Artificial Intelligence (AI)



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EDITOR'S NOTE

AI is transforming traditional learning landscapes. This Spotlight will empower you with steps educators can take to be prepared for teaching in an AI-powered world; tips for using AI to plan lessons, email parents, and help struggling students; insights on principles to consider when crafting AI guidance; a guide to the generative AI tools teachers are using in their jobs; and more.



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What Teachers Need to Know About AI, But Don't

Students must be critical AI users. 3 steps for teachers to prepare

By Lauraine Langreo

rtificial intelligence experts and K-12 educators agree that it's imperative for the education system to prepare students to be successful in the age of AI. ChatGPT and other artificial intelligence tools like it are here to stay, and now is the time for schools to find ways to use the technology for the benefit of teaching and learning while being aware of its potential downsides.

But a summer 2023 EdWeek Research Center survey shows that a majority of educators (77 percent) said they or the teachers they supervise are not prepared to teach students the skills they need to be successful in an AI-powered world. So, what do they need to prepare students to be critical AI users?

Here are three big answers to that question, gleaned from conversations with classroom teachers, teacher educators, AI researchers, and technology CEOs:

1. Teachers need time to learn what AI is, how it works, and how to use it.

Before teachers can use AI as a tool in the classroom, they need to be familiar with it. Some educators talked about concerns that they are already so far behind on AI knowledge and skills that students who have grown up learning how to use all kinds of digital technologies will be running circles around them.

"My concern is education isn't out in front guiding the kids through this," said Chad Towarnicki, an 8th grade English teacher in the 4,800-student Wissahickon school district in Pennsylvania. "I'm learning about it through the kids. They're already familiar with this foreign tool, but I'm playing catch up."

District leaders and principals will need to make sure teachers have time to learn what these AI tools can and cannot do so they can gain confidence and be able to use it responsibly with their students. District leaders and principals need to provide mentors or colleagues for teachers to work with as they explore these tools as learners and as educators.



2. Preservice teacher training needs a revamp.

Some researchers and educators I talked to said schools of education are not exactly known for being ahead of the curve on preparing prospective teachers to integrate emerging technologies into instruction.

"Teacher-preparation programs really have to grapple with what's changed," said Glenn Kleiman, a senior adviser at the Stanford Graduate School of Education whose research focuses on the potential of AI to enhance teaching and learning. "That traditionally has happened much too slowly and piecemeal, not systemically."

Kleiman said he was not optimistic about teacher-preparation programs matching the pace of technological change anytime soon because they are just not "strong or powerful" enough for such a job.

It's critical that schools of education act quickly to ensure prospective teachers have a foundational understanding of AI, know how to use it effectively in instruction, and are able to infuse AI literacy into every subject so that they're ready when they get in the classroom.

3. Standards and assessments will need to change.

Many educators are concerned about stu-

dents cheating on assignments by using AI tools, and they say the only way around that challenge is to change what they're asking students to do. They need to create assignments that are impossible to complete with these tools or they need to allow the use of these tools but require students to acknowledge and document how they used them.

For some teachers, such as Towarnicki, these changes are easy to make, but it'll be difficult for others in districts or schools that are more restrictive about curriculum or instructional adjustments. Policymakers and other stakeholders will need to come together to figure out how to change the curriculum and standards so that "the skills students are expected to learn in the 2030s are relevant to the 2030s, instead of continuing to teach the same material that was taught in the 1930s," said Hadi Partovi, the CEO of Code.org, a nonprofit organization dedicated to expanding access to computer science education in schools.

If teaching with and about AI is not part of states' standards, it just becomes something that's "nice to have," which means it won't come with funding and support, and schools will have to figure out how to prioritize it against a million other requirements, said Adam Geller, the CEO of Edthena, which provides teacher professional development using AI tools.



Published November 10, 2023

Can AI Improve Instruction? 3 Teachers Share How They Use It

By Lauraine Langreo, Lydia McFarlane & Caitlyn Meisner

any artificial-intelligence experts have touted AI's groundbreaking potential to help people become way more efficient at their jobs, and a lot of educators have been trying it out for themselves.

Sixty percent of teachers said they've used ChatGPT—an AI-powered tool that can instantly answer seemingly any prompt—in their jobs, according to a nationally representative Walton Family Foundation survey conducted in June and July.

Of course, there are potential downsides to the new technology. It can produce inaccurate or biased responses based on faulty data it draws from, and it has the potential to cause huge data privacy problems.

Despite those risks, teachers have used AI-powered tools to plan lessons, create ruMy goal is to show them how to use AI responsibly and effectively and model that for my students."

APRIL EDWARDS 6th Grade Teacher Texas brics, provide feedback on student assignments, and respond to parent emails. And they're looking for other ways to use the technology to make their jobs easier.

In interviews with Education Week, three educators described how they've used AI tools in their work and how they plan to use them in the future.

Using AI as a planning tool

April Edwards, also known as @alldayapril on TikTok, is a 6th grade social studies teacher in Texas. She uses her TikTok account, which has amassed more than 60,000 followers, to share ways that she uses AI in her instruction. Primarily, Edwards uses AI for planning purposes.

