitive modeling. Unlike chess, where playing the game well is the point, education systems need to track students' reasoning in order to help students build expertise. It's not about speed or efficiency in arriving at the correct answer; it's about nurturing a student's comprehension and conceptual understanding.

The experience of creating AI that models human thinking is, perhaps, more relevant in education than in other fields. So, how do we ensure that AI supports the fundamental goal of fostering a student's understanding, rather than simply focusing on speed, efficiency, or correctness?

Here are a few questions to consider when researching and evaluating AI programs for the classroom.

Does the AI think like a student?

Education is all about making connections with students. Because each student has different backgrounds, experiences, and interests, good teachers adjust their instruction to match each student's needs. Good educational AI needs to do the same thing.

This is where empathy and data intersect. An effective AI program should grasp the student's perspective, identifying where they stumble and why.

Take math, for example. Many students form common denominators to multiply fractions, even though they do not need to do so. A good teacher will recognize this error as indicating a lack of conceptual understanding about what multiplying fractions means and how it differs from adding them. AI should do this, too. An advanced AI program will have a cognitive model that helps it understand why students might confuse the two operations so it can intervene with hints, recognize common errors, and guide students toward a deeper understanding.

In this way, AI can also assist teachers by acting as a one-to-one coach for students. AI can adjust to every action students take to meet them where they are and help them progress at a very detailed, skill-by-skill level.

Does it provide teachers with critical data to help them guide students in real-time?

There are some things that technology excels at, like collecting data, and other things that teachers excel at, like teaching and motivating students. AI that is built with a live facilitation tool can provide teachers with in-the-moment data, such as when students are working or idle. Real-time alerts can indicate when students need extra support or when they've reached milestones.

When teachers have actionable insights into how their students are working and performing on specific

Think, page 15

Think

continued from page 14

skills or standards–as well as predictions of how far they are expected to progress by the end of the year–they can manage, guide, coach, and intervene more effectively.

Does it allow students to track their own progress?

In addition to providing teachers with data, AI should enable students to see their own progress. As students see their proficiency improving in each skill, their confidence grows and they become motivated by their results. They begin to develop a sense of ownership in their learning and a sense of responsibility for their success.

Is the AI unbiased?

Despite its benefits, AI can also bring ethical challenges to education. For example, some AI tools have been shown to exhibit bias. Even if that bias is unintentional, it can amplify stereotypes about race and gender.

There are many ways to guard against bias in data sets. To start, organizations that develop and instruct AI models for education–or any field–should have diverse teams. They should also rigorously test their programs to identify potential bias and then continually monitor them.

Is the technology safe, secure, and effective?

As with any technology, AI programs should protect student security and privacy, and abide by all applicable laws.

Further, engagement with the program should result in improved outcomes and better support for students, including those who have been historically underserved. Like other education and edtech programs, AI-powered software should be built on evidence-based research, as well as research on how the brain learns, to give students the best learning experience possible. It should also be proven by research to measurably improve students' learning, growth, and achievement.

Looking ahead

AI has immense potential to transform teaching and learning. It's time that the realm of AI in education evolves beyond mere efficiency and correctness. The true revolution lies in using AI to empower and elevate the minds of our students. eSN

Dr. Steve Ritter is the founder and chief scientist at Carnegie Learning. He earned his Ph.D. in cognitive psychology at Carnegie Mellon University, and is the author of numerous papers on the design, architecture, and evaluation of intelligent tutoring systems and other advanced educational technology.

Misconceptions

continued from page 13

ChatGPT, which was released in November 2022, to GPT4 in March 2023 was a huge leap in capability. When ChatGPT came out and educators really started digging into it, they may have thought, "It's not going to pass my class like a human would, so I don't have to worry about this." And then only a few months later, they saw that GPT4 could pass their class. And now Open AI has announced that people will be able to create their own GPTs. We don't know the extent to which that's going to change things, but it's a huge step.

My point is that you can't think in static terms when it comes to AI. It's changing so fast, and there's so much investment in AI right now, so many resources, so many smart people working on it, that as soon as you think you know what's going on, it's going to drastically change. And it's changing so fast that no one can even really know what's going on, except for a small handful of people who work deeply in it. To me, the biggest truth about AI right now is that as soon as we think we have a grasp on it, it's going to be different. eSN

Carl Hooker has been an educator for over 25 years. He has held a variety of positions in multiple districts, from 1st-grade teacher to virtualization coordinator. As director of innovation & digital learning for the Eanes Independent School District, he helped spearhead the LEAP (Learning and Engaging through Access and Personalization), which put 1:1 iPads into the hands of all K-12 students at Eanes.

Carl has been the author of multiple books including the 6-part ISTE book series titled Mobile Learning Mindset. His book Ready,Set, FAIL! focuses on strategies and techniques for educators to unlock creativity by risk-taking and embracing failure. Carl also works as an advisor for multiple edtech start-up companies, and is a national advisor for the Future Ready Schools Initiative. He blogs regularly at HookEDonInnovation.com, guest authors a regular blog on Tech & Learning, and has written guest blogs for the Huffington Post and Edutopia. He's the host of five podcasts and is the co-founder of K12Leaders.com, a social network for educators. Learn more at CarlHooker.com.

David McCool is president and CEO of Muzzy Lane, a company that was recently awarded 1EdTech™ 's 2022 Gold Learning Impact Award and recently introduced SkillBuild. Since founding the company, David's goal has been to build technology that empowers authors to create compelling online experiences and helps students practice skills with guidance and feedback. He was previously involved in the founding of 2 successful startups and graduated from MIT. He can be reached at dave@muzzylane.com or LinkedIn.

