Inside This Issue

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Beyond the bookshelves: 3 ways school libraries have evolved to meet students' needs

Carrie Friday, Melbourne High School

School libraries have undergone a significant shift over the years, adapting to changes in technology, education philosophies, and the dynamic needs of students. Once simply a quiet space to check out books, libraries have evolved to provide students with a holistic and interactive learning experience.

Over the past several years, these spaces have transformed into collaborative areas that encourage group work, discussions, and hands-on activities, promoting creativity and innovation–ultimately becoming instrumental in shaping well-rounded, adaptable learners.

While still a repository for information, there has been a major shift from traditional print materials to a blend of physical and digi-

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Critical thinking in the digital age of AI: Information literacy is key

Dr. Marc Owen Jones, Northwestern University in Qatar

From New York to Texas, the pro-Palestinian protests sweeping U.S. colleges have become a flashpoint for viral disinformation, from falsely attributed "Jewish genocide" chants to debunked claims of Hamas presence. With the tenor of allegations reaching a fever pitch, Columbia University students have even launched their own fact-checking Twitter account. As this highly-charged moment collides with a hyper-partisan landscape, it offers a stark reminder of how disinformation thrives at the intersection of fierce emotions and polarized politics, threatening to drown out nuance, facts, and good-faith dialogue when they are needed most. All of this points to the urgency of tackling disinformation through information literacy.

Disinformation has long played a role in global events. Technological change and increasingly global communications have made the deliberate spread of inaccurate information faster and more impactful. With the birth of AI, disinformation has entered a new era, rendering it critical to teach students how to question sources, spot fakes and be discerning consumers of news, social media, and information.

AI has dramatically complicated the information landscape by rapidly generating and amplifying deceptive narratives, deepfakes, and AI-generated visuals, drawing concern from global leaders as a major emerging challenge. The World Economic Forum's latest Global Risks Report, which surveyed experts from academia, business, government, the international community, and civil society, named misinformation and disinformation from AI as

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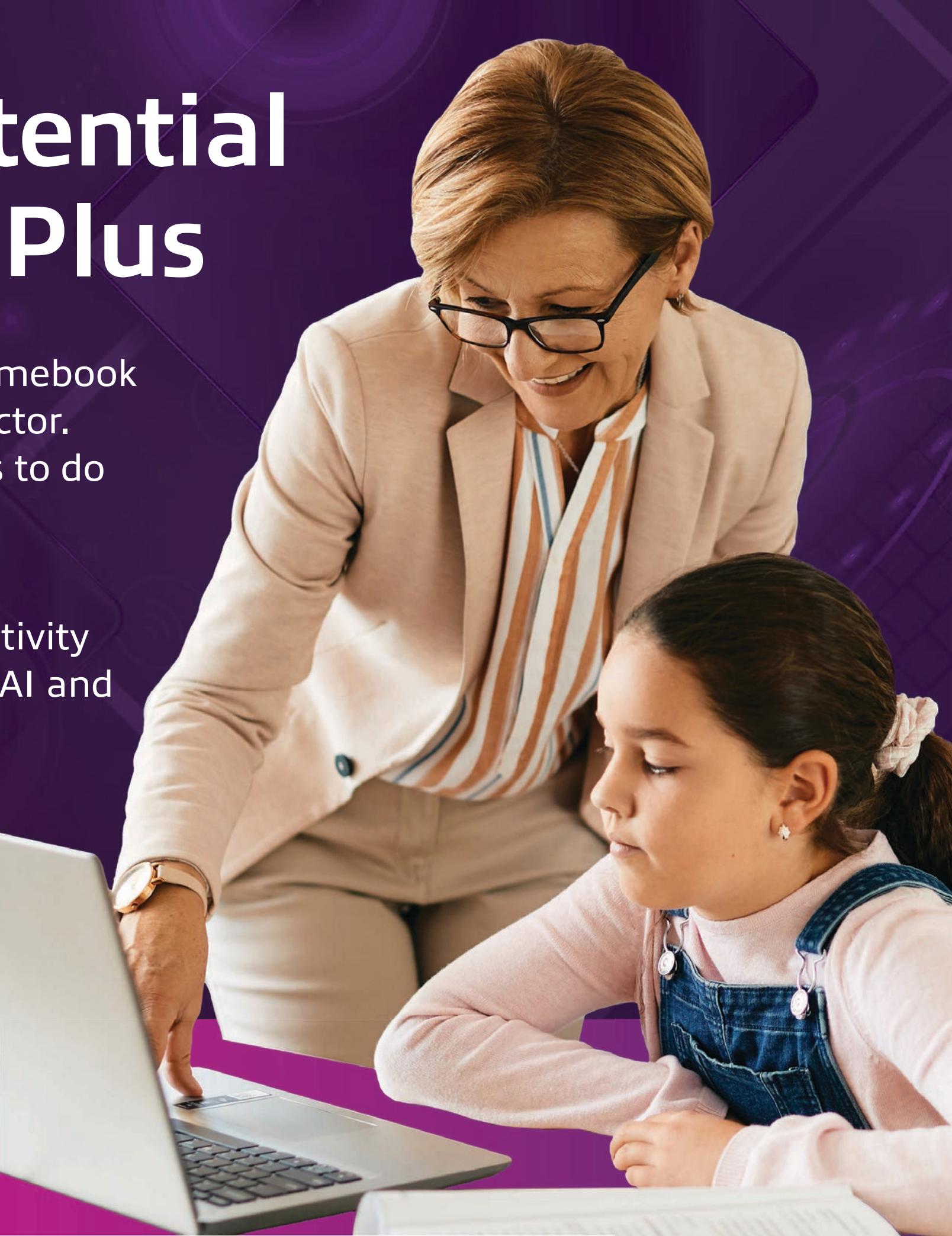

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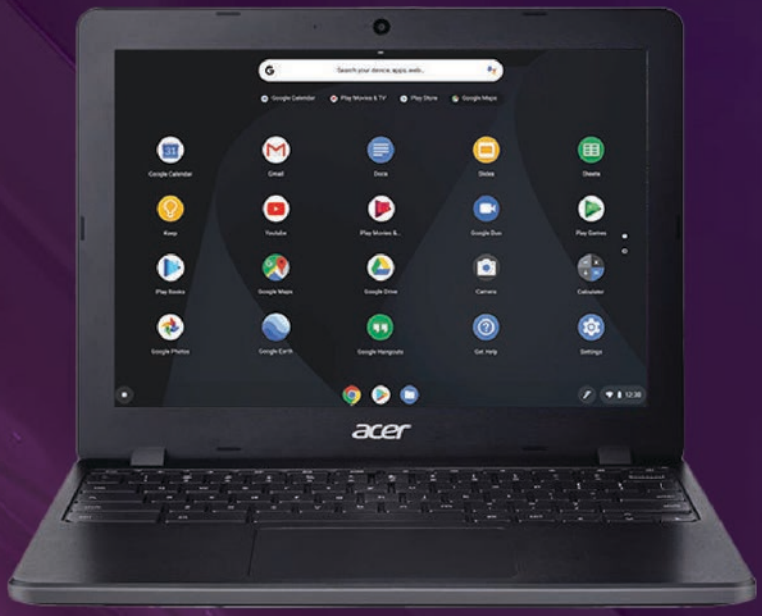

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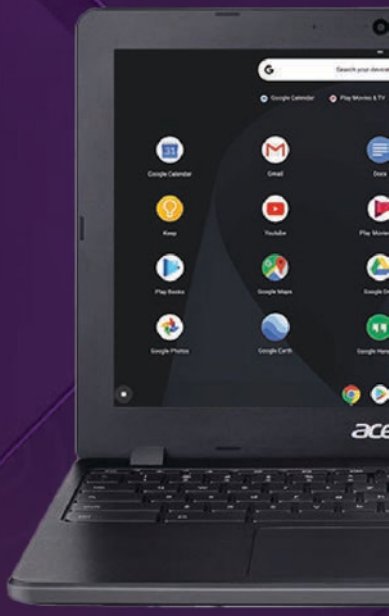

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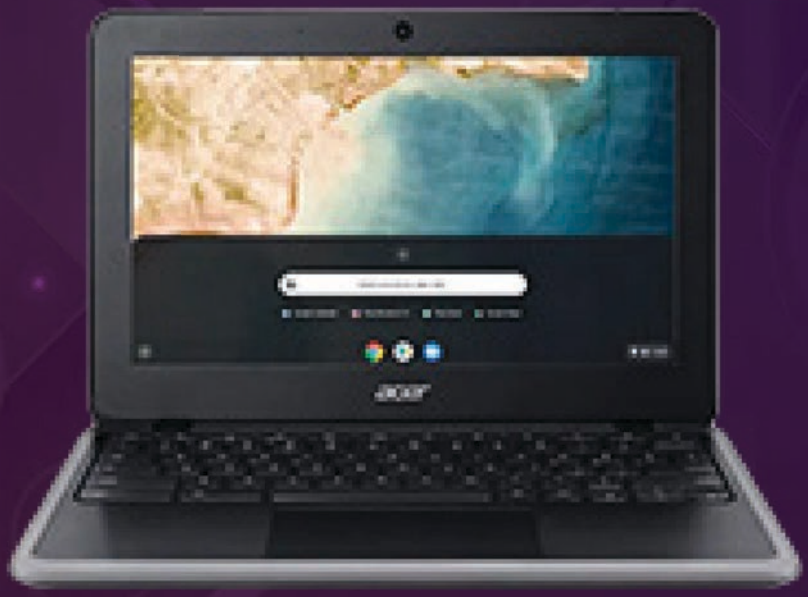