"I use AI to help create lesson plans, presentations, write emails, and to create checklists. AI is a great resource to use as an initial starting point for a task or to give you ideas," Edwards said.

In one of her TikTok videos, Edwards uses the embedded AI assistant, "Magic Write," in the graphic design tool Canva to create a "6th grade lesson on dinosaurs." It gave Edwards an entire lesson plan broken down by time dedicated to each topic.

In that same video, Edwards showed examples of how to prompt the tool to create a template for emailing parents. After inputting "professional email from a teacher to a parent about upcoming field trip," the Magic Write tool created an email template, which Edwards would only have to replace with the specifics, such as students' names and the field trip time and location.

Edwards began to use AI tools, such as the Canva Magic Write, in the spring of 2023, after it had been out for a few months. However, she still has not introduced AI to her students, because she wants to fully understand it before allowing students to use it in the classroom.

"I have not let my students use AI yet, but I plan to incorporate it this school year," Edwards said. "My goal is to show them how to use AI responsibly and effectively and model that for my students. If I am using AI irresponsibly, then so will my students."

While she advocates for AI use by teachers, she thinks if AI begins to replace the role of teachers, that would be going too far.

"There are so many things that a teacher does that AI would never fully be able to replicate a wonderful teacher," Edwards said.

Still, Edwards believes that AI is the future of education. While only a few other teachers in her district use AI, Edwards thinks all teachers should start learning how to incorporate it into their classrooms.

"Whether it is a year from now or 10 years from now, eventually, AI will be incorporated in education," Edwards said.

For teachers who want to start using AI, Edwards has some suggestions on where to start.

"My advice is to start using AI with platforms that you are already familiar with," she said. "For example, I use AI inside of Canva for Education. Canva is a tool that I use everyday, so when they implemented AI into their platform it was easy and fun to play around with it."

Helping English learners with assignments

Mike Kerr, a high school English-learner teacher in Tennessee, uses ChatGPT to reduce Lexile levels—the measure for how difficult a text is—for his students.

As an English-learner teacher, Kerr uses most of his class time to teach the content he's supposed to, such as the alphabet and high-frequency vocabulary. But he often saves time at the end to help students with any assignments they're having trouble with—usually reading assignments.

High school students are often assigned to read relatively complex classic novels, such as 1984, Of Mice and Men, and The Great Gatsby—texts that have archaic language or specific vernacular. Those reading assignments "can be a real big task for an English learner in their first couple months here," Kerr said.

To help students with those reading assignments, Kerr uses his planning period to use ChatGPT to give summaries of works of literature or to help answer whatever questions other teachers are asking his students, so he can better guide them through the text or assignment. Using ChatGPT saves him time from having to read all the assigned literature to help each student.

For instance, one of Kerr's students had to read William Shakespeare's *Julius Caesar* and find evidence of ethos, logos, and pathos.

"He's never seen anything like that before," Kerr said. "He was feeling really anxious because it was hard for him to connect to the text."

So, Kerr copied and pasted the prompt into ChatGPT. They read ChatGPT's answer together and then opened the book and found the answer in the original text of Shakespeare's work. After that, they talked about how they could put the answer in the student's own words. Kerr never has students use ChatGPT unsupervised.

"Stressing that process of finding information and then citing the evidence, finding where it is literally found—because ChatGPT has a record of giving inaccurate information—had a tremendous effect of reducing the student's stress," Kerr said.

Streamlining feedback on student work

Dyane Smokorowski, the coordinator of digital literacy and citizenship for Wichita Public Schools in Kansas, said she's been thinking of ways to streamline feedback on student work through learning management systems like Google Classroom or Canvas this school year. She hopes students can become acquainted with AI through teacher-controlled activities that engage them in conversation with ChatGPT.

Smokorowski said the process she imagines goes like this: A student is writing a draft of an essay in the learning management system and then asks the teacher for specific feedback on part of the essay. The teacher, in turn, copies the feedback request into ChatGPT and gets a response to review before passing the feedback back to the student. This has the potential to save teachers time and, as a consequence, create opportunities for teachers to feature more writing assignments in their instruction.

"It's a writing coach, it's not rewriting their content or putting their voice in," Smokorowski said. "At the end of that back-and-forth experience, I'm going to ask the students to write a reflection on where they began in their writing, the feedback they received, what they think now, and what they learned about being a better writer."

Smokorowski also said she uses ChatGPT to make accommodations for student interests and learning challenges. Because she does not have knowledge on every learning difference or middle school pop-culture trend, she can ask ChatGPT to provide a writing sample for students to interact with, which makes personalized lesson plans much easier to craft.

"If I have a student who completely disengages because he does not feel like it's relevant or I have a student who might be excited about e-sports or science, I can tap into that student's passion and personalize this lesson to build engagement," Smokorowski said.

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Published October 17, 2023

The 93 Questions Schools Should Ask About AI

By Alyson Klein

oes your district have a dedicated point person on the role of artificial intelligence in K-12 education? Are you requiring vendors that use AI algorithms in their products to ensure they are free from bias? Do you have employees with the right skills to evaluate, procure, and operate generative AI?