Wilson Tsu is the founder and CEO of PowerNotes, the creator of the only platform scientifically designed to help students and professionals create high-quality research and written work confidently and efficiently. He can be reached at wilson@powernotes.com or by LinkedIn.

Here's how to protect schools from cyberattacks in 2024

The costs of a cyberattack may include replacing computer hardware and enhancing cybersecurity protections—and the burden and risk of identity

Thuy Wong

Identity theft and data breaches are on the rise and K-12 schools are one of the biggest targets. In fact, from 2016 through 2022, there have been more than 1,600 publicly reported cybersecurity-related incidents at K-12 public schools, affecting millions of current and former students. And now in 2024, it's reaching a crisis point. Exposure of private information can have long-term impacts for not only schools, but for the students they serve.

It's why the nation is now taking a closer look at data vulnerabilities in K-12 schools. In late 2023, the Federal Communications Commission proposed a $200 million program to gather data on schools' cybersecurity and firewalls, to examine how we can best protect students, teachers and schools. It's largely in response to the recent influx of ransomware gangs targeting K-12 schools. As cyberattacks against schools continue to increase in severity, schools must take it upon themselves to implement extra protections against online threats.

When students' personal information is compromised, it can lead to emotional and financial harm for years to come. Schools manage a slew of personal data, from health and psychiatric records to academic test scores to even social security numbers. For school districts, financial losses from cyberattacks can be in the millions, according to the U.S. Government Accountability Office. These costs may include replacing computer hardware or enhancing cybersecurity protections, not to mention the burden and risk of identity theft. Yet, the majority of school districts do not have a single staff member solely dedicated to cybersecurity.

While new cybersecurity measures and modernization projects are taking place at the national level, more tangible action must be taken to combat these rising risks for schools in California. What else can be done to address these rampant cybersecurity attacks at the school level?

With a new year upon us, here are proactive steps you can take today to protect yourself or your school community against systemic cybersecurity threats in 2024:

Multifactor authentication. The process of Multifactor Authentication (MFA) helps prove you are who you say you are by prompting the user to enter a second factor to verify your identity when signing in to a device. Because usernames and passwords can be easy to discover, implementing MFA makes it more challenging for a threat to gain access to student, staff, or your school's information.

Train staff. Attacks are often socially engineered. That means staff must know how to identify and respond to these threats. Protecting against phone-based, email-based, and SMS-based scams through regularly scheduled training for staff helps ensure they have the language and tools needed, such as phishing campaigns. Required training will help your school community not only identify cyberthreats but share actionable guidance on what to do if any information at your school is compromised. And according to experts, it would behoove districts to participate in programs that would protect against online attackers who are specifically targeting schools.

Protect student, teacher and staff identities. Restricting administrative access to only those who need it can help keep devices and personal information protected, since users with administrative privileges can often bypass critical security settings and access sensitive information. This can be done by validating which staff members are required and authorized to carry out those tasks as part of their duties. End-to-end encryption (e2ee) can also help ensure no one but the sender and the recipient can read sensitive communications.

Practice continuous improvement. Regularly patching and updating systems is one of the most important cybersecurity procedures to protect against known vulnerabilities as well as provide new features. Lastly, enact policies to regularly back up your data or material in different places or mediums (e.g. separate servers). Archiving or deleting sensitive information, in alignment with your record retention policies, can help keep information secure.

The scale and number of attacks escalated the last few years as more schools relied on technology for instructional delivery and operations. In an increased digital age, cyberattacks will only become more hazardous for students and their school communities. Looking ahead to 2024, it has never been more important for school leaders to prioritize cyber insurance, education and security. eSN

Thuy Wong is President and CEO of CharterSAFE. For more resources to better equip your school community against cybersecurity threats, visit CISA's toolkit.

5 helpful hacks for managing a STEM classroom

Kim Harding

Every classroom is a busy place, but STEM-specific classrooms are built on collaboration, communication, and hands-on inquiry. Things are bound to be extra noisy and energetic. This isn't a bad thing–it's "the sound of learning," as a coworker of mine once put it! However, it does mean that STEM classrooms require skilled management to keep students focused on their tasks. So, how do we as educators foster an environment of engagement and creativity without stifling our students' curiosity?

In my experience, educators looking to create a STEM-centered classroom can take advantage of five teaching hacks which allow them to manage students while still fostering a growth mindset:

Hack 1: Material management

The first challenge in a STEM classroom is material management. To streamline material usage, students should know where materials are located, how to access them, when they can use them, and the appropriate ways to use them. Providing visual aids like stop signs and bin cheat sheets enhances understanding. This creates a clear picture of where and how their learning takes place.

Hack 2: Teach collaboration

Building a collaborative environment is fundamental in STEM education. Effective communication skills are vital for creating an inclusive atmosphere where every voice is heard and valued. This means teaching students not just how to speak, but how to listen as well. When speaking, students should be clear, concise, and prepared to ask deeper questions. When listening, they should avoid interruptions, withhold judgment, and learn to take verbal cues.

Hack 3: Keep it real

Interest-driven learning empowers students to independently question, explore, and solve real-world problems. Consider addressing issues like earthquake safety, oil spill cleanup, or snow removal. These lessons not only impart practical information, but they also show students their education is something that can be applied to the real world–including their homes and communities. Best of all, it's great for fostering students' critical thinking, curiosity, and confidence.