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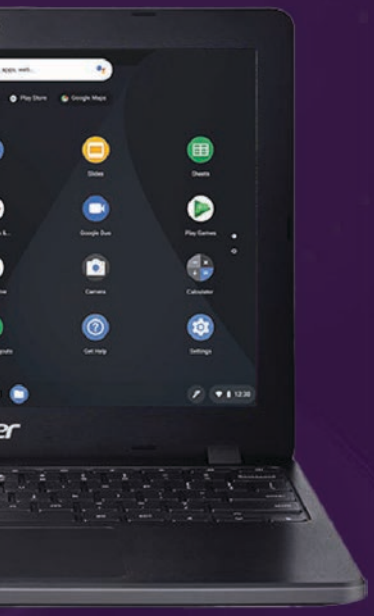

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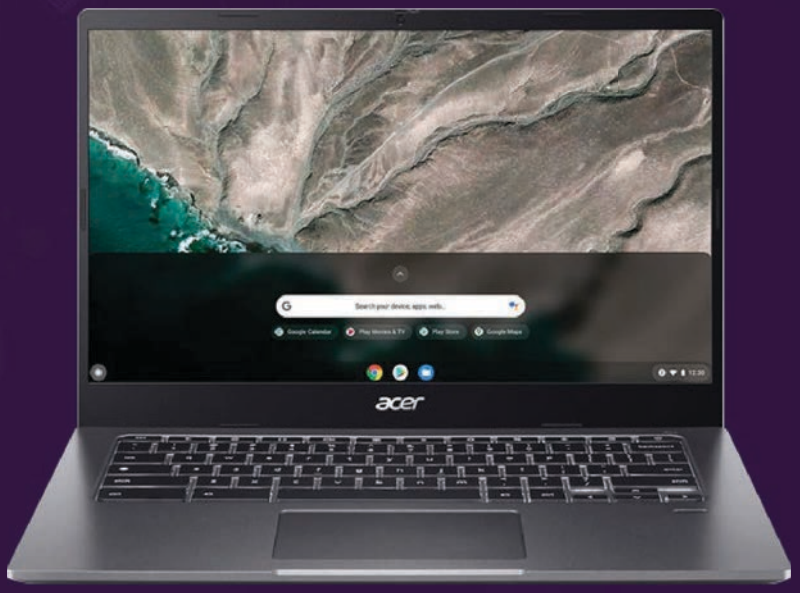

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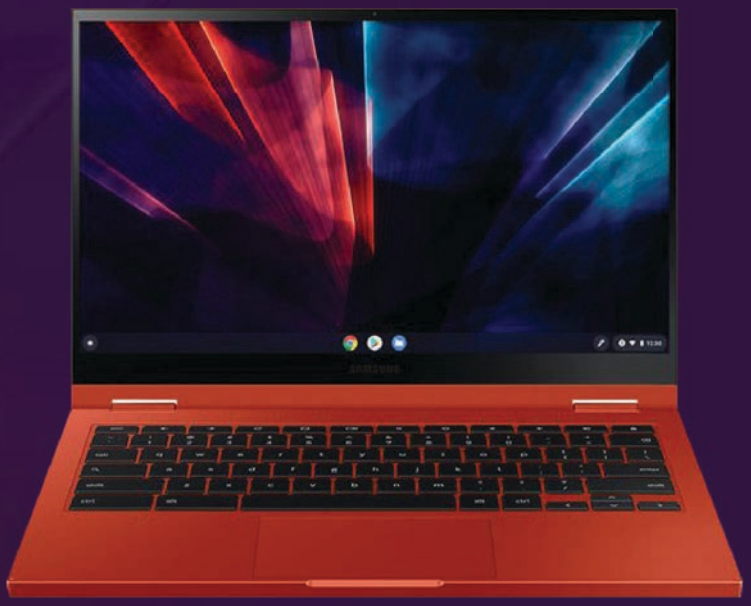

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Libraries

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tal resources including: e-books, online databases, and multimedia resources to support diverse learning levels. Librarians and media specialists are now tasked with not only ensuring students and educators have easy access to essential physical media and textbooks, but also efficiently managing an infinite amount of digital resources.

Here are three ways school districts are using libraries as a venue to provide students with effective, personalized approaches to learning:

Flexible spaces

School libraries have shifted to interactive spaces, equipped with 3D printers, coding kits, multimedia production equipment, whiteboards, games, and other tools that encourage communication and teamwork. Traditional beige, rigid layouts with rows of bookshelves and tables have given way to open, adaptable spaces that accommodate group work, discussions and various learning activities. Libraries now incorporate mixed-use furniture, movable partitions, and diverse seating arrangements to create spaces that can be easily reconfigured to accommodate various group sizes and activities. Design elements such as writable surfaces, multimedia stations, and intentionally placed power outlets are integrated to support collaborative projects and technology use. For instance, in our library, we have bike desks and crafting stations, and recently our students engineered a Makerspace-style mini-golf course throughout the aisles of our non-fiction section using found materials.

This shift reflects a move toward active and collaborative learning environments, as well as provides students with the tools and resources to engage in hands-on, creative learning projects. These modern spaces encourage creativity, innovation, problem-solving, and integration of STEM concepts, while giving students a "brain break" from traditional classroom learning.

By embracing flexible learning spaces, libraries are transforming into dynamic centers that not only house information but actively encourage social interaction, teamwork, and the development of crucial collaborative skills essential for success in today's interconnected world.

The digital shift

Along with traditional physical materials, school libraries now also house a wealth of digital tools, including e-books, online databases and multimedia resources. Especially relevant during periods of remote or hybrid learning, educational technology can grant students remote access to library resources before or after school, or in the event of an absence. Adopting student-centric digital platforms empowers learners to conveniently access essential learning materials, online databases, and educational software independently from anywhere, promoting continuous learning and opportunities for enrichment outside the physical school environment.

Integrating with edtech software and e-learning platforms allows librarians to collaborate with teachers in delivering digital content and resources directly to students, facilitating a seamless connection between classroom instruction and library resources.

By understanding and embracing digital media trends, school libraries are not only adapting to the changing educational landscape, but also playing a pivotal role in fostering digital literacy, creativity and innovation among students.

Changes in our schools' libraries reflect the broader educational shift towards preparing students for the demands of the 21st century, where digital literacy, collaboration, and adaptability are essential skills for success.

Partnering with a resource management system

Library resource management software enables librarians and media specialists to effectively manage physical and digital resources efficiently, inducing cataloging, circulation and inventory management, ultimately streamlining library operations. Valuable analytics provide insights into resource usage patterns, students' reading habits, preferences, and overall engagement with library materials. This enables librarians to make recommendations for resources that align with students' interests and learning preferences. It also provides the ability to curate collections that reflect diverse perspectives and cultures fostering inclusivity and equal learning opportunities to broaden students' world views.

Adopting a data-driven approach can inform librarians about the effectiveness of certain materials and guide future collection development, ultimately reducing the need for over-purchasing, duplicate spending or underutilization of resources, which results in efficient time management and cost savings.

Changes in our schools' libraries reflect the broader educational shift towards preparing students for the demands of the 21st century, where digital literacy, collaboration, and adaptability are essential skills for success. Shifting the focus from a "traditional library" to a space that promotes lifelong learning skills prepares students for continuous learning in an ever-changing world, contributing to the development of students' critical thinking, research skills, and overall academic success. eSN

Carrie Friday is the Media Specialist at Melbourne High School in Melbourne, Florida. She is a 2018-2019 Teacher of the Year Finalist for Brevard Public Schools, and her library program was awarded the designation of a Florida Power Library School by the Florida Department of Education. She writes and presents in local, state and national forums on best practices and innovations related to libraries and media in education.

AI

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the top global risk over the next two years–ahead of climate change and war.

The stakes are high, especially as the U.S. approaches a critical election year–one that will undoubtedly be subject to disinformation, a force that voters will remember as having played a critical role in the 2016 and 2020 elections.

As an academic who has studied how digital technology is used by governments and non-state actors for the purposes of repression and information control, these issues are especially concerning. There is an urgent need to promote greater critical thinking among young people, to give them the tools to detect what information is authentic and what has been manipulated. Information literacy, specifically across digital platforms, should be a mandatory part of every K-12 curriculum, to combat the rise of disinformation and develop more discerning students ready to take on an AI-driven future.