Those are just three of the 93 questions educators should be asking themselves as they seek to craft policies around generative AI, the technology that powers tools like ChatGPT. The list of questions is featured in "Generative AI Readiness Checklist," a report from the Consortium for School Networking (CoSN), which represents district tech leaders, and the Council of the Great City Schools, which represents urban district leaders.

The checklist was designed to help districts think about AI in a hands-on, actionable way, said Keith Krueger, the executive director of CoSN.

Since a sophisticated version of ChatGPT was released last year, schools have been hungry for specifics on AI policy. But the reality is that most states and districts have held off on providing that guidance.

Instead, there's been a "lot of high-level vision statements, either it's 'the promised land' or it's 'the sky is falling,' but there's little practical guidance to help school system leaders think about what are the most important things they need to do," Krueger said. "Educators are clamoring for guidance around policy. So, the cavalry is coming."

The list of questions is divided into half a dozen areas for different teams within a school district to consider. They include questions for superintendents or executive leaders and operations teams, and officials working with data, as well as questions around technical readiness, security, and risk management. The work was done in partnership with the National Association of Secondary School Principals, the National School Public Relations Association, and the State Educational Technology Directors Association.

Another resource called Teach AI, an initiative launched by a cadre of nonprofits to help schools think through AI guidance and policy, offered another piece of practical advice: A toolkit of principles to think through when crafting AI guidance.

The toolkit recommends schools consider:



Educators are clamoring for guidance around policy."

KEITH KRUEGER

Executive Director, CoSN

- **Purpose:** How can AI help achieve educational goals?
- Compliance: How does AI fit with existing policies?
- Knowledge: How can schools advance AI Literacy?
- **Balance:** What are the benefits and risks of AI?
- Integrity: How does AI fit into policies on things like cheating?
- Agency: How can humans stay in the loop on AI?
- Evaluation: How can schools regularly assess the impact of AI?

The toolkit was developed by nonprofits Code.org, CoSN, Digital Promise, European Ed-Tech Alliance, and Policy Analysis for California Education or PACE, with help from school leaders, teachers, and tech organizations.

Published October 5, 2023

180 Degree Turn: NYC District Goes From Banning ChatGPT to Exploring AI's Potential

By Alyson Klein

ew York City Public Schools will launch an Artificial Intelligence Policy Lab to guide the nation's largest school district's approach to this rapidly evolving technology.

That development—announced Oct. 4—is quite a turnabout for a district that less than a year ago banned ChatGPT, an AI-powered research and writing tool, spurring other districts to follow suit.

In May, New York reversed its decision to block ChatGPT on school networks. And now, the district wants to take the lead on crafting policy around the smart use of AI for teaching and learning and the management of schools.

"Technology is constantly evolving and New York City Public Schools aims to remain at the forefront of these changes," Nicole Brownstein, a spokeswoman for the district, said in an email. "We are thrilled to announce that we will be implementing an AI Policy Lab in partnership with national experts and school districts across the country focusing on human-centered AI implementation, equity, safety, ethics, effectiveness, and transparency."

The effort won't be confined to the Big Apple. New York's AI policy lab will serve as a hub for a national network of similar labs in school districts across the country. Roughly 15 school districts of various sizes and demographic mixes will likely be part of that network initially, said Erin Mote, the co-founder and executive director for InnovateEDU, a nonprofit partnering with New York on the lab.

New York's AI policy lab will consider questions about cybersecurity and privacy, as well as ways to use AI-powered tech responsibly for teaching and learning. It will examine how to communicate with parents about AI-powered tech, whether and how AI can be used in lesson planning and other teacher tasks, and the ethics of allowing students to use generative AI tools like ChatGPT for school assignments.

The lab will "think about: under what conditions could AI use be safe, accountable, fair, and efficacious?" Mote said. "We're go-



ing to have to tackle some sticky issues here around [reconciling] the technology and existing policy."

New York will make any of the resources it produces—including sample letters to families explaining AI tools or materials to help districts clarify their AI policies for educators—available to any district that needs guidance.

Because New York is one of the most diverse districts in the country, the policy lab will help the K-12 field consider how AI could be used with a range of student populations, Mote added.

"I think New York gives us an opportunity to think about some really interesting challenges that education systems are thinking about all over the country right now," she said.

'Different moment' from the rush to ban AI last school year

Schools are hungry for specifics on AI policy, but most states and districts have held off in providing them.

That's likely to change soon, said Keith Krueger, the executive director of the Consortium for School Networking or CoSN, a membership organization for district technology officials.

AI has developed rapidly, but policy on

how to handle it in schools has been slower to percolate, he said.

Krueger recently spoke to a group of superintendents and district tech officials in California. When he asked how many of them had policies and procedures already on the books on AI, few raised their hands. But when he shifted the question to "are you considering AI policies?" nearly every hand went up. This is a "different moment from De-

This is a "different moment from December, January," when a new version of ChatGPT was released, shocking educators with its humanlike ability to craft anything from an essay on Shakespeare to a chocolate chip cookie recipe, and prompting a "rush to ban AI," Krueger said.