Hack 4: Cultivate curiosity

Cultivating curiosity is crucial for student engagement and passion for STEM. Educators can model curiosity by introducing diverse perspectives, offering choice, and asking proactive questions. For instance, you could test them with the viral image of the blue dress to teach them about different perspectives, then ask them to ponder the science behind the image. This hack is great for promoting independent thinking and increases classroom participation!

Hack 5: Nurture growth

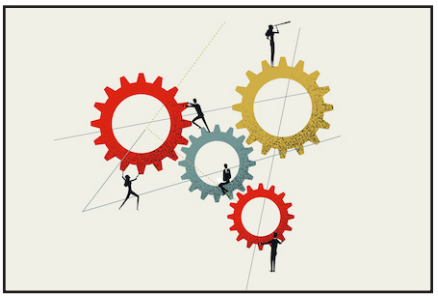
If you never fail, you're not trying new things. Encourage students to embrace failure as a part of the learning process. Show them the positive power of failure by sharing inspiring stories of individuals who learned and persevered from their disappointments (Walt Disney, Thomas Edison, and Oprah Winfrey are just a few!). By empowering students to fail like a champion, we teach them how to set goals and learn from their experiences.

It's important to remember that classroom management isn't about maintaining order but creating an environment where students feel encouraged to explore, experiment, and engage with the material. By taking advantage of these five teaching hacks, educators can give students the freedom they need while still providing them with structure and a positive learning environment. Above all, remember to have fun. It's in STEM classrooms like these that the next generation of great thinkers are grown! eSN

Kim Harding 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.

Educational leaders must leverage collaboration for success

How do leaders keep improving our schools to recognize unique opportunities and needs at the forefront?



Melissa Anne Brevetti, Ph.D.

The International Monetary Fund (IMF) calculated global economic output loss will total $28 trillion dollars between 2020 and 2025 as the result of the COVID-19 virus that impacted businesses and education. Our schools are still pivoting to serve students and families who are figuring out life in the space of no longer and not yet.

The pandemic has changed us all.

Nonetheless, success in education is about developing people—on every level.

Even though we do not know exactly what the future holds, we can recognize that leaders who make a difference see opportunity in challenges. We can lean into applying this paradigm to our educational systems.

This begs the questions: How do educational leaders keep improving our schools to recognize unique opportunities and needs at the forefront? What situations can bring adaptive capacity to education?

Upon reflections, with a 20-year career as an educator and scholar, I'm asserting a simple response: collaboration and mentorship. This requires a cognizance, commitment, and humility from all of us.

Setting the stage for innovation

Schools shape everyone and the memories endure a lifetime.

We recognize how strong school leadership means we are exploring and adapting with others for a better future—and that includes valuing the collective diversity of ideas to set the stage for innovation in educative spaces.

After all, to lead effectively, we must create and honor safe spaces for collaboration. Because when it comes to spaces with uncertainty and high challenges, people are often reluctant to express thoughts or potential actions. We must suspend judgments to learn more from the people around us.

Ultimately, the more often that educational leaders anticipate and promote change and input, the more effective will become the results—which brings out the best in our teachers' abilities and talents.

Avoiding fool's gold

With practices that make a difference, teachers (and students) want to "listen, learn, lead" from authentic leaders who care about lifting others up and excelling in uncertain spaces. Although 83 percent of organizations assert that developing future leaders and mentoring are crucial aspects, research shows only 5 percent of organizations have leadership development programs at all levels (Kizer, 2023). The work of leaders is not to keep resources or power for themselves—but to share it and give it away.

Now, more than ever, educational leaders must highlight and affirm teachers' talents and skills to deliver more than what they thought was possible. The classroom is a space where teachers know that "one-size-fits-none" and where they need support from leaders and community to adapt curriculum.

A scholar from the thirteenth century, Rumi, expressed that "Fool's gold exists because there is real gold." This sentiment could address leadership in education. We must differentiate between effective leadership and ineffective leadership. Authentic leaders demonstrate self-awareness and competence in that all members are included to act with purpose and empowerment.

Mentoring is one important strategy to let people connect and reflect, and it works as a two-way street for colleagues to support each other. Genuine acts of caring and collaboration, such as a handwritten note of encouragement or visiting colleagues, are other ways to uplift a person's spirits. In other words, leaders recognize unique opportunities to connect and draw people forward.

And leaders know that meaningful change takes more than one person to reach the next level.

Humility wins, paradoxically

To illuminate on collaboration a bit further, I'd like to share one more important piece of fascinating information.

In education, as in life, we must take the time to find strengths in each person. Why? Because there is nothing more rewarding than helping others discover their unique strengths. CliftonStrengths Assessment is one resource to find out what you (or another person) have as greatest strengths that sets you apart from everyone else. It is important to leverage each other's strengths, so the sum is greater than the parts!

In this space of no longer and not yet, honest discussions are necessary to explore the space of where others are along the journey. Career paths differ, and there are different seasons in our careers. Most notably, in a study where

Collaboration, page 20

How esports can help students in the classroom (no, seriously!)

Esports programs instill important leadership, critical thinking, and communication skills that students will carry with them throughout their education?

Benjamin Yeh

Ask most parents if their children's school should start an esports team, and you'll be met with reluctance. Video games? In the classroom? Absolutely not!

The reasons why pile up quickly. Some worry it could lead to their children spending less time on schoolwork and more time on screens. Others fear what their kids may wind up seeing and hearing in online gameplay. More than a few don't even know what esports means.