How and where disinformation can take place

Disinformation can show up anywhere, but it thrives on stories that appeal to emotions. Election issues and partisan politics are a prime example. During the pandemic, COVID-19 disinformation narratives, spanning the bizarre claims that the disease is spread by 5G and other conspiracies, spread faster than the virus itself–thanks to digital technology. Anti-vaccine groups essentially tricked Facebook's algorithms into allowing posts that spread disinformation by using a carrot emoji in place of the word "vaccine." Looking at climate change–another highly polarized and partisan issue–a probe into a subset of social media accounts revealed hundreds of AI-generated and stolen pictures used in greenwashing campaigns.

Praying on the emotions that emerged after the deadly October 7th attacks and the ensuing attacks on Gaza, deepfakes powered by AI have spread at an unprecedented pace. Soon after October 7th, a fake story emerged that

Qatar had threatened to cut off the world's natural gas supply if Israel didn't stop its bombing in Gaza, garnering millions of views before it was ultimately debunked. More recently, the United Nations Relief and Works Agency (UNRWA) has been a target of disinformation, thanks to a network of fake accounts and websites that have collaborated to spread accusations about the agency's ties with Hamas.

Not only is disinformation incredibly damaging to the delivery of accurate, verifiable information, it has eroded the public's trust in some of our most reliable institutions. Only 32 percent of Americans say they trust the mass media, a figure that is tied with record-low levels in 2016.

Engaging with disinformation and AI as teachable moments

Disinformation can be rectified through fact checking, but in many cases, a false story has already done its damage before it is corrected. Another strategy is 'prebunking,' a technique gaining momentum that helps to build preemptive resilience to misinformation.

We can combat the spread of disinformation by encouraging and teaching more critical thinking, especially about AI, algorithms, and deception, and the value of greater subject matter knowledge.

Whether you are a teacher in K-12 schools, a university instructor, or simply an individual who actively engages in online platforms, there are many steps that can be taken to ensure a greater understanding and literacy around disinformation and AI. This will in turn instill greater trust in the institutions and organizations that disseminate the information we are seeking.

Context-based case studies, such as videos of celebrities and influencers, can serve as important teaching moments. In my classes, I've challenged students to discern what is a deepfake or AI-generated image through exercises such as reverse image searches. This teaches them to detect clues such as fuzzy details, inconsistent lighting, out-of-sync audio and visuals, and the credibility of the image source. We spend time analyzing and discussing the spread, origins, and nature of social media manipulation, which equips students with important data literacy skills.

Bringing the study of disinformation to the classroom

What we know about the world ultimately informs how we approach disinformation and deception. Today's students need a cross-disciplinary approach that starts early, so the foundations of critical thinking and information literacy are instilled at a young age and stick with them as they grow and mature.

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Helping students learn new tech skills–and exceed expectations

Dr. Matias Arellano,
The Crockett Foundation

Last summer, the Crockett Foundation took a group of middle school students to Orlando to participate in a full-stack development (coding) workshop at Oracle Labs. The field trip was part of the Foundation's annual enrichment trip centered on exposing students to burgeoning aerospace and technology careers. Upon arrival, the workshop facilitator spoke to the group's director and commented that the day's lessons may be too advanced for this age group.

"They can put their heads down if they find the presentation too complex. I won't mind," he said as he explained the first of several coding problems for the day. After the first challenge was cued, a sprinkle of hands rose almost immediately. "That is correct!" "Wow, you guys are quick studies." Soon, the tone of the workshop changed, and the group of middle schoolers was on its way to gaining proficiency in the fundamentals of full-stack development and adding one more coding language to their repertoire.

So, how did the Crockett Foundation's students, most of whom attend Title I schools and live in historically under-resourced communities, achieve this sort of success? The answer can be found in a small but mighty after-school and summer program that sets high expectations to inspire young people to explore technology career pathways and become leaders committed to improving their communities.

Introducing tech-powered career pathways

The Crockett Foundation's Coding in Academics (CIA) program was launched in 2009 in a local middle school as an afterschool space to provide students with basic instruction on coding languages. Over the past 15 years, the program has expanded its offerings to include classroom instruction on general computer science, digital technology, mixed media, robotics, esports, and web design. Currently, the CIA program has been rebranded as the Digital Explorers, a robust STEAM education program that spans four middle schools and serves over 150 students.

Throughout the years, our Digital Explorers have visited NASA's Kennedy Space Center, the Magnet Research Lab at the FSU/FAMU campuses, and JetBlue University–all as part of the enrichment field trips to expose students to the grand possibilities found in the science and technology fields. Our purpose is twofold: (1) provide our students with unique experiential learning opportunities; and (2) expand their understanding of the STEAM careers of the future.

Helping students connect multiple disciplines

Oftentimes, the typical school setting pushes students to compartmentalize varied subject matter. Subjects like mathematics and science are often learned in isolation, making it difficult for students to develop comprehensive ideas across the different disciplines. We believe, however, that it is crucial for students to understand that every discipline informs and is connected to each other. Such a position can help frame classroom assignments as interdisciplinary tasks and projects that require knowledge from other classes and other subjects. It can compel students to tap into different intelligences and develop the habit of synthesizing knowledge.

We use an interdisciplinary approach to the STEAM education we provide in our Digital Explorers program. Projects like coding microbits or designing web pages require students to apply multiple intelligences and areas of knowledge learned in school and beyond, thus allowing students a space not only for STEAM but also for general enrichment and creativity. This year, we reorganized our course offerings under four subject matter pillars to ensure that students get a taste of multiple subject matter–whether it be esports, robotics, or shout-casting–with the intention of providing a diverse wheel of activities. Currently, we are cultivating lessons in artificial intelligence (AI) to guide students to better understand the strengths and limitations of Chat GPT in the classroom, as well as its current and future impact on tech careers.

Creating an exploratory setting

To facilitate our interdisciplinary approach, we believe that the classroom environment must be one that fosters experimentation and imagination. Students must be given opportunities where they are "at play" with technology and are challenged to apply their creativity alongside their problem-solving skills. Our instructors are subject matter experts who help guide their exploration by providing them with scenarios and simulations to solve.

In one esports class, the instructors teach the students basic techniques associated with manipulating the characters in the video game. In each class, some students are given a challenge that may require them to apply their technical knowledge in conjunction with their problem-solving skills. Other students take on the role of videographers and shoutcasters and are challenged to provide a detailed gamecast in a fun and enthusiastic manner. Few mistakes are corrected. Instead, instructors work on polishing the production quality by offering additional insight into the

Tech skills, page 22

What 1,000 families want your district to know about school-home communication

Russ Davis, SchoolStatus

Can you point to that moment where a teacher said or did something that changed the course of your life? I certainly can. In my case, it wasn't what the teacher said to me. It was what she said to my mother.

The reason I even graduated from high school was because my mom ran into my English teacher at the grocery store when I was in 10th grade, and the teacher mentioned that I'd missed class–a lot, actually. That chance encounter saved me from dropping out.

My mom also happened to be a teacher, so you better believe I started showing up to school daily and made up for the work I'd missed. But what I learned from that moment was how important it is to keep families looped into what's really happening with their kids at school. Because left in the dark, even the most well-intentioned parents can't step in to course-correct before it's too late. I became determined to bridge that communication gap between schools and home.

I started down that path as the youngest school technology director in my home state of Mississippi's history. But I quickly learned that one-size-fits-all methods didn't even come close to getting the job done. The tool we needed didn't exist. For true engagement, we needed two-way communication: conversations based on data, in languages families understand, and tailored to each child's needs.

I started my journey with that vision of seamless school-home communication. And more than a decade later, I'm still on a mission to empower families with insights and open doors for supportive interventions and greater collaboration between families, teachers, and administrators.

This past winter, my team was laser-focused on integrating six different companies into one cohesive set of solutions to better tackle some of the monumental struggles schools are experiencin–like chronic absenteeism. In the midst of this, I had my daughter's parent-teacher conference. I am that parent who's guilty of missing information in the firehose of communications that come home from school because they are often school-wide announcements and rarely have anything to do with my specific child. But the parent conference was solely about my kid and had my full attention.

If those high-value touchpoints are so meaningful for me, I knew they had to be for families across the board. We couldn't just develop "the next great thing" without understanding families' true needs and perspectives. That's why I was determined to put families' perspectives front and center. To truly empower productive school-home partnerships, we needed to go straight to the source–caregivers raising our nation's students.

We're continuously striving to improve and to help inform our ongoing evolution, we launched a survey. The 2024 K-12 Family Communication Survey aimed to gather insights from U.S. families and caregivers of K-12 children. The final survey results included more than 1,000 responses. And the results were stunning. The data shows just how much families crave a deeper level of transparency and collaboration.

Here is one of the starkest findings: **More than 78 percent of families reported that they don't receive suggestions and resources for how they can support learning at home, with middle and high school families reporting they receive even less regular communication on supporting student success.** We also learned that45 percent of all families only receive communications after a student is already absent. We know educators are overwhelmed and schools are being asked to

do more with less. Over the last decade we've seen time and again that in order to make a real impact on chronic absenteeism, schools need to be leading with proactive, positive communication. Families agree–71 percent shared they think positive updates celebrating good attendance would be helpful.

Perhaps most critically, for multilingual families, the struggle is even more **pronounced. While 70 percent of multilingual respondents prefer to receive text messages about their child, over one-third have trouble with the information coming home from school due to language barriers.** This cuts families off from insights critical to engagement.