Now, many district leaders understand that AI is "probably in almost every product that you already purchase, every new product that's coming out," Krueger said. "Having a way to think about what you're allowing and not allowing and what questions you're going to ask vendors is absolutely critical."

CoSN is partnering with the Council of the Great City Schools to create an "AI readiness" checklist for districts, to help guide their thinking about AI policy. CoSN and CCGS's work is separate from the AI lab in New York, though there will be collaboration between the two efforts. Published August 29, 2023

ChatGPT Is Everywhere in This District. Here's What It Looks Like

By Caitlyn Meisner

hatGPT has found a friend in the Wichita district in Kansas. The district has integrated artificial intelligence technology into almost every aspect of daily life, offering a glimpse into what a 21st century classroom may end up looking like.

The 50,000 student-district, unlike many other districts across the country, embraced the new technology soon after it was introduced last year. And educators there do not plan on stopping.

How it all started

Rob Dickson, the chief information officer in the district, said he was introduced to the new chatbot right around the time it launched in 2022. Almost immediately, he decided to present it to district leadership to become familiar with it. Then, district leaders decided staff members across the district needed to be trained as well.

Dickson said he recognized AI like this was not going away: It was here to stay. So, the district had to act accordingly. Dickson compared the phenomenon to when phones first started becoming an issue in schools. In the early 2000s, he remembered taking phones away from students if they were being used during instructional time. Now, the script has flipped; phones are inseparable from the person they belong to.

"So many of our kids have things that are a part of their life that is hooked up to [their phones] ... like medical monitoring," Dickson said. "I think with AI, it will be the same way. It's finding the balance within the school system."

Training for teachers started in the new calendar year. The first to be trained were instructional coaches.

Tia Jones, one of the technology instructional coaches in the district, was excited to introduce a new time-saving tool to teachers. She said although many teachers first experienced the chatbot through inappropriate student use, she knew teachers could get on board with the right approach, with a deeper grounding in the technology.

"The main thing with teaching teachers



CHATGPT IN ACTION

Trish Moya, special education math teacher, asked ChatGPT to "explain Pi to 8th grade student" and then to make the explanation "even more simple". Here's how it responded:

Of course! Imagine you have a big circle, like a giant pizza. Pi is a special number that helps us figure out how big the pizza's edge is compared to how wide it is in the middle. It's like a secret number that's always close to 3.14, and we use it in math to talk about circles and round things. It's essential because it's a unique number that keeps going on and on forever without ever repeating the same digits. So, whenever we talk about circles, we use pi to help us solve the problems!

about any technology is to introduce how it's going to help them save time in the classroom," Jones said. "That's where we all start ... [and] some of them got very, very excited and some were a little bit hesitant."

In April, the entire educational staff was given access to ChatGPT and then participated in a district-wide summer "ChatGPT camp" to master the ins and outs of the chatbot and maximize its use in the classroom. Only the faculty and staff in Wichita Public Schools have access to ChatGPT. If a student is using AI in the classroom, they must be supervised.

Reducing the stigma for teachers

Several educators in the district said there were many ways for teachers to capitalize on ChatGPT to streamline their day-to-day.

CHATGPT IN ACTION

Dyane Smokorowski, coordinator of digital literacy and citizenship, wanted to use shadow puppetry as an introduction to a unit on Mesopotamia and asked ChatGPT for help. (She had to clarify that the unit was for 11-year-olds.) Here's one of the scenes it generated:

Scene 1: Village Life

N: (Standing behind the backdrop) Welcome, curious minds, to the enchanting world of ancient Mesopotamia. In a small village nestled by the river, lived two young friends, Zara and Darius.

Z: (Holding a shadow puppet of herself) I am Zara, a weaver's daughter. I help my mother spin wool and weave beautiful fabrics.

D: (Holding a shadow puppet of himself) And I am Darius. I assist my father in tending to our fields and the plump sheep.

"It's a good way to get unstuck from a position," said Katelyn Schoenhofer, a middle school technology coach in Wichita. "Sometimes, with teachers, we have these really cool ideas and dreams that we want to accomplish. The logistics or the small details end up bogging us down—making things so much quicker, finding ways to use AI to help get feedback to kids, help lesson plan, even to help communicate with parents and make those things more streamlined."

Schoenhofer also said she has had to work to reduce stigma surrounding AI with many of the teachers on her campus.

"Our teachers start out ... fearful before they work with kids on this," Schoenhofer said. "It's very similar to when we first had the calculator, where teachers were worried kids wouldn't be able to do the math. Now, teachers are worried that kids aren't going to be able to think for themselves, but that's not the case. We're teaching them that it is a tool."

Amanda Young, the principal of Education Imagine Academy, a virtual K-12 school in Wichita, said grappling with new technologies is essential so they can guide their students to use it.

"I think it's important not only for teachers to be able to use AI, but for students to start learning how to use those tools because ... those are tools they are going to need to be successful in life and in their professions," Young said. "We have to make sure that we're using tools that [students] are going to be using—not tools that we are comfortable with."