I've seen up close how those concerns are fading while esports in education become more and more prevalent. At Mira Mesa High School in San Diego, California, which has launched an esports program, teacher Brandon Trieu has proven through the success of the team he coaches, the Mira Mesa Marauders, that esports are a valuable addition to the classroom. They instill important leadership, critical thinking, and communication skills that students carry with them throughout their education journey. Teachers and administrators in schools from coast to coast are recognizing the same lesson.

"I haven't seen any drawbacks to it. I've seen kids be more attentive to their grades. They want to be a part of something," Trieu says. "The family environment that we've created here, I don't see what school doesn't want that."

Esports programs offer students all the benefits of traditional athletics, including evidence of increased engagement, higher GPAs, and a deeper sense of community, according to research conducted by UC Irvine Connected Learning Lab. Supporting esports in education gives students a leg up, empowering them to foster a passion for technology and innovation while allowing schools to integrate powerful hardware into their STEM and STEAM curricula.

When schools invest in esports teams, they're investing in high-level hardware that also integrates into STEM and STEAM programs, which means students wind up having more opportunities to get hands-on experience and learn in-demand skills. The PCs and laptops used for esports have high-performance processors, graphics cards, RAM, and solid-state drives, among other cutting-edge features, so they transition seamlessly into the classroom for students to pursue their interests in professions and hobbies that require resource-intensive applications. Many of the skills that students develop by participating in esports also translate to STEAM and STEM career tracks, according to UC Irvine research: "Esports is a community that natively fosters acquisition and mastery of knowledge and skills that connect to high tech sector jobs not only in the games industry but also in data science, software and web development, social media marketing, and event organizing."

While this may come as a surprise to teachers and school administrators who are more familiar with classics like Pac-Man rather than Valorant or League of Legends, the rise of esports in education is part and parcel with the widespread popularity of competitive esports. Colleges and universities like Miami University, which boasts one of the country's top collegiate esports programs, offer scholarships to students who compete on their teams. The North America Scholastic Esports Federation (NASEF) has developed a framework for schools to launch their own teams, providing a supportive foundation to train teachers as coaches.

For students, esports teams are a way to make connections with peers and mentors through a shared passion. Roughly 3 in 10 Gen Z teens say that gaming is their favorite form of entertainment, according to a Deloitte study, and 70 percent say that gaming provides social and emotional benefits because it helps them stay connected to others. The researchers at UC Irvine reached a similar conclusion, finding that student participation in school esports teams leads to "significant feelings of connectedness across all levels of the program, from team to club to peers to the league as a whole."

Success stories like Mira Mesa High School aren't so much an outlier as a sign of a growing trend. At Oswego East High School in Oswego, Illinois, teacher and coach Amy Whitlock has also had a similar front-row seat to engaging underserved students through esports.

Students are proud to compete for the school's esports team, Whitlock believes, which leads to deeper ties between themselves and their peers, their teachers, and their community. "They want to come to school. They want to be in school. They want to work in their other classes," she says.

Of course, schools can't just simply snap their fingers to create an esports team. It's an involved process that calls for budget, space, infrastructure, and equipment, just like any traditional sport. Based on our experience, we recommend following these four best practices to help you set up your program for success.

1. Identify the core goals for your esports program.

What skills do you want the team to develop? How many students can you accommodate? What grade levels will be invited to participate? How often will

Esports, page 20

Collaboration

continued from page 18

mentors underestimated their abilities, these humble mentors were given the absolute highest ratings by the mentees (Johnson, 2016, p. 68). Lesson learned: The best leaders were the ones who had self-awareness and humility. These guides offered the highest-quality relationships and the most effective facilitation of a person's development.

Finding hope and purpose within ourselves

Harvard Business School states, "Leadership is about making others better as a result of your presence and making sure that impact lasts in your absence." Collective vision holds the dream of flourishing individuals and communities, as we need both for society to function well.

In particular, leadership success includes mobilizing colleagues to believe in and achieve their goals. When it comes down to it, every person has a role in contributing to playing big in uncertain times.

We must start seeing our educators as our community leaders, which they already are in many ways. Remember the words of John Maxwell (2008) that we should "Never work alone. I know that sounds too simple, but it is truly the secret to developing others. Whenever you do anything that you want to pass along to others, take someone with you" (p.16). Agreed, engaging others is how to pass down important information and practices. Strong relationships and common experiences create winning teams. Moreover, committed teams go places that no one has been before.

To conclude, educators should have more collaborative supports and leadership opportunities since they are the experts on what is working (or not) in this fast-paced world. Success will come. When we cross a worthy finish line, the anguish vanishes. Deep inner satisfaction replaces the time of hardships, because we have made the world a better place. Educators know a simple truth: When we lead others, we facilitate that others can find hope and purpose within themselves.

Because without hope, we would not find the courage that is needed when we are grappling in the space of no longer and not yet. eSN

Dr. Melissa Brevetti earned her Ph.D. in Educational Leadership and Policy Studies, and her teaching background consists of working with all types of learners, including preservice teachers, graduate students, homeless, international students, and at-risk students. Dr. Brevetti is the recipient of various honors, including the International Roundtable Scholar Award, Leadership Team Award, Ten Outstanding Young Americans Award, and the Young Educator Award.

Esports

continued from page 17

the team meet, practice, and compete? By answering these questions first, you'll give yourself a clear roadmap.

