Artificial intelligence (AI) has been a hot topic since OpenAI released ChatGPT in late 2022. Predictions on how ChatGPT will affect education have ranged from fears of rampant cheating and job displacement in many career fields to glowing predictions of a future with personalized learning for all students through AI-powered tools. While the ChatGPT application of AI is new, forms of AI already power computer systems that we use every day.

AI technologies learn from data and improve their own performance over time without additional instructions from human coders. For example, an AI application on Netflix suggests TV shows you might like based on what you have watched before and what other viewers who like the same shows tended to watch as well. It adjusts future recommendations based on whether or not you watch the suggested program. Your bank also uses AI tools to flag potentially fraudulent purchases based on whether a purchase is similar to what you usually buy, was purchased in an unexpected location and other factors. And AI software helps streamline supply chain logistics by predicting which products will be in high demand at various stores at different times of the year.

If AI is incorporated into existing products, why has ChatGPT caused such a stir? In its own words:

ChatGPT is causing great interest because it is a computer program that can talk and write like a human. It is really good at understanding what people are saying or writing and responding in a way that makes sense. It is much better than other computer programs that tried to do the same thing before. People are excited about ChatGPT because it can be used to make chatbots and virtual assistants that are more helpful and natural to interact with. However, some people are also worried about the impact of AI on our jobs and privacy.

In light of this rapidly evolving technology, state policymakers and education leaders have raised good questions about their role in ensuring students and teachers can use AI tools to their advantage—while avoiding potential pitfalls and dangers. This policy brief addresses common questions from policymakers about ChatGPT and similar tools with specific regard to their effect on education. Excel*in*Ed will continue to monitor developments in AI and provide additional resources to support well-informed decision-making in states.

FREQUENTLY ASKED QUESTIONS

How does ChatGPT work?

ChatGPT and similar programs, like Microsoft Bing's AI chatbot and Google's Bard, are a type of generative artificial intelligence known as large language models (LLMs). They work in a similar way to the feature on your phone that predicts your next word as you type a text message. However, these LLMs are trained on vastly larger amounts of data, with algorithms that "teach" them to predict the most likely associations between words and then to respond in natural, human-like language.

When users enter a question or request into ChatGPT, it responds in the format requested. For example, you could ask it to write an essay comparing and contrasting themes in two books, write code that performs a specific function or provide suggested places to visit for your upcoming trip to a new city.

Can all students and teachers access ChatGPT?

Currently, anyone can create a free account and use ChatGPT on their desktop computer or smartphone. There is also ChatGPT Plus, a monthly subscription option that provides faster response times, especially during peak usage, and grants early access to new developments.

ChatGPT and other LLMs require a stable broadband connection to work well. Students who lack reliable home broadband will be at a disadvantage when it comes to using these tools, especially to support their learning. Support for broadband and device access and affordability programs at the federal, state and local levels all continue to remain useful in bridging the digital divide for students and families.

What can ChatGPT do well?

ChatGPT can generate text in many tones and styles, for many purposes. It can mimic styles of authors or organizations that have public-facing content. For example, it can "write a blog post in the style of Excel*in*Ed" on an education policy topic. It can also generate code for websites and software in common programming languages and translate text into other languages, such as from English to Spanish.

What is ChatGPT not good at (yet)?

As of this writing, the basic form of ChatGPT does not include information more recent than September 2021. This is because the dataset used to "train" it was compiled at that time. However, there are recent add-on extensions to ChatGPT that do scan the internet in real-time; other AI tools offer ongoing access to the internet in an effort to provide more up-to-date responses.

ChatGPT responses can be vague, general or repetitive, especially about detailed or highly local issues. Interestingly, it also provides made-up citations and links, making it significantly less useful for assignments that require research and bibliographies. Providing made-up information is called "hallucinating" in this context, and ChatGPT presents those false citations as being just as accurate as real ones. Current versions of ChatGPT also perform worse on math-related tasks than on other functions that it can do.

What can education leaders do to prevent students from using ChatGPT to cheat?

Merriam-Webster's definition of "*plagiarism*" is "*to steal and pass off the ideas or words of another as one's own.*" This definition covers students who might try to present ChatGPT-generated text as their own original work. Schools and districts typically have policies against plagiarism, with specific consequences for students who break those rules. Education leaders at the local level can update these policies to explicitly cover AI-generated text. State policymakers could provide model policies to assist in this endeavor. Professional organizations, such as school board associations, could also provide model policies for their members.

The market has also responded to this challenge with software solutions to detect AI-generated text. Some nascent tools include GPTZero and an update to the popular TurnItIn program focused on detecting AI-generated text. Teachers can take a low-tech approach to preventing AI-supported plagiarism as well. They could require students to write in class or to turn in several, progressive drafts of a paper for feedback. Further, districts and schools can increase training for educators and students on digital literacy skills, including how to use technology effectively and ethically.

What are potential safety and privacy concerns about ChatGPT and other AI tools?

Widely available LLMs—including ChatGPT, Google Bard and Microsoft Bing's chatbot—are designed for everyone, not specifically for students. That means these tools will reply to inappropriate questions that students may ask and could provide responses that parents or teachers find objectionable. Further, these tools track everything typed into them to improve their algorithms. Students must be instructed to avoid entering sensitive, offensive or personal information.

Because large language models are trained on a huge volume of content, they will replicate any inaccuracies or biases in that content, even those that were included unintentionally. For example, one AI tool aimed at supporting physicians in making diagnoses was trained on data from military hospitals. That tool turned out to be much less accurate in diagnosing conditions in women than men, because a much higher percentage of its training content was based on male service members. In education settings, schools and districts must exercise caution with issues around safety, privacy and bias before purchasing or encouraging the use of specific AI tools. They can ask providers for detailed information on how the tool was developed and trained.

How can ChatGPT improve education?

ChatGPT, LLMs and AI tools can offer a variety of benefits for students and teachers. For students, AI-powered programs can provide:

- New options for personalized learning and support, such as tutoring programs like Khanmigo.
- Different ways to explain concepts that students are struggling to learn. Students can ask ChatGPT to explain something "so a fourth grader can understand it" and get a response appropriate to their level.
- Individualized feedback on student writing by entering text into ChatGPT and asking for suggestions on how to improve.
- A resource to quickly generate ideas in a brainstorming session for a project or paper.
- Practice with specific AI-utilization skills that are becoming in-demand in the workplace, such as prompt engineering and prompt patterning.

AI tools can also save teachers time and capacity. ChatGPT can generate lesson plans for different topics and grade levels that teachers can then customize and refine for their students' needs. Teachers can use ChatGPT to generate example essays for students to critique. It can also draft emails, recommendation letters and other common communications, although educators will always need to carefully review and revise these drafts to fit their own contexts.

CONCLUSION

There is still much to learn about how AI will change education in the long run. Excel*in*Ed will continue to follow emerging issues related to this topic and provide resources to assist state policymakers in leveraging the benefits of these new tools and addressing their challenges. Just as states and districts regulate access to certain online content in school buildings and on school-issued devices, well-informed policies about AI use in education are needed to establish guidelines and guardrails that support students as they navigate safe and ethical use of these new tools.

Excel*in*Ed looks forward to continuing this conversation at our 2023 National Summit on Education.