In her experience, Young said, using AI does not harm the critical thinking abilities of students, but it can foster a deeper understanding of the new technologies that come into fruition in their own lifetimes.

"How do you find out that it can't give you a description of a video unless you try it?" Young said. "New technology can be scary for teachers just because it's the unknown, but ... it can be a way that can create community and learning in a classroom because it takes the teacher and students collaborating together to think critically to find out how the tool works."

Where ChatGPT falls short

The educators in Wichita said they also recognized that ChatGPT has limitations.

Dickson, the district CIO, said the district is rolling out Bing Chat Enterprises as a way to fill the gaps in ChatGPT. Teachers will now be able to input student information into the system without compromising student data. Staff must use their district credentials to sign into Bing to chat with the AI; this is different from ChatGPT because the latter is a public model and if educators use it, they run the risk of leaking private information.

"It's all protected within our environment," Dickson said. "It's not used by Microsoft in any way, they have no access to it and it's not used to train any models. It would give teachers an added set of security as well as being able to do more things with it than what they're limited to on public ChatGPT."

Dickson also said ChatGPT struggles to summarize videos or podcasts for students. He said the chatbot often "hallucinates" and mischaracterizes the long-form medium it's asked to summarize. He also pointed out that ChatGPT is limited to only 4,000 characters.

"If you take a long-form conversation like a podcast, you're going to reach that limit very quickly and not have the whole space," Dickson said.

Kyle Schoenhofer, a computer science and esports teacher at Education Imagine Academy and husband of Katelynn, said he has seen problems when ChatGPT is used for higher-level math in place of a calculator.

"Once you start getting into algebra and stufflike that, it just loses all reality," Schoenhofer said.

In many other ways, though, the school system has sussed out how to use ChatGPT to its advantage in almost every possible position in the district. Here's a sampling of how Wichita educators are using the technology.

Communicating and adapting texts

"I've used it to expedite and create things more streamlined for myself. Emails, instructions for an asynchronous course [get dropped] into ChatGPT and ask it to rewrite for clarity, optimism, positivity, and to add emojis to provide context for ... students [when] English may not be their first language or students who have learning differences." —Dyane Smokorowski, coordinator of digital literacy and citizenship

"As an interrelated teacher (special education), I have to adapt just about everything I teach. It is really a time and brain saver to be able to put in what I want to teach directly [for word problems], copy and paste, and then say, 'Explain in the style that I need explained.' Then I can through and pick out the parts that work and don't work."

-Trish Moya, special education math teacher

"We do a weekly newsletter to our parents, and it takes a lot of time because we have 13 grade levels at our school. Narrowing down the most important information is ... something that takes a lot of time for me as the creator. It saves me so much time that I can then devote to helping my teachers, students, [and] families in the virtual setting." —Amanda Young, principal of Education Imagine Academy

Research

"If there's any kind of research that I need to provide to teachers, I will go to ChatGPT and say, 'Give me five articles based on critical reading processes that I could share with teachers.' I do have to go into those and make sure that's the direction (I'm) wanting to go with those articles. It's a good starting point." —*Tia Jones, technology instructional coach*

"Right now, I would say research is huge for us since we're about to build a strategic plan. I can ask conversational-based questions, dig deeper, and can even take my lens and widen it if I want to. Research is just more complete than it ever was before."

-Rob Dickson, chief information officer

Student feedback, planning and gamifying lessons

"I will copy and paste student work in [ChatGPT], state the standard, and ask for feedback ... to improve their work. It's not necessarily grading the paper. ... I planned an entire semester of lessons completely using ChatGPT as a tool. [AI] is not going to replace us, but it can really help us save time."

-Nancy Henderson, middle school English teacher

"ChatGPT is good if you already have a lesson that you want to gamify ... or need something fun. This lesson stinks, it's boring, [so] go in and reinvent it on ChatGPT just by saying, 'I want something better.' It may not give you the answer, but it'll give you the creative juices to go and finish it."

—Kyle Schoenhofer, computer science and esports teacher

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Inclusion in tech at McDaniel High School

Lavar Askew, a software architect at Intel, doesn't have to look far to find an example of how a teenager can make a large impact. In 1979, Intel hired an 18-year-old named Pat Gelsinger — and now, 44 years later, he's the international chip giant's CEO.

That's one reason why Lavar has so much passion for mentoring high school students and helping to connect them with life-changing opportunities. But it's not the only reason. As a young man, he had a passion for STEM, but didn't know what to do with it. "When I was a kid, I was always told that an engineer was someone who drove trains," he recalled. "And even though I had a liking for math and science, I just didn't know where I could go to find out more about it."

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Giving back at McDaniel

Today, Lavar leads a program at McDaniel High School in Portland, Oregon called "Inclusion in Tech" that gives students the direction and guidance that he didn't always have as a young man. As one of Oregon's most diverse high schools, McDaniel has no shortage of talent, yet the community it serves has too many kids with limited opportunities to hone their talents using cutting-edge devices. When Lavar started working with McDaniel students, he was stunned by how much they knew before he even walked in the door. "One of the things that I noticed right off the bat is that I don't have to teach them anything," he said. "They already know how Blender works. They already know how Sketchbook works. Many of them already understand calculus."