2. Every team's equipment needs will be unique.

Find a reliable hardware partner with experience implementing high-quality devices, who can help you determine your equipment needs based on the goals of your program. For schools with dedicated space like computer labs, desktop PCs are a smart way to maximize your investment. At schools where space is at a premium, laptops are an effective way to prioritize flexibility.

3. The ambition of your program is a key factor.

A casual club with a limited budget should focus on equipment that ensures smooth gameplay, while teams that want to compete in and win tournaments should seek out high-performance hardware. Consider each piece of equipment: High refresh rate monitors, mechanical keyboards, and gaming mice offer competitive advantages, while infrastructure upgrades like ethernet jacks and a robust electrical supply that provide reliable power and connectivity are necessary for everyone from hobbyists to league champions.

4. Most of all, it's essential that efforts are led by a motivated coach.

While it's almost guaranteed that every school has students who would join a team, every program needs a leader like Trieu or Whitlock who is committed to fight for student interests and lobby for the budget, space, and equipment their team needs to succeed.

Myths about esports are still widespread. But that's no longer a good reason to sit on the sidelines. As more and more schools choose to start their own teams and bolster their STEM and STEAM programs, they'll discover what Mira Mesa High School and Oswego East High School already know: Esports don't detract from the student experience. They enrich it. eSN

Benjamin Yeh is the President of ASUS Computer International, Systems Business Group.

Scaling-up high-dosage tutoring is crucial to students' academic success

Paige Shoemaker DeMio

In the aftermath of the COVID-19 pandemic, students have faced unprecedented levels of learning loss because of school closures and interrupted learning. In fact, recent national testing shows a decline in math scores in 43 states and reading scores in 30 states, while no states saw an improvement in scores for either subject. Nationwide, 64 percent of fourth graders are below proficient in math and 66 percent are below proficient in reading. The scores remain grim for older students, with 73 percent of eighth graders below proficient in math and 69 percent below proficient in reading. Public school leaders estimate that 49 percent of students began the 2022-23 school year behind grade level in at least one subject. As students across the country continue to struggle academically and as educators work to catch students up, policymakers must ensure that they are properly scaling academic recovery strategies to reach as many students as possible before it is too late.

The pandemic left students, on average, five months behind in math and four months behind in reading by the end of the 2021-22 school year, with even more significant losses for students in majority-Black or low-income schools. This gap shows an increased inequality in educational outcomes across racial and socioeconomic lines. As educators work to catch students up academically, analyses reinforce the importance of supporting this generation, predicting that students affected by the pandemic may earn up to $61,000 less over their lifetime, with a resulting impact on the U.S. economy that could amount to $188 billion every year as this cohort enters the workforce.

Thankfully, extensive research points toward one incredibly effective option in recovering learning loss: high-dosage tutoring. As states, districts, and even the federal government begin to implement tutoring initiatives to address learning loss, it is important that they consider the type of tutoring being offered. Not all forms of tutoring reap the same benefits, and districts may need help in determining how to select and implement the best programs.

High-dosage tutoring

High-dosage tutoring, sometimes called "high-impact" or "high-intensity" tutoring, is one of the few school-based interventions with demonstrated significant positive effects on math and reading achievement. Yet high-dosage tutoring is a very specific form of tutoring that must meet specific criteria:

- One-on-one or small-group sessions with no more than four students per tutor
- Use of high-quality materials that align with classroom content
- Three tutoring sessions per week—at minimum—each lasting at least 30 minutes
- Sessions held during school hours
- Students meeting with the same tutor each session
- Professionally trained tutors who receive ongoing support and coaching

High-dosage tutoring is most effective when the program supports data use and when tutors use ongoing informal assessment to tailor individual student instruction. As a bonus, these sessions can allow educators more opportunities to measure student achievement through informal assessments, potentially providing new holistic accountability measures.

Studies continuously show the benefits of high-dosage tutoring: It increases students' learning by an additional three to 15 months across grade levels; moves an average student from the 50th percentile to the 66th percentile; and is, overall, 20 times more effective than standard tutoring models for math and 15 times more effective for reading. These increases in achievement show great potential for using high-dosage tutoring as a school improvement strategy. As schools continue to focus on long-term improvement of their education, implementing a high-dosage tutoring program can provide them with the tools necessary to ensure students' academic achievement by catching knowledge gaps early, meeting students where they are, and providing evidence-based intensive recovery. Indeed, implementing these programs with fidelity allows schools to recover current learning loss while also gaining the long-term knowledge and skill to scale programming as needed moving forward.

Unfortunately, there are many challenges districts and schools face in implementing high-dosage tutoring programs. Amid a teacher shortage, labor challenges persist in hiring tutors. Moreover, schools often face complex logistical issues when it comes to training tutors properly, rescheduling the school day to fit in a tutoring block, and vetting tutoring services run by outside companies. In addition to these challenges, funding concerns are often at the top of school leaders' minds. While COVID-19 relief funds provided targeted funding for high-quality tutoring, those funds are set to expire at the end of 2024. And unfortunately, many schools lack long-term investments that can be directed toward effective tutoring programs.

Current implementation efforts

While more than 80 percent of schools offer at least one type of tutoring in the 2022-23 school year, the modes and student participation levels vary. The School Pulse Panel collected

Tutoring, page 22

Tutoring

continued from page 21

data from a representative sample of more than 1,000 public K-12 schools in December 2022, providing insight into what tutoring services they offer. The survey estimated that only 37 percent of schools offer high-dosage tutoring and, nationwide, only 11 percent of public school students participate in high-dosage tutoring—despite recent National Assessment of Educational Progress (NAEP) scores showing that a vast majority of students are below proficient in reading and math. Schools were found to be most likely to offer standard tutoring, a less intensive method of tutoring provided by educators, with 59 percent of schools reportedly offering this method.