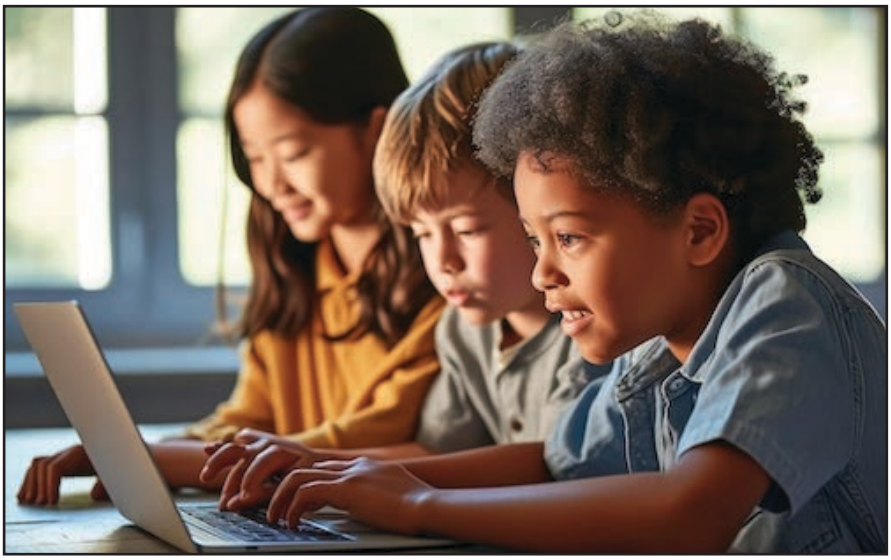
It's clear the status quo is still leaving many families in the dark. And I can't accept that. It's on all of us to reimagine school-home communication through a modern, family-friendly lens. The bottom line is this: Every student has both a teacher and family member out there who will advocate for them. My goal is to put a tool in their hand that will let them do so. eSN

Russ Davis is the founder and CEO of SchoolStatus, a leader in K-12 data-driven solutions that empower student success. In 2024, SchoolStatus released a report with key findings from a nationwide survey of K-12 families.

4 key findings on student engagement

A look at student engagement offers deeper insight into what engages, inspires, and builds confidence in students and educators

Laura Ascione, Editorial Director, eSchool Media



Schools in the U.S. and across the globe continue to struggle with student engagement, according to new research from LEGO Education. Only one-third of U.S. administrators, teachers, and parents/caregivers say students are engaged in learning, underscoring the critical need for more engaging learning experiences.

Nearly half of U.S. administrators (47 percent) believe student disengagement leads to increased absenteeism and decreased enrollment. More than half (61 percent) of U.S. teachers report that disengaged students demonstrate increased behavioral issues, according to the LEGO Education State of Classroom Engagement Report.

The report summarizes findings from a global survey of more than 6,000 administrators, teachers, parents, and students aged 5-14. It spotlights deeper insight into what engages, inspires, and builds confidence in students and educators.

The research yielded four key insights that call attention to universal challenges–and opportunities to meet those challenges–in education today.

1. Administrators, teachers, and parents agree that students are not engaged in their learning, but peer collaboration is a powerful engagement driver. "Student engagement is lower than we want it to be. Administrators and educators are concerned about academic performance and absenteeism, and in need of new approaches and resources," according to the report.

Key takeaway: Leverage student connection for with collaborative, hands-on learning. Hands-on learning fosters collaboration and uses students' natural inclination to connect with one another, driving engagement by making the material more fun, tangible, and relevant.

2. Engagement improves academic outcomes and student well-being. "Students who are engaged perform better in school and they're happier. Teachers who describe their students as engaged report much higher satisfaction with their performance across subjects than those whose students are disengaged," the report notes. "Beyond academic results and skills, teachers and parents want to inspire a lifelong love of learning."

Key takeaway: Engage the whole student to boost academic performance, attendance, skills development, and overall well-being. Ideally, the methods we apply in the classroom should help close the gap in academic comprehension and performance, while also boosting students' self-esteem and happiness to ensure their overall well-being and future readiness.

3. Improving student engagement improves teacher retention. "Eight in 10 teachers would be happier with their work and find it more rewarding if their students were more engaged," according to the research. "But teachers are feeling the weight of not having enough support. Compared to their global counterparts, U.S. teachers are more likely to say they need resources that are flexible for all learners."

Key takeaway: Invest in and empower teachers with ongoing support, professional learning, and resources to improve teacher retention and job satisfaction.

4. The path to increased engagement is paved in purposeful play. "The learning through play methodology leverages our natural and intuitive way of learning–which is actively engaging, meaningful, iterative, socially interactive, and joyful. This methodology is defined by its use of creativity and curiosity, encouraging students to adapt, build confidence, and problem-solve," the report notes. "It encourages active student involvement in the classroom, from asking critical questions to creating connections between concepts."

Key takeaway: Foster a culture of play to make learning engaging. eSN

In the age of bots and AI, how can students identify misinformation online?

Garrett Smiley, Sora Schools

In this digital age of AI and misinformation, today's students need to be better armed to discern fact from fiction.

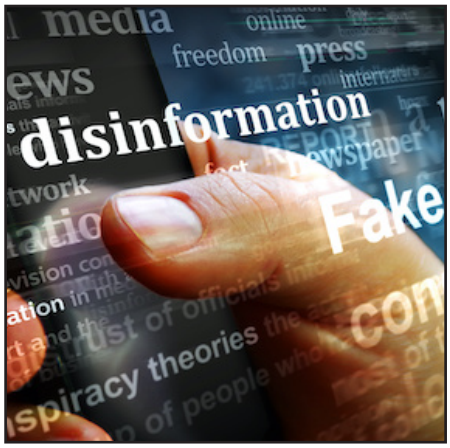
A 2023 survey by the Center for Countering Digital Hate (CCDH), a nonprofit that fights misinformation, found that "60 percent of 13- [to] 17-year-old Americans surveyed agreed with four or more harmful conspiracy statements–compared with just 49 percent of adults. For teens who spend four or more hours a day on any single social media platform, the figure was as high as 69 percent."

Whether it's relying too heavily on ChatGPT to write a paper resulting in an assignment filled with inaccurate information, or relying solely on social media to learn about world issues like the conflict in Gaza or upcoming national elections, learning to understand primary sources, question information, analyze data, and discern hidden agendas are top skills all students need.

While reading, writing, and arithmetic are still important, today's middle and high school students are bombarded with misinformation daily. Now that AI can effortlessly create convincing but fabricated stories, today's curricula must prepare students to navigate the murky waters of AI, bias, and misinformation.

It's possible to work this into interesting learning segments. For instance, a course or learning unit might explore issues like the Bermuda Triangle and examine which news sources are credible or not, what misinformation really means, and how to write an argumentative paper correctly. The subject matter translates into critical real-world cognitive skills.

Another learning opportunity could evaluate AI tools through ethical frameworks. Students might read and engage with the ideas of renowned philosophers and apply them to modern dilemmas in



artificial intelligence. They could ask questions like, "How do I measure and assess the benefits vs potential harms of this AI tool?" and "What can Immanuel Kant's Theory of the Categorical Imperative illuminate about how we make decisions around AI?"

My advice for educators is to:

- Incorporate skills like critical thinking into segments on current events that students will find interesting. Students can engage with questions like:
  - What kind of content am I encountering?
  - Is the information complete; and if not, what is missing?
  - Who or what are the sources, and why should I believe them?
  - What evidence is presented, and how was it tested or vetted?
- Explicitly teach students how to identify an op-ed versus a news article, and to consider who's behind a website or social media account.

Today, institutional brand names like CNN or NBC News are no guarantee of a single set of norms, values, or approaches to quality. Knowing what distinguishes news from propaganda, advertising, publicity, or entertainment is increasingly important. In their book The Elements of Journalism, Rosentiel and Kovach have identified the four following models of media (note that all or some of these models may be found within a single issue of a newspaper and its online outlets):

- Journalism of Verification: A traditional model that puts the highest value on accuracy and context (sense-making)
- Journalism of Assertion: A newer model that puts the highest value on immediacy and volume and in doing so tends to become a passive conduit of information (relays information without providing much further context)
- Journalism of Affirmation: A new political media that builds loyalty less on accuracy, completeness, or verification than on affirming the beliefs of its audiences, and so tends to cherry-pick information that serves that purpose
- Interest-Group Journalism: Targeted websites or pieces of work, often investigative, that are usually funded by special interests rather than media institutions; they are designed to look like news
- Help students understand the differences among:
  - Facts
  - Bias (pre-judgment about an idea, thing, or person, usually in a way that is unfair)
  - Well-reasoned opinion based on facts-based analysis
  - Poorly reasoned opinion based on bias or assumptions
- Incorporate AI tools into the classroom so students understand the power and limitations:
  - Aim for transparent and thoughtful AI usage, which involves citing the AI tool and user input, evaluating the output, and editing, combining, and elaborating on the output
  - Explain the differences between using AI as an assistant and tutor and using AI to execute tasks for you

Identify, page 21

3 online resources to encourage student career planning

Forging connections between students and industry professionals is key to opening their eyes to future possibilities

Joanna McCumber,
Anderson School District 5

For the last three years, I have worked as a digital integration specialist for Anderson School District 5 in South Carolina. In this role, I support teachers by providing high-quality learning opportunities through innovative integration of instructional technology. One of the schools I serve is a CTE high school and I am always on the hunt for new tools to prepare these students for their future careers.