What the students were missing was access to computers that could keep up with their ambitions. Lavar explains, "What I felt like I needed to do was get some of the devices that I saw in the lab, like the ASUS Chromebook Flip CX3, and I needed to provide those machines to the students."

The right tech creates new opportunities

Schools around the country use Chromebooks for classroom activities, and it's not hard to understand why. These affordable devices are easy to deploy and easy to manage. Yet not all Chromebooks are built to empower the ambitions of high school STEM enthusiasts.

Antonio Jackson, an educator and the founder of the non-profit organization Building Blocks 2 Success (BB2S), works as a community manager in this project between Intel and McDaniel High School. His years of experience working with underrepresented youth have shown him clearly what these students need from a laptop as they explore their interests and develop career skills.

"The one thing about young people is they get equipment and they're trying to break it," Antonio explains. "They're trying to figure out how this all works. They'll have so many things running. They're always trying to test the limits, and you can only test the limits when you have equipment that you're able to push to the limits."

The Chromebook CX34 Flip's touchscreen and 360° hinge prove invaluable for students with interests in game development, character design, and digital art. It's easy to flip the screen over into stand mode and sketch out an idea in Sketchbook using the garaged stylus. 9th grader Tyson Nguyen commented that the display "really helped me with digital design and it just showed a new path to me, because I'm not really good at art, but I just like doing it." Another student Kelly Leoung, explained how the CX34 Flip was an asset for her biomed class: "We have to use a lot of sources in our projects, so if I can switch between tabs seamlessly, that would take me much less time."

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Putting the learning experience first

School districts know that durability is essential. Kids aren't always gentle with school laptops, so their classrooms are typically equipped with highly repairable devices that are built to go the distance. "It's not that durability and repairability aren't important," Lavar clarified, "but they shouldn't be more important than the learning needs of the students."

In the Chromebook CX34 Flip, Lavar identified a laptop that offered the performance and features he needed to engage his students and the durability that the school's IT decision makers required.

Students benefit from high-performance hardware

Today's high school students have a wide range of exciting career opportunities ahead of them in science, technology, engineering, and mathematics. Yet too many kids lack the opportunity to realize how talented they are — and how much today's tech companies need their skills, passion, and creativity. That's why we support digital inclusion initiatives around the world to promote digital equity, regardless of education status, gender, ethnicity, and other key socioeconomic factors.

As Lavar thinks about the prospects ahead of his students at McDaniel High School, his mind keeps returning to the example of his CEO. "Pat Gelsinger is the CEO of Intel. He joined Intel at 18 years old," Lavar said. "One of the questions that I ask myself is, where would Intel be without an 18-year-old Pat? Well, I got some kids. They're 14 and I think they're little Pats. I think there's more out there. We don't have to wait until they graduate from college, from undergrad, in order to employ them or make them interns or mentor them. I say, I think we should just start right now. Start where they are."

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Beyond ChatGPT: The Other AI Tools Teachers Are Using

By Lauraine Langreo

any educators have tried out ChatGPT, an artificial intelligence-powered tool that can instantly generate a response to seemingly any prompt, and they say it—and other similar tools—have helped them improve their work.

They've used generative AI tools to plan lessons, help struggling students with their assignments, streamline feedback on student work, and more.

Artificial intelligence technologies replicate human-like intelligence by training machines and computer systems to do tasks that simulate some of what the human brain can do. It relies on systems that can learn, usually by analyzing vast quantities of data and searching out new patterns and relationships. These systems can improve over time as they take in more information.

Of course, there are potential downsides to the new technology. It can produce inaccurate or biased responses based on faulty data [Teachers have] used generative AI tools to plan lessons, help struggling students with their assignments, streamline feedback on student work, and more."

LAURAINE LANGREO

it draws from, and it has the potential to cause huge data privacy problems. Experts have cautioned that when using these tools, it's important to know how they were trained and what datasets were used. It's also important to be skeptical about any information these tools provide and to double-check it with a trusted source.

ChatGPT, created by research laboratory OpenAI, is one of the most popular generative AI tools, being the first on the scene. Since its release last year, many more like it have cropped up. Below is are other generative AI tools teachers are using to help them with their work:

Google Bard and Microsoft Bing Chat

Bard and Bing Chat are, respectively, Google's and Microsoft's competitors to ChatGPT. Bard and Bing Chat function similarly to ChatGPT: They aim to give human-like answers to questions. They're free and easy to use. They can write lesson plans and emails and provide feedback on assignments. But there are some differences.

For instance, the free version of ChatGPT was only trained on data available up to 2021, while Bard and Bing Chat can give more upto-date information. Bing Chat runs on the premium version of ChatGPT, which has been trained on a wider range of information and is more advanced than the free version, while Bard uses a different model. Bing Chat also often cites where it got its answers, while Bard and ChatGPT do not.

Like ChatGPT, these chatbots are prone to making up information or producing biased responses. When using these tools, it's best to always double-check the facts with other sources.