Despite the evidence-based benefits of high-dosage tutoring, only a small share of students receive this service. To adequately recover learning loss and ensure a brighter future for this generation, high-dosage tutoring programs must be properly scaled to reach more students.

Policy recommendations

Despite strong evidence pointing to the effectiveness of high-dosage tutoring, logistical challenges have prevented many schools from providing this valuable service to their students. The federal government can further assist districts in the following ways as they work to support students.

Designate long-term funding for high-dosage tutoring

While COVID-19 relief funds have played a vital role in district and state efforts to recover learning loss, these funds are due to expire in September 2024. However, reports estimate that it will take three to five years to recover learning loss at the current rate of recovery—time that, unfortunately, older students may not have. Without continued funding, districts will likely face disruptions in their recent efforts, reducing the long-term benefits these evidence-based practices can provide.

To prevent this, Congress must consider providing additional funding to public schools to implement high-dosage tutoring on a long-term basis, with particular emphasis on schools serving low-income students. Without increased federal and state funding, districts will be much slower to recover learning loss as they face more barriers to success. Most importantly, districts must, at a minimum, maintain all funding in upcoming federal budget discussions.

While funding from the Elementary and Secondary Education Act (ESEA) and Individuals with Disabilities Education Act (IDEA) is available to districts for tutoring purposes, it is challenging and unsustainable for districts to reroute how they have historically used these funds. Estimates suggest districts must spend between $1,200 and $2,500 per student each year to provide high-dosage tutoring effectively. Without additional funding, they have few options and may need to diminish other vital programs to shift funds toward high-dosage tutoring.

To adequately invest in high-dosage tutoring, policymakers should allocate additional funding through a new grant program accessible to all populations, specifically to implement high-dosage tutoring programs. As Elementary and Secondary School Emergency Relief (ESSER) funds wind down, new funding avenues are vital to continue this work and successfully recover learning loss to set this generation on a better path.

Continue to grow awareness and reach of the National Partnership for Student Success

Recognizing student learning loss, the White House, in coordination with AmeriCorps and the Johns Hopkins Everyone Graduates Center, launched the National Partnership for Student Success (NPSS) in July 2022 to supply 250,000 tutors and mentors in K-12 public schools over the next three years. NPSS estimates that in its first year, 78,000 additional adults have provided high-intensity tutoring. The partnership has also developed the NPSS support hub, which provides technical assistance and resources at no cost, and has formed a network of organizations doing similar work that can support one another and share information. In addition, NPSS established a higher education coalition focused on placing more college students in school support roles, such as high-dosage tutors.

The work NPSS is doing plays an essential role in the initiative to increase the number of students receiving high-dosage tutoring. The NPSS support hub is crucial in providing guidance and

Tutoring, page 21

Tutoring

continued from page 22

technical support to districts, states, and organizations. This includes one-on-one support and published resources accessible to the public. These resources include guides on creating a state partnership for student success, a district partnership toolkit, and voluntary quality standards. As education leaders focus efforts on addressing learning loss, they must have access to NPSS as a valuable network with expertise in high-dosage tutoring and implementation.

For its efforts to be most effective, the White House must work to increase awareness of these resources by marketing the work of NPSS to states. NPSS can market its services through its hub and networks of organizations. States should, likewise, spread awareness of NPSS and the organization's resources to local school districts.

Expand the federal work-study program

College students are one population education leaders are trying to tap to support the staffing issues schools face when implementing high-dosage tutoring programs. While high-dosage tutoring requires professionally trained tutors, many examples exist of colleges, school districts, and even third-party entities providing professional training before and during college students' service to meet this requirement.

Recognizing this population's value, NPSS formed a higher education coalition focused on placing college students in school support roles. Additionally, U.S. Secretary of Education Miguel Cardona issued a letter encouraging colleges, universities, and school districts to collaborate to use federal work-study (FWS) and other federal resources to increase the number of college students in these roles. FWS, a program that provides paid part-time jobs for college students with financial need, is an existing resource colleges and universities can use to partner with their local school districts and provide additional tutors. However, limitations regarding FWS' funding formula and regulations related to where students can work prohibit the program from more effectively benefiting communities. To provide more tutors, Congress should consider amending FWS, including by allowing college students to serve as tutors in all academic subject areas for grades pre-K-12, rather than current regulations that restrict this to reading tutors for pre-K-6.

Universities and colleges must market these school support roles as a type of FWS employment to increase the number of college students serving in these roles. Doing so will allow universities and colleges to build stronger connections with their local school districts and better serve their communities. At the same time, it is necessary to emphasize the importance of providing quality training for college students who will serve as tutors to ensure they meet the high-dosage tutoring criteria. These partnerships must ensure that the college or university, local school district, or a third-party provider offers free, high-quality training before and throughout the college student's service for continued support. For example, in partnership with Annenberg Learner and Step Up Tutoring, Arizona State University is building a program with stackable microcredentials accessible for free to anyone interested in becoming a high-dosage tutor. This is just one resource that partnerships can utilize to ensure tutors are professionally trained and prepared to support students.

Collect more robust data on tutoring

Currently, the availability of federal data on tutoring initiatives is limited. While the School Pulse Panel provides some insight into the tutoring students receive, there are limitations. To better understand recovering learning loss efforts nationwide, the Department of Education must collect more in-depth data from districts across the country.