According to a study conducted by ECMC Group, 81 percent of high school students surveyed said learning skills they need to be successful in the real world is a top criterion in choosing a path after they graduate. But there's a disconnect between what students know they want to learn and what they do learn. A YouScience survey found 83 percent of today's learners can't connect the skills they have and learn in school to future employment. Many students simply don't have access to industry professionals to get a better look at careers they are interested in and understand what skills and abilities are necessary for those fields. This can lead to thinking that pursuing that career in the future is impossible.

Knowing this, I work to provide students with opportunities for career-focused learning that encourages them to be curious about different careers. Here are some tools that I love to use and have found effective with my students:

Career Connect

I was invited to pilot Discovery Education's Career Connect platform during the 2023-2024 school year (and I'm happy to report that it is now open to all 4.5 million educators who use Discovery Education!). Through Career Connect, students connect with working industry professionals to learn about career journeys and what it's like to work in the field. Teachers can virtually connect students with industry professionals to talk about their careers, the concepts they use to solve problems, and the path they have taken to get to where they are today.

Career Connect offers many industry professionals for teachers to choose from, including software engineers, microbiologists, financial analysts and planners, and many more. For example, I worked with our computer science teacher to choose a professional that fit into her curriculum and submit a request through the Career Connect platform. The students were able to connect virtually with a Software Engineer and a Vice President of IT at a technology company.

It's not just about the connection with the professional, though. I help make the learning last by utilizing the turnkey worksheets. With this resource, students are prompted to share three things they learned, two things they can do to prepare for their future, and one way the speaker inspired them. At the end of both conversations, students were given an opportunity to ask questions and have a meaningful conversation with the professional.

A Day in the Life

A Day in the Life is a free digital archive of first-hand written accounts of what it's like to work in a specific field or role. Students will be able to find jobs that reflect their interests and get excited about their future. From social media manager, to oncology charge nurse, to video game lead animator, there are countless different career paths to explore.

These blogs are snippets of one day in the life of these industry professionals. Each one is time stamped, starting from when the professional first begins work that day and going until they arrive back home. Some articles provide additional background into their role's responsibilities, such as explanations of the research conducted by an entry-level scientist in biotech, before going into a description of a typical day.

Students can explore a diverse range of careers connected to their current interests through these short, easily digestible articles. The standardized for-

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Maximizing librarian efficiency with collaborative solutions

Collaboration and time-saving digital tools can significantly alleviate librarians' workload and ultimately enhance student outcomes

Kristen Mogavero,
John F. Kennedy High School

I love the flexibility that comes with working in a school library. Each day, I interact with students and teachers across all subject areas. I began my career as a high school science teacher, teaching Advanced Placement Biology and Environmental Science. However, I changed career paths six years ago after witnessing how much one of my former colleagues enjoyed being a school librarian. I still get to share my AP science background in my library media specialist role, where I participate in our AP Seminar and Science Research programs.

One of my favorite parts of my job includes helping classroom teachers choose what their students might want to read next. Instead of finding one novel for a whole class to read, I'm often helping English teachers find engaging books for 26 different students–and that's just one class.

The role of the school librarian and library media specialist is a dynamic one, constantly evolving to meet the needs of teachers and students. Today's school library staff are tasked with managing budgets, evaluating and expanding collections, overseeing makerspaces and technology, planning special programs, and assisting students with research. In some instances, library staff are even asked to split their time between schools, fill in as substitute teachers, or supervise lunch and recess periods.

When you add in the necessity of attending additional meetings and professional development sessions, it's clear that school librarians are facing a significant challenge in finding enough hours in the week to fulfill their responsibilities.

A recent Library Journal/ School Library Journal survey revealed that although 62 percent of school librarians said they are satisfied with their jobs, their overall satisfaction rate has dropped 8 percent since 2013. What's happened in the last decade? Both public and school librarians cited "a lack of time to do everything." Nearly one-quarter of school librarians took on extra work voluntarily, while 30 percent were given more responsibilities due to staff cuts.

As a library media specialist, I am fortunate to work with a team of four experienced librarians across the buildings in my district. Our collaborative approach allows us to share new ideas and strategies, while our administrators provide us with the necessary time to implement these strategies. I believe that collaboration, coupled with the use of time-saving digital tools, can significantly alleviate librarians' workload pressures and ultimately enhance student outcomes.

Creative collaboration with "book tastings"

We've all heard of wine and cheese tastings, but I've started inviting English classes to "book tastings." I mentioned previously that I work with English teachers to customize student book selections. If you multiplied that effort by six or seven classes, it would take a lot of time for one librarian to match more than 180 students with the right books. Here's how my book tastings work:

- I send each of the students Google surveys, asking them about their interests–everything from what shows they like to what they like to do in their free time
- I invite the students to an organized "book tasting," where I set up tables that include books of different genres

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- Students rotate between the tables and gain exposure to high-interest books
- At the end of the event, students select what book they'd like to check out

This is just one example of how creative collaboration can save time and help teachers better understand what students like to read. The interesting thing about librarianship is that sometimes it can feel a little isolating because there's only one of you in a building most of the time. We must actively seek out that collaboration piece, whereas classroom teachers are part of departments working toward the same goal.

Students must also understand how their library supports what they're learning in class. When I'm working with a teacher and students see my rapport with them, it gives the library credibility. After I've made a small connection with a student by teaching their class a lesson on information literacy, for example, they'll often seek me out in the library for something completely unrelated. These connections are essential and help create a shared culture of reading in our schools.

Use digital tools to streamline processes and enhance learning

There are several technology hacks that school librarians can employ to maximize their time and efficiency. For instance, I allocate blocks of time in my schedule each week for various activities. On Mondays, I focus on checking the current circulation, while Fridays are dedicated to recapping the week and sharing information with the principal or parents. Automating routine tasks, such as sending out reminders to staff through my book circulation system, frees up time for other important work. I also use Canva templates to update library signage or event posters, and many librarians find the app useful for creating weekly or monthly newsletters. AI tools like ChatGPT help me brainstorm titles for events or create writing prompts that I can share with students.

One of the most impactful digital tools we've implemented at our school is the Sora reading app. We discovered this digital app when we were looking for a solution that would allow us to continue our elementary school read-aloud program during the pandemic. It integrated with Google Meet, allowing us to continue the read-alongs and host virtual book clubs. Now, students tap into the app to access digital materials, giving them the option to read or listen to books on any device. Because our school is a 1:1 district and each student has the app downloaded on their device, all students have access to our entire district collection. When they add their public library card information to the app, they can also choose books across the county's collection. This tool has not only offered students greater variety and access but also supported our critical librarian-teacher collaboration piece, empowering us to better control spending and provide timely access to new titles.

Aside from offering students greater variety and access, Sora supports that critical librarian-teacher collaboration piece. We can search for titles and decide what books to "rent," allowing us to better control spending. Teachers can assign students to new titles available over 90 days within a day. If we were purchasing hard copies, we'd have to wait for purchase orders to be processed and for books to be shipped.

I'm particularly excited about Sora's ability to accommodate readers of varying abilities. Students can bookmark pages, add notes, get word definitions, and have sections of text read to them. They can even adjust the audiobook playback speed. We're invested in using the features of the app to empower our ENL students to become more confident readers.

Understanding what kids like to read and what formats they prefer takes the guesswork out of purchasing books. Data that tells us what titles engage students most helps us better plan for future lessons and independent reading choices. The Sora dashboard lets us share reports with teachers, offering key insights about their students' reading preferences and habits. These features not only allow librarians to do their jobs more efficiently, but they give teachers information that can potentially help them better accommodate struggling or reluctant readers.

Understanding what kids like to read and what formats they prefer takes the guesswork out of purchasing books. Data that tells us what titles engage students most helps us better plan for future lessons and independent reading choices.

The bottom line: Be your own advocate

We're all familiar with the stereotype of the strict, quiet librarian, known for being the school rule enforcer. It's time to break that stereotype and start recognizing school library staff for the creativity and innovation we bring to the job. By advocating for ourselves and our space, we can successfully carve out the time needed to champion literacy in our schools. eSN

Kristen Mogavero has worked as a library media specialist at John F. Kennedy High School in Bellmore, NY, for six years.

5 strategies to navigate science literacy in the digital age

Cory Kavanagh, Van Andel Institute for Education

Science literacy is a crucial skill for modern students. It equips them with the knowledge to critically evaluate information, understand scientific concepts, and make informed decisions in a rapidly changing world.

In today's digital age, however, both students and educators are at risk of information overload. Each day, we are bombarded with content from websites, social media, and a hundred other sources that demand our attention and seek to influence our behavior. It's enough to make the human brain short circuit.