Hello History, Character Al, and other persona chatbots

Hello History, Character.AI, and other persona chatbots allow users to have real-time conversations with bots purporting to be historical figures, world leaders, and even fictional characters. The tools are trained on data available online and are supposed to mimic the speaking style and tone of their characters. These tools could be helpful for students to learn more about historical figures or fictional characters, but they are usually powered by the same technology behind ChatGPT, meaning that they can provide inaccurate information. For example, when Education Week's Alyson Klein asked an Obama chatbot about his education record, it got a lot wrong.

DALL-E, Midjourney, and other art generators

Midjourney, OpenAI's DALL-E, Adobe Firefly, and other similar tools can generate realistic and detailed images from textual descriptions. Students and teachers could use these tools to generate artwork to use in their assignments or presentations. But there are ethical concerns. Artists have filed lawsuits claiming that these companies trained AI tools on their artworks without consent. And experts say, while it's good for brainstorming, it's always better to ask students to create art without the use of these AI tools, so they can learn to be independent of these tools.

Education Copilot and other "teacher assistants"

Many education-focused AI assistants have cropped up, as well. Here are some examples: Education Copilot, Teacherbot, and Eduaide.AI. They all do tasks that ChatGPT can do for educators. They can generate lesson plans, handouts, writing prompts, project outlines, student reviews, and more. It's unclear whether these tools are powered by the free or the premium version of ChatGPT, but many come with a cost, so educators tend to use ChatGPT instead.

Al assistants in existing ed-tech tools

Many ed-tech companies that are fixtures in the K-12 world have also added AI features to their products. EdPuzzle, an online video editing and formative assessment tool that lets teachers cut, crop, and organize videos, has added an AI assistant that can automatically generate questions that teachers can add to their video assignments. It can also grade students' answers based on teachers' ideal answers. Kahoot, a game-based learning platform, has also added a feature that can automatically generate questions based on any topic a teacher chooses. Canva, a free graphic design platform that has an educational version, added "Magic Write" and "Magic Design" features that generate presentations and documents based on any prompt.

OPINION

Published October 16, 2023

I'm a Math Teacher. Graphing Calculators Taught Me a Thing or Two About AI

Artificial intelligence will enhance learning if we use it right

By Stacie A. Marvin

here is no avoiding the constant chatter about AI these days. Really, it's been months. As a math teacher, this struggle over new technology feels oddly familiar. More than 30 years ago, the National Council of Teachers of Mathematics released standards about how to teach with the "newly emerging" calculator technology. Charmingly, this was a physical book that you had to buy, but I digress.

I remember watching, as an intern teacher, transfixed and amazed as my former high school teacher, and now my mentor, used nascent TI-80 graphing calculators to make connections I'd never seen between tables, graphs, and equations of polynomials. When I say "never seen," I mean I had never even thought about this. I had mastered her class five years before. I had mastered calculus and other higher-order math on my way to earning my college math degree. And yet I sat there and learned everything from my high school pre-calc course all over again. As my brain rewired itself, creating new connections, I swear I actually felt my fingers tingle as I made notes.

A month later, my understanding of trigonometric functions likewise deepened as I took over the class to learn to teach students using those same graphing calculators. Suddenly, as I watched the sine and cosine waves unspool from the unit circle on the calculator's screen, I grasped for the first time why they were called "cyclic functions."

That was 1992, and the math teaching community has struggled ever since, productively most of the time, to integrate calculators of increasing complexity and ability into all levels of instruction. For a while, we could discourage calculator use with pithy statements like, "You're not always going to have a calculator with you!" (Insert iPhone here.) I still run into students who've been taught trigonometry or ratio and proportion facts



in isolation and through procedures, but we continue, as a community of math educators, to generally move in the direction of capitalizing on the calculator's ability to enhance conceptual understanding.

We came to view calculators as tools, like protractors or straight edges, which students must be taught to use. We coached students on how to determine if an answer is reasonable or garbage. We modeled strategic use, pointing out both when calculators can enlighten and when they can hinder progress.

Over time, some of the content we teach has changed. We've worked to define what computational "fluency" means over and above precision of calculations. Fluency includes drawing on mathematical understanding to find flexible and efficient pathways to correct answers. Knowing most students will pull out their phones to perform even the smallest of calculations, we've had to rely on our relationships of trust to teach them to have confidence in their own abilities. We help them understand that they are more capable without the technology than they believe.

The scariest part of this journey was that at all levels of math education, we had to ask ourselves, "What do we teach? What does it mean to do *math*?" As I learn more about AI, as I think about how kids will and are already using it, this feels like déjà vu. Except this time I'm joined by my English/language arts, science, social studies—actually *all*—my teaching colleagues. Welcome to my world!

I have a message for you, and you may not be ready to hear it. AI is here. AI is not going away, not ever, and you cannot ban it. It will continue to evolve and become more powerful. Those online tools you used in the spring of 2023 to help you determine if a chatbot had "written" something? Even some of the developers of those tools, such as OpenAI, which came up with ChatGPT, no longer think they are reliable. That's how fast things are changing.