In developing a more robust data collection tool, the department should first consider providing precise definitions of high-dosage tutoring, standard tutoring, and self-paced tutoring. While the most recently administered survey defines high-dosage tutoring, it fails to state that this form of tutoring must occur during the school day. Additionally, despite the Education Department providing its definition, 13 percent of schools who say that they offer high-dosage tutoring also note that their students only receive it once to twice weekly. Given high-dosage tutoring's requirement of at least three sessions per week, these responses are contradictory. The department should therefore consider providing a more precise definition, emphasizing that programs must meet all criteria to be regarded as high-dosage tutoring. Moreover, it must give that precise definition multiple times throughout the survey to reduce confusion.

New data collection should also include information on student progress through high-dosage tutoring programs. As previously mentioned, high-dosage tutoring is most effective when it supports ongoing data collection and when tutors use ongoing informal assessments to measure student achievement. Offering insight into students' grade-level achievement will provide more transparency on the success of programs. In addition to this quantitative data, these efforts should include a collection of best practices and innovations that are easily shared across the country for educators to utilize in their implementation efforts.

To increase school participation, the Education Department may consider clarifying the Every Student Succeeds Act's (ESSA) required accountability indicators to include student participation in high-dosage tutoring programs as an opportunity dashboard indicator. ESSA requires state-designed accountability systems to include several indicators, including math and reading assessments, graduation rates, and English language proficiency. The law also requires at least one indicator of school quality and student support, known as the "opportunity dashboard" indicator. This allows for greater flexibility, including the use of

Tutoring, page 23

How to ensure edtech ROI? Ask these 4 questions

Nancy Rose

Working with curriculum and system leaders and educators across the state of New Hampshire, I frequently hear some common refrains about education technology tools for the classroom.

I know ___ is a great resource, but I don't think teachers are even aware of it.

Teachers aren't able to take on "another thing" so anything we share with them has to solve problems they already have.

We want to use ___ but the tech staff have other priorities.

Somehow, after the pandemic and returning to "normal," teachers are more reliant on worksheets or things they find online (often unvetted) and can easily duplicate. They need tools that are easy to use, support active learning, and can accommodate the needs of diverse learners. There are almost too many options! Or too many different tools for different tasks. And, unless yours is a very fortunate system, technology staff hasn't increased at a rate commensurate with the reliance on, and the complexity of, technology that supports school operation and education of students.

Maybe some of these challenges sound familiar, whether you're a district, a school, a curriculum leader or an instructional coach, a digital learning specialist, or a librarian. Across New Hampshire, school leaders are searching for strategies to ensure that their edtech investments are being leveraged to pay dividends on student engagement, acceleration of learning, and saving teachers' time.

To explore how to increase the return on investment (ROI) of education technology, let's take an inquiry approach. Consider your district, schools, departments, and educators, and ask the following four questions at a team meeting to ensure you're all on the same page and experiencing these challenges and solutions with common understanding.

Who are your district's building-based edtech coordinators?

Do your district's schools have a central point person who serves, and is widely recognized, as a central point person for edtech tools? Databases, lists, websites, newsletters, and the like are all excellent ways to share information about digital tools and drive usage. Establishing and highlighting the person in this role can be a great help in getting educators to the right person for targeted support, getting the word out, coordinating training, and so much more. Library media and digital learning specialists or technology coordinators are excellent candidates for this, especially when they periodically meet with their role-alikes across the system. Edtech information is then not limited to one school but shared throughout the system. The educators in these coordinator roles will be more effective if they are members of school leadership teams and have the flexibility needed to integrate into the classroom to support educators and students while actively engaged in learning.

How might you increase usage without "adding another thing"?

This is a challenging one, because no matter what edtech you've acquired, there will be some necessary investment of time for that tool to go from new to indispensable. Educators frequently seek administrator guidance for what they expect to see in the classroom or in use by students. Designated edtech coordinators can take the lead, working with principals and curriculum leaders to set goals, leading professional learning, and fostering digital tool adoption.

Success will come by ensuring teachers understand what different tools can do, highlighting best practices, sharing fun and relevant examples, and providing time for educators to play with and learn new tools. Coordinators can also help streamline the numbers of tools needed, such as finding tools that bring tech functionality and content together. Coordinators can make it fun by creating challenges that leverage engaging digital content and interactive learning activities that teachers can share, copy, and edit. This solves one problem teachers already have: lack of time. This is an excellent way to foster use that is rewarding and meaningful, ensuring usage is based on value rather than mandates that satisfy compliance metrics.

In New Hampshire, all preK-12 schools have access to high-quality digital content through the New Hampshire Education Department. This content includes instructional activities that educators can use as-is or edit to meet the needs of their students. These resources can be shared and tweaked to support all learners and tailored to meet specific learning goals. This type of sharing and collaboration reduces stress and saves educators' time. Now that's incentive! This process can also alleviate confusion about what tools educators should select.

How do you keep the instructional edtech and IT infrastructure team on the same page?

Depending on how IT infrastructure and instructional edtech support teams are structured, they may not understand each other's work or have may have competing interests. Your district's IT

ROI, page 25

Tutoring

continued from page 23

student engagement and any other state-chosen indicator that allows for meaningful differentiation of school performance. Issuing guidance that clarifies that this component could include reporting student engagement in high-dosage tutoring programs, as well as guidance on how to best collect this data, may lead to more states and schools using high-dosage tutoring participation as a school-based indicator in their accountability systems. With this increased transparency, more research can be conducted on the success of high-dosage tutoring by comparing student participation rates and statewide or national assessments.