So, how do we prepare our students to navigate this confusing world of digital tools without getting lost in a jungle of misinformation? We start by cultivating a mindset that makes critical engagement second nature, and that fosters the confidence they need to meet challenges head on.

Here are just five simple strategies that can help students navigate science literacy in the digital age:

1. Is It CRAAP?: The CRAAP strategy teaches students to evaluate information sources based on five criteria: Currency, Relevance, Authority, Accuracy, and Purpose. This teaches students to first ask important questions like, "How old is this information?", "Is it being published by a reliable source?" and "How does this compare to other research?" This allows students to assess the reliability of the information and helps them discern credible sources from misleading ones.

2. Employ fact-checking websites: It never hurts to call in a professional. Educators should encourage students to fact-check their own information against websites like FactCheck.org and Snopes. Both websites do a great job explaining why something is true or false and what details may have been embellished.

3. Bias Bingo: This activity engages students in identifying different types of bias in texts, advertisements, or media by marking corresponding squares on a bingo card. This interactive exercise helps students develop critical thinking skills and recognize bias, enhancing their ability to evaluate information objectively. There are many free bingo creator sites where educators can create their own cards to use with their students.

4. Data your way: Students can take ownership of their learning by choosing how they represent their data from an investigation. This will stretch their abilities and teach them a new way to graph or chart data. They may also observe other students' representations and want to learn that method. By sharing different representations with students, educators can allow them to rank them in order of how best they represent the data. As students grow in their data representation skills, they can start providing feedback to their own data representation creations.

5. Data choice chart: As students start learning how to make their own data representations, educators should use this resource to maximize their growth. The flowchart helps students determine what sort of graph representation they might want to make for their investigation. From there, they can use the graphing tips to help them create a representation that can successfully show what happened in their investigation.

Let's face it–teaching students science literacy is a challenge that won't be solved overnight. It will take diligence, creativity, and more than a little grit. Still, by using simple strategies and keeping up with the latest digital tools, teachers can create a path forward for students in the ever-changing digital landscape. With the right attitude, students won't just tackle the problems of today—they'll create a future where curiosity, critical thinking, and a steadfast commitment of scientific inquiry can flourish. eSN

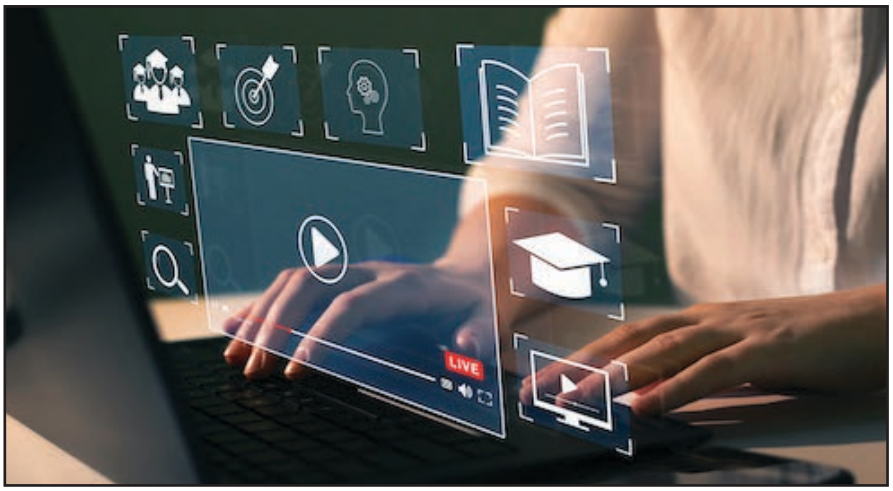
Cory Kavanagh is a Learning Specialists for Van Andel Institute for Education, a Michigan-based education nonprofit dedicated to creating classrooms where curiosity, creativity, and critical thinking thrive.

Schools must bolster network continuity as they adopt more technology

Alan Stewart-Brown, Opengear

Technological innovations have always been a vital aspect of education, with today's classrooms coming a long way from chalkboards and overhead projectors to the latest in cloud computing and the Internet of Things (IoT) devices. Network infrastructure is at the heart of these modern technologies, enabling the resources and devices teachers and their students use daily.

Unfortunately, many institutions do not have suitable networking solutions in place to facilitate always-on connectivity. Should a human error or a cyberattack compromise the network, these technologies could become unavailable, making essential educational processes impossible.



The consequences and causes of network downtime in education

As educators become more reliant on network-dependent technologies to do their jobs, the greater the consequences when these things become inaccessible due to unexpected network outages. Just as the driver who only uses their backup camera struggles to reverse without it, so is the predicament educators find themselves in today.

Online learning, for example, requires constant connectivity–should the network go down, students will have no way of accessing learning materials or turning in assignments. Likewise, network outages can block staff from accessing financial and operational systems and learning management applications. In some cases, educators may be unable to complete fundamental tasks such as taking attendance or using grading systems.

In addition to disrupting educational processes and jeopardizing productivity, network outages can be expensive, mounting up tangible costs in recovery fees as well as intangible costs such as damaged reputations. Research from Comparitech shows that between 2018 and mid-September 2023, ransomware attacks against K-12 and higher education institutions around the world cost over $53 billion in downtime.

In recent years, cyberattacks on K-12 schools have increased mainly due to these institutions being easy targets for bad actors. A 2022 U.S. Government Accountability Office report found that classes can take up to three weeks to return to normal after an attack. The report also notes that behind the scenes, some districts can take nine months to recover.

Bolstering network resiliency with Out-of-Band Management

There are two ways to manage a network: in-band management and Out-of-Band (OOB) management. Many education institutions rely on the former, which involves managing the network through the network itself. The issue with this methodology is that when an outage occurs, there is no way for network engineers and IT personnel to access remote devices and remediate the problem.

Alternatively, OOB management allows network engineers to establish a separate management plane that operates independently from the data plane or productive infrastructure. In other words, a school's technicians can use OOB management to reach remote devices without directly accessing the IP production address in the data plane. Even if the network is down, IT teams can still access, manage, and remediate devices remotely and securely.

Some best-in-class OOB management solutions allow network engineers to detect and remediate issues through proactive monitoring, including systems that automatically notify requisite personnel of network issues or environmental inconsistencies via email or SMS. By preemptively recognizing and remediating issues, educational institutions can detect faults before they spiral into failures, minimizing downtime and operating costs through operational continuity. Moreover, the ability to monitor and remediate problems remotely eliminates the need for schools to dispatch engineers to sites to make configuration changes and troubleshoot issues, saving precious time.

Additionally, OOB management enables education institutions to isolate and contain security incidents, like breaches or attacks. Locking down and quarantining affected parts of the net-

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5 steps to boost CTE programs and fill workforce pipelines

Laura Ascione, Editorial Director, eSchool Media

As the U.S. faces a shortage of critical healthcare workers, career and technical education (CTE) can help fill the pipeline and link students to valuable career opportunities.

Training healthcare workers to fill an increasing gap between available jobs and highly-qualified candidates begins in high school–and there is where CTE enters the picture, according to a new report from iCEV, conducted by Catapult X.

The World Health Organization predicts a shortfall of about 10 million healthcare workers by 2030–an alarming projection that highlights the need to help interested students explore healthcare fields. The U.S. Bureau of Labor Statistics predicts that by 2032, the U.S. will need about 1.8 million healthcare workers.

"As a global community, we need to engage students while they are young, partnering with industry, and ensuring that all CTE educators have the tools, lab activities, career exploration materials, and support to inspire the next generation of healthcare workers. Collectively, our health, quality of life, and longevity depend upon it," said Dusty Moore, president/CEO of iCEV.

Access to industry certifications through CTE programs enable students to demonstrate their skills, qualifications, and capabilities to employers immediately, connecting them with valuable career opportunities to fill the healthcare worker pipeline.

But to do this, CTE programs need highly-qualified educators with industry experience. In fact, securing teachers with industry experience is a top challenge for 60 percent of district CTE leaders, according to the iCEV study.

That challenge is followed closely by securing CTE program funding (53 percent), retaining qualified teachers (51 percent), developing work-based learning opportunities for students (48 percent), and finding engaging instructional materials (32 percent).

Student engagement remains a challenge, too–17 percent of CTE educators said they grapple with a lack of student interest in the health science career pathway as their top challenge. Developing work-based learning opportunities, finding engaging instructional materials, providing accommodations, and preparing students for industry certifications are among other top challenges cited.

Here are 5 actionable steps for CTE programs:

1. Secure partnerships with local healthcare institutions for access to internships, expensive and/or large healthcare equipment, and information about trends in the healthcare industry.

2. Offer a wide variety of industry recognized credentials and exams in dual credit programs, and encourage students take two or more courses in a single CTE Healthcare cluster.

3. Train school staff in best practices for CTE placement, focusing on student interest and prerequisite skills.

4. Create evaluation and vetting committees composed of CTE educators and administrators to review instructional materials, curriculum, resources, and vendor services.