This will, literally, change everything about how you teach in ways that nobody can predict, not even the "experts." After two months of reading about AI, listening to podcasts, and even attending hearings and briefings about AI on Capitol Hill, I've come away with a great big "who knows?" shrug of the shoulders.

AI will frustrate you and make you question what it means to "learn" content. But, if you let it, this creates an opportunity to make your teaching better, to make your content more relevant. We have been thrust into the top four levels of Bloom's taxonomy of educational objectives together, and it's a pretty exciting place to be. When our students have access to all the information that they once spent much brain power memorizing, they are able to apply, analyze, evaluate, and create. The miracle here is that brain research tells us that when they are doing these magical things, they remember and understand *at the same time and more permanently*.

Make no mistake, public school teaching is at a crossroads. We change and become relevant, or more and more parents will join those clamoring for "choice" in educating their children. They are right to want what's best for their children. What they want, ultimately, should be what we want as well—for their kids to grow into adults who can be productive members of a technologically savvy world.

If we open ourselves to the technology as it develops, always with a mind to protecting our students while teaching them how to use it, surprising things will happen. We will prepare our students to thrive in a world that has AI embedded into nearly everything they are going to be asked to do. In a very basic sense, teaching students to thrive in a future we can't completely predict is what we're supposed to be doing anyway.

Stacie Marvin is a math educator in Howard County, Md. A national-board-certified teacher, she was a 2019 recipient of the Presidential Award for Excellence in Mathematics and Science Teaching. She is currently serving as an Albert Einstein Distinguished Educator Fellow in the office of U.S. Rep. David Trone, D-Md.



OPINION

Published September 7. 2023

AI Can Teach Students a Powerful Lesson About the Truth

How I'm harnessing ChatGPT in the classroom

By Rachna Nath

fter the release of ChatGPT last November, the education world was taken by a wave of uneasiness and doubt. I realized that many of my fellow educators are worried about the technology's use in a classroom setting. But students' use of this new generative artificial intelligence tool to plagiarize, to take shortcuts, and to not do the actual writing they need to do is only one of the many interpretations of this tool's implications for education. As a person who tends to be surfing on the edge of new technological waves, I found this to be the most exciting technology I have ever encountered.

What we teachers *desperately* need, though, is an ocean of examples and training. We need to see and share examples of generative AI any type of artificial intelligence that can be used to create new text, images, video, audio, code, or data—being used across the curriculum. We need catalogs of new lesson plans and new curriculum. What we teachers desperately need is an ocean of examples and training."

RACHNA NATH

And we need training on theoretical and practical levels: training to understand what artificial intelligence actually is and where it stands in the development timeline and training about how to integrate it into our classes.

Anecdotes from peers, administrators, and news stories aren't helping. They are confusing and often sensationalized projections of doom and rampant plagiarizing.

Students will naturally try their best to make use of any technology they can to make their life easy. I'm not naive about that. Right now, we are all experimenting with AI, and I'm OK with my students' occasional lapses.

Remember that we had to deal with this in the early days of the internet when anyone could lift the words off a research paper and drop them into their own essay. But then, just as now, we teachers started having conversations with our students. The basis of that conversation was being able to spot the plagiarism, but the rest was on us.

The problem is that my fellow teachers and I cannot have those productive conversations about generative AI if we do not understand it. We need models of what is or isn't acceptable when using this technology. At this very moment—and completely on the fly—we're setting the standard of what is acceptable, and each one of us has a different perspective. Consequently, drawing the line between cheating and not cheating cannot be universally standardized.

My contribution to this conversation, then, is to share my experiences. When ChatGPT first launched, I told my students, "Go for it!" Go ahead and use the technology but then not only cite the sources, get to the primary source. Don't settle for the article reporting the study, find the original study. Then, when you get the primary source, report that.

Here's what happened: Students had to start thinking more about the information presented. In fact, they had to work harder to confirm the source and the information the bot gave them.

This lesson—how to track back to a primary source and evaluate the information presented—is one of the most essential skills students can learn today. We are constantly bombarded with fake information presented as fact even by previously trustworthy media outlets. There is no standard of truth on the internet, and generative AI has absolutely no ability to confirm the veracity of what it is presenting as fact. Sometimes, it's not even presenting fact at all. Humans do that, and my students are learning how to be cynical readers, perhaps better now than ever.

So, my advice to teachers is to use any and all the generative AI you can get your hands on. Then experience—for yourself—verification of the information. Track it back to the source because in doing so, you'll land on the adjustments you need to make in your classes next year.

If you use an AI detector like Turnitin or GPTZero or even ChatGPT itself, when it identifies a segment or even an entire paper as written by AI, also consider the citations that go along with it. Run a plagiarism check, too. I realize this is extra labor, and it adds time, but this phase will be short-lived. You'll quickly start to see how to adjust your lessons, how to recognize generative AI with or without detection tools.

The mechanics of writing are absolutely essential skills, but the ability to evaluate and recognize truth is the skill that students may need the most, now.

Rachna Nath has been an educator for over 15 years, teaching at both the community college and K-12 levels. She is one of Time Magazine's 2022 innovative teachers, a Fulbright Fellow, a National Geographic certified educator, and a NASA Solar System Ambassador.

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