It is essential that this data collection is robust, public, and easily accessible. Having access to such data would allow education leaders and policymakers at all levels to make evidence-based decisions. When robust data are not collected and made public, policymakers are more likely to draw conclusions that are not evidence-based and have the potential of further harming students. For example, some policymakers—based on low-quality data—may be led to believe that high-dosage tutoring has been properly implemented and yet has made little impact on testing results. However, with robust data, policymakers can better visualize the lack of proper implementation and the barriers to successfully scaling high-dosage tutoring programs. Developing a stronger understanding of the programming occurring in schools is necessary for policy to be effective in supporting students.

Conclusion

As students struggle to catch up, the federal government must step up to support states and districts in implementing effective high-dosage tutoring programs. With dedicated long-term funding for high-dosage tutoring, continued support through the National Partnership for Student Success, expanded federal work-study regulations, and more robust data collection, districts will be better equipped to support students in learning loss recovery. This work is vital to ensuring the success of a generation and the U.S. economy's future. eSN

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ROI

continued from page 24

infrastructure team must know what education purchasers are acquiring (or requesting), the function and users of the tool, any specific tech requirements, and how they will integrate into your digital ecosystem.

Interoperability is increasingly important as a means of making deployments efficient, supporting ease of use, and protecting student data privacy. Partnership and collaboration between technical and education stakeholders along, with tools that support integration such as single sign on and learning management systems, can help ensure that all parties are on the same page, part of effective implementations, and educators have a single point of entry for finding the edtech their school wants them to use. This collaboration also ensures technology support teams will understand the importance of edtech tools and keeping them accessible and functioning. This cross-collaboration ensures school-based tech coordinators can help fill communication gaps, expedite support, and provide educators and students with best practices for all edtech systems.

Is professional learning a part of your edtech implementations?

It is increasingly true that teacher professional learning time is at a premium, and there are so many initiatives beyond implementing effective edtech for which districts are responsible. However, just as in any new learning initiative, professional learning on edtech is key.

As leaders with a whole-school focus, dedicated edtech coordinators are poised to assess and address professional learning gaps and opportunities. Library media or digital learning specialists are uniquely capable of helping build professional learning plans, plan professional learning days, and play a leading role in building internal capacity among educators to help them help their peers. Training on digital tools does not need to happen in a vacuum. New learning in literacy instruction can be delivered through learning management systems. Resources for competency learning can be built and shared with digital tools, so both the competency process and edtech training are happening at once. Create purposeful opportunities for collaborative planning, leveraging learning tools that support sharing between teachers.

By identifying your edtech coordinators as communication and professional learning leaders in their schools, district leaders can take a big step forward in the effort to wring maximum return on investment for edtech spend. eSN

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AI

continued from page 8

emphasize critical thinking, creativity, and problem-solving. AI-assisted tools can provide real-time feedback, enabling personalized learning experiences that adapt to each student's progress. Project-based assessments, peer reviews, and interactive simulations offer students opportunities to demonstrate their understanding in diverse and meaningful ways.

Moving away from traditional memorization-based methods, educators are exploring how to evaluate students' ability to apply knowledge in practical, real-world scenarios:

- **Project-based learning:** Students can work on real-world problems, using AI as a tool to analyze data, predict outcomes, and propose solutions. This hands-on approach fosters critical thinking and problem-solving skills.
- **Reflective learning:** AI can prompt students to reflect on their learning journey, guiding them to articulate their thoughts and feelings about the material learned. This reflective practice helps students internalize their learning and develop metacognitive skills.
- Real-time feedback: One of the significant advantages of AI in education is the ability to provide immediate feedback. This instant response helps students quickly understand their mistakes and learn from them, promoting a growth mindset.
- **Ethical and critical engagement with AI:** As students interact with AI tools, they also learn to critically evaluate the information and outputs provided by these systems. This critical engagement is essential in an era where digital literacy and ethical considerations around AI are becoming increasingly important.

These evolving assessment methods, empowered by AI, not only cater to the diverse needs of learners but also align with the skills required in a technologically advanced society.

Preparing educators and students for a world of AI

The integration of Gen AI into education necessitates a shift in how educators and students interact with technology. Educators need to be equipped with the skills and knowledge to effectively incorporate AI tools into their teaching methodologies. This includes understanding how to use AI for content creation, personalization of learning experiences, and assessment, as well as being aware of the ethical considerations and limitations of AI.

Students need to be prepared to navigate an AI-enhanced world. This involves not only leveraging AI tools for learning but also developing critical thinking skills to discern the quality and reliability of AI-generated content.

The Consortium for School Networking (CoSN) plays a crucial role in this transition. As a leading voice in advancing innovative teaching and learning, CoSN provides valuable resources and support for educators to navigate the new AI-enhanced educational paradigm. Educators can explore a wealth of information on effectively navigating this new normal at CoSN's AI in Education resource page.

What lies ahead

2024 stands as a watershed year for the integration of Gen AI in education. This technology's transformative potential extends beyond just enhancing teaching methodologies; it reshapes the very way we demonstrate and assess learning. As we embrace the opportunities presented by AI, it's imperative to prepare both educators and students for this new era. The journey ahead is filled with possibilities to improve educational outcomes and foster a more engaging, inclusive, and adaptive learning environment. eSN

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