5. Develop relationships with employers to learn about job-readiness expectations and incorporate those into CTE courses. eSN

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work will prevent bad actors from moving freely, protecting the sensitive data of students and staff. These capabilities significantly enhance network resilience in the face of cyberattacks, preserving network integrity to ensure learning and other business operations can continue without interruption.

The need for connectivity amid rapid technology adoption

As advanced technologies go from novelty to mainstream, more schools and universities across the world will adopt them, including artificial intelligence, wearable technology, natural language processing, and virtual and augmented reality, reshaping learning for the better. Simultaneously, students and faculty demand faster, more innovative applications and devices.

Although these technologies and applications will open the door to new educational possibilities, they will place greater strain on the network and increase the risk of outages, underscoring the need for always-on connectivity through OOB management. eSN

Alan Stewart-Brown is VP of EMEA with responsibility for overseeing all Sales, Channel Development, Marketing events and SE activities across the EMEA region. Alans' primary focus is the development and execution of sales strategies, talent development and channel initiatives that will ensure the accelerated growth of the Opengear business across the region. Alan brings 25 years of sales leadership experience gained across the technology sector, including Wireless LAN, Enterprise Software, BI Analytics and e-Commerce. Before joining Opengear Alan held Senior Pan-European Sales Management positions at Xirrus, Fiserv, AIM Technology, eColor and Phoenix Technologies. Alan holds a Bachelor of Science degree from Imperial College, London.

Thinking outside the classroom: Creative strategies to combat the teacher shortage

Businesses across the globe are adapting to meet changing needs– it's time the education industry does the same

Michele J. Stephens,
Rockdale County Public Schools

The teacher shortage in the United States has reached a critical point, threatening the quality of education and the future of our children. According to a recent report, schools are short nearly 360,000 positions, and what's more, a shocking 55 percent of teachers are burned out by the shortage and want to leave their profession early. Across the nation classrooms stand understaffed, and districts are left scrambling to find ways to fill the void.

Schools can no longer rely on the same recruitment and retention strategies that have been in place for decades. This crisis has permanently shifted the educational landscape, and traditional methods of filling our classrooms are falling short.

By thinking outside the box and implementing innovative strategies, school districts can create an appealing and sustainable career path for educators, ensuring that every classroom is led by a qualified and motivated teacher.

Here are three scalable strategies our district has used to build and strengthen our team of classroom educators:

"Grow your own"

Untapped teaching talent is all around us. Local industry professionals are a powerful resource pool of work-based knowledge and skills, but require varying levels of preparation before teaching a class. Some may lack a bachelor's degree. Some may have taught at the college level but have no experience with K-12. Some may be paraprofessional or classified staff, already extremely skilled at classroom work, but need to become certified.

Through our district's "teacher induction program," we've created new and flexible pathways for individuals of all educational and experiential backgrounds to become certified. By partnering with a local university, these individuals can become certified to teach at both a pace customized to their individual needs as well as a discounted rate. Once hired, we then provide ongoing, structured support to ensure they have what they need to succeed in the classroom.

Transformative tech

Adopting a live teaching platform like Elevate K-12 can expand certified teachers' reach to schools, helping to alleviate the teacher vacancy crisis without sacrificing teaching quality. State certified teachers stream in to lead real-time, synchronous classes, while paraprofessionals are on-site for classroom management and tech support.

By leveraging advanced technology, schools can tap into a broader pool of skilled teachers. Moreover, the interactive nature of these platforms, with features like live Q&A, collaborative tools, and instant feedback, can enhance student engagement and improve learning outcomes.

Live, interactive teaching does more than just help fill classroom vacancies. It can also expand core course offerings and electives and offerings such as test prep, career readiness skill development, summer school, and small group instruction in areas like special education or enrichment.

Embracing technology-forward solutions not only addresses the immediate shortage, but also paves the way for a more flexible and resilient educational infrastructure in the future.

Go global

Looking abroad for potential hires is a valuable and multifaceted solution. Bringing in educators from diverse global backgrounds not only fills vacant positions, but also enriches the educational experience with unique cultural perspectives.

International teachers can introduce students to different worldviews and foster a more inclusive and globalized mindset, preparing them for an interconnected world. Additionally, these teachers can bring specialized skills in critical subjects such as STEM, foreign languages, and the arts–areas where shortages are often most pronounced.

While there are many benefits, international hires may face challenges in understanding and adapting to our education system's standards and societal norms. Our district has put proactive measures in place such as special development seminars, cultural orientation programs, and mentorship teams to ensure effective communication and integration into the school community.

To overcome the teacher shortage, we must think beyond traditional recruitment methods and embrace innovative strategies that attract and retain talented educators. Forging partnerships with universities, leveraging technology, and expanding the search globally to reach a broader pool of candidates can help us build a diverse and dynamic workforce. It's time to invest in these forward-thinking strategies to ensure every classroom is led by a passionate, well-equipped educator. eSN

Michele J. Stephens is the Chief Human Resources Officer at Rockdale County Public Schools in Conyers, GA.

3 free STEAM education resources to nurture student curiosity

Engaging STEAM content in classroom is the first step to inspiring students to explore those career possibilities in the future

Lisa Gray, Allegheny Valley School District

According to the National Math and Science Initiative, STEM education helps students develop critical thinking and problem-solving skills, fosters communication, and bolsters teamwork. In my 25 years of teaching, I have learned that finding and infusing arts into STEM takes the learning even further. I am always on the lookout for STEAM-based resources and tools that engage and inspire my students. In my experience, I have found that using creative, dynamic tools significantly boosts student learning outcomes–but you need to know where to look.

In my current role as a STEAM Specialist, where I teach students from Pre-K all the way to 6th grade, it's important to use resources that can be tailored to their education level and lesson plans. Having access to STEAM education not only improves classroom outcomes, but better prepares students for the future. The US Bureau of Labor Statistics estimates the total number of STEM careers will increase at twice the rate–and pay more on average–than non-STEM jobs across the next 7 years.

Interacting with STEAM content in the classroom is the first step to inspiring students to explore those career possibilities in the future.

Finding good STEAM tools can feel daunting, so here are some of my favorite resources:

STEM Careers Coalition

The STEM Careers Coalition from Discovery Education is an alliance of industries and nonprofit organizations that provides access to STEM resources and connects students to industry professionals. The free resources are intuitive, easy to use, and tailored to be turnkey. The search features and filters make the career profiles and videos quick to find. There are suggested grade levels for each video and activity, linked questions, and suggested additional resources to follow up to the lesson.

The videos and questions can be embedded into Google Classroom or other learning platforms. This means you can curate content, activities, and lessons for students to complete without jumping to different platforms or tabs. It is a great way to integrate conversations regarding future careers into current STEAM lesson plans, and my students are always excited to connect what they learn in class to a real-life career and STEM professional.

Whether you are encouraging space-obsessed students or inspiring the next generation of engineers, STEM Careers Coalition provides educational materials designed to reflect the diversity of the students watching. Not only is STEM Careers Coalition easy to use, but its commitment to making STEM education equitable and engaging more than earns this resource a spot on this list.

Verizon Innovative Learning HQ

Verizon Innovative Learning HQ offers engaging and cutting-edge resources to support educators and students around the world. This completely free-to-use resource gives you access to 350+ K-12 lessons and activities across all subjects. From stop-motion animation to orbits modeled using augmented reality to in-depth looks at cells and other organisms, there are hundreds of STEAM-focused lessons to choose from.

The search function is very effective, allowing teachers to filter by grade level, subjects, standards, technologies involved, and more. It is easy to find a lesson tailored specifically to your students' age and interests. The AR and VR apps offered immerse students in the content, making each lesson accessible and engaging. The AR/VR resources remain a student favorite in my classroom.

This database offers a lot of strong, innovative materials that supplement more traditional classroom resources. The emphasis on downloadable apps

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15 unique virtual field trips for students

Virtual field trips are engaging and connect students with opportunities, ideas, and places they might not be able to access inside a classroom

Laura Ascione, Editorial Director, eSchool Media

Virtual field trips have become widely available thanks to more accessible virtual reality technology, and they saw a surge in popularity during the COVID-19 pandemic when physical field trips were impossible or severely restricted.

But virtual field trips have always offered engaging and innovative alternatives to in-person field trips that are either too cost-prohibitive or geographically impossible to visit.

Students can see large-scale processes up close, explore outer space, go back in time to visit ancient civilizations, or travel to different countries to see famous landmarks.

Here are some great virtual field trips to explore with your students:

1. Statue of Liberty: Created from 360-degree photos, students can explore the interior and exterior of the Statue of Liberty, along with taking a peek inside the museum.

2. The Journey of Water: Roughly the size of Texas and Oklahoma combined, Colombia is the second most biologically diverse country on Earth—home to 10 percent of Earth's plant and animal species! There are over 300 different ecosystems in Colombia. In this virtual field trip, students will explore the magical páramo ecosystem and the stunning mountain landscapes found just beyond the capital city of Bogotá.

3. The Anne Frank House: Explore the hiding place of Anne Frank and her family in virtual reality using the 'Anne Frank House VR' app. The app provides a very special view into the Secret Annex where Anne Frank and the seven other people hid during WWII.

4. American Museum of Natural History: Virtual field trips allow students of all ages to observe Museum exhibits up-close and complete an activity in order to gain scientific understandings.

5. National WWII Museum: These virtual trips are streamed directly into your classroom–no special technology required. Focusing on the national impact of World War II, take your students on a cross-country tour of historic sites while examining fascinating artifacts and exhibits at The National WWII Museum. Hosted by student reporters, these virtual field trips will help your students understand how the war affected young people just like them.

6. The Louvre: Visit the museum rooms and galleries, admire the palace architecture, and enjoy the views.

7. The Great Barrier Reef: The Great Barrier Reef collection was part of the first group of underwater panoramic images added to Google Maps, the next step in our quest to provide people with the most comprehensive, accurate and usable map of the world. With these vibrant and stunning photos you don't have to be a scuba diver—or even know how to swim—to explore and experience six of the ocean's most incredible living coral reefs. Now, anyone can become the next virtual Jacques Cousteau and dive with sea turtles, fish and manta rays.

8. The Nature Conservancy: Designed for ages 9-15 but customizable for all ages, virtual field trips allow students to travel the world and explore natural environments without leaving the classroom. Each virtual field trip contains a video, teacher guide and student activities.

9. The British Museum: Explore more than 60 galleries at the British Museum from home. Gallery pages feature a range of exciting resources, including virtual tours with Google Street View, object highlights, timelines, family activities and facts.

10. Great Wall of China: As China's most famous attraction, the Great Wall of China is an essential stop on all China tours. Commonly considered a wonder of the world, the Great Wall boasts a history of over 2,000 years and stretches more than 3,000 miles across several provinces of northern China, making it one of the most impressive ancient structures on the planet.

11. Ellis Island: On this Scholastic virtual field trip, students will experience first-hand what it felt like to come to the United States and progress through Ellis Island.

12. Georgia Aquarium Ocean Voyager Cam: Explore the ocean's great depths, virtually. Dive into vast, open waters in Ocean Voyager to learn about our whale sharks, manta rays, and over 90 other species that live in this 6.3-million-gallon exhibit.

13. Amazon Fulfillment Center: From the online store to your doorstep, discover how computer science, state-of-the-art engineering, and incredible people deliver customer orders at Amazon.

14. National Museum of Natural History Virtual Tours: The Smithsonian National Museum of Natural History virtual tours allow visitors to take self-guided, room-by-room tours of select exhibits and areas within the museum from their desktop or mobile device. Visitors can also access select collections and research areas at our satellite support and research stations as well as past exhibits no longer on display.

15. Johnson Space Center: Join Boeing and Discovery Education on a mission to inspire the world through aerospace innovation with an exclusive virtual field trip to historic Johnson Space Center in Houston, Texas. This behind-the-scenes tour will introduce students to just a few of the amazing Boeing employees who are preparing to write the next chapter of space history with the launch of the Starliner/CST-100 spacecraft and the deployment of the Space Launch System (SLS). eSN

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and creative approaches to standards-based lessons offers news ways to teach STEAM concepts.

Another reason I love Verizon Innovative Learning HQ is because it offers a wide range of professional development modules. These tailored professional development resources helped me sharpen my STEAM teaching skills and support teachers in developing new skills in the ever-changing educational landscape.

STEAM lesson plans for LEGO Education Solutions

With 400+ lessons ranging from Pre-K to 12th grade, these LEGO-based STEAM lesson plans are another versatile classroom tool. Combining coding and LEGOs into interactive stories, students get to investigate a wide variety of STEAM concepts right at their desks as they follow along with the demonstrations.

Each lesson plan includes student worksheets and evaluative materials, write-ups on the relevant STEAM phenomena, and clearly-stated educational standards. The content is easily filtered by subject, grade level, and products needed to complete the lesson. Subjects include a wide range of STEAM topics, including computer science, social emotional development, math, creative exploration, and more.

The lesson plans and building guides are free to access. The LEGO products referenced are extensive and can be used for more than one lesson; the SPIKE Essential Kit, for example, is used in almost 70 different lessons in various ways.

This tool will engage your students in a new and dynamic way, helping them to understand complex topics and concepts through multi-step builds, discussions, and reflections.

If you are looking for comprehensive digital resources, this list is a great place to start. All three of these suggested resources and activities offer ready-to-use, standards-aligned curriculum that are fun and engaging for teachers and students alike. As I prepare for the upcoming school year at the Allegheny Valley School District, I know that I can visit any of these awesome tools and find materials that will get my students excited to learn. eSN

Lisa Gray is a STEAM Specialist at Acmetonia Elementary School in the Allegheny Valley School District. With 25 years of teaching experience, Lisa Gray loves integrating new and innovative resources into the classroom. During her tenure, Lisa has held roles of Special Education Teacher, Classroom Teacher, STEAM Specialist, and Science Olympiad Coordinator.

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mat, regardless of industry, makes the insights accessible and engaging, allowing students to quickly dive into a wide range of possible careers.

Forage: Free Virtual Work Experiences

Forage offers free-to-use job simulations that expose students to a wide array of careers and skills. Through partnerships with top companies, students get a unique look into what being an industry professional would be like. Industries range from marketing to software engineering, with popular companies such as J.P. Morgan and Lululemon offering job simulations. This is a great tool for students looking to develop industry-related skills and explore real-life projects.

These short, self-paced, open access lessons guide students through a variety of tasks, giving them insight into the company and developing the skills needed to hold this position. Students follow along with videos and text resources and compare their answers and projects to real company deliverables. For example, Lululemon explores Omnichannel Marketing, walking students through creating integrated marketing plans and key data analysis tasks.

My advice: Just begin!

Career planning can seem daunting to students, especially if they do not feel they have the necessary connections or skills to enter the work force. Forging connections between students and industry professionals is key to opening their eyes to future possibilities. These resources are a great way to encourage your students to consider different career paths, giving them access to key professionals and skill development opportunities. So now, the challenge is to just get started. eSN

Joanna McCumber is a Digital Integration Specialist for Anderson School District 5 in South Carolina.

Identify

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- Use an AI competency rubric or scale to illustrate the skill sets required to use AI responsibly
- Teach students how to fact-check information:
  - Help students explore how to corroborate information they see online
  - A good rule of thumb is to "trust, but verify"
  - If a statement looks suspect, determine if you can find 2-3 credible, unbiased sources that can corroborate it

We cannot ignore the new set of skills students today need as they graduate and head into the real world. A key part of our job as educators is to prepare students to be critical thinkers and help them decipher information. It's also more than just teaching students to navigate online sources; we must prepare them for the new challenges AI presents. eSN

Garrett Smiley is the CEO & Founder of Sora Schools.

AI

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In Finland, media literacy constitutes a core component part of the national curriculum, starting in preschool. They start with understanding the basic elements of media, and build from there to understand more complex elements, such as identifying sources. It is not a single subject–rather, it is taught across different disciplines, including Finnish language and literature, math, and art to grow a well-rounded set of analytical skills. In a survey published by the Open Society Institute in Bulgaria, Finland has ranked No. 1 of 41 European countries on resilience against misinformation for the fifth time in a row. Finland's population also has a higher level of trust in news and other institutions, with 76 percent of Finns considering print and digital newspapers to be reliable, according to a survey conducted by market research company IRO research.

There is no denying the impact of disinformation and the stronghold it is having on political processes around the world. We will doubtless see the use of disinformation throughout 2024 U.S. presidential election battle, but a concerted effort on developing greater critical thinking can help alleviate the impact. By becoming more knowledgeable about what disinformation is, as well as different countries, cultures, and subjects, we can better navigate the array of disinformation scenarios in the digital world and foster a questioning mindset. eSN

Dr. Marc Owen Jones is an Associate Professor of Digital Humanities at Northwestern University in Qatar

Tech skills

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equipment and its possibilities.

This exploratory approach requires a learning environment that facilitates flexibility. We partnered with School Specialty to build our Innovation Lab four years ago and they were immensely helpful in both giving us new ideas and reaffirming them along the way. The furniture we installed was mobile, multimodal, and comfortable. This setting helped us create a "judgment-free zone" where students can make mistakes free of consequences.

Walking into one of our Innovation Labs, one will see couches, mobile chairs, or even simply cushions on the floor for students to make circles that help engender a sense of collaboration. This modular furniture, smart TVs, laptops, and game consoles, encourage collaboration and experimentation, while at the same time allowing for autonomy and creativity. It may all look a bit chaotic, but a sense of organization is implicitly present in the space. While the traditional classroom often focuses on paper and pencil or even a laptop computer, our sessions focus on tools and materials that require hands-on learning objects. Along with the instructor, students are compelled to cultivate a sense of curiosity by exposing students to new ideas and concepts to explore.

Almost always, the Crockett Foundation Innovation Lab stirs us to ask, "What could happen if we had one extra hour with students? What could happen if they have the right console, an extra laptop, a smart TV, or a drone? What could we all gain from that additional investment?

Every day we get closer to answering those questions. With a strong belief in exploration, experimentation, and education, the Crockett Foundation can inspire the next generation of inventors, technical entrepreneurs, engineers, and designers–the next generation of innovators and explorers. eSN

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