

ChatGPT: Challenges and Possibilities for Teaching Critical Thinking

Key Takeaways

- ★ ChatGPT and other forms of generative AI can produce written responses to school assignments.
- ★ Parents may want to provide guidance and supervision as students learn about this new technology.
- ★ The technology does not “think.” It predicts the next word in a text in a way that mimics natural speech. This makes it prone to errors.
- ★ Students need to know that those errors, and many other attributes of ChatGPT produced writing make it fairly easy to spot, and “plagiarism checkers,” used regularly by teachers, can now identify ChatGPT generated text.

MORE IN DEPTH INFORMATION BELOW...

What is ChatGPT?

- Open Ai released ChatGPT on November 30th. It uses GPT-3, a language model known as a **Generative Pre-trained Transformer (GPT)**.
- Basically, it is an AI bot people can “chat” with. It will “answer” questions posed to it and complete writing tasks.
 - It is trained on a massive data set (170 billion data parameters) culled from online sources.
 - That data helps it predict the likely next word in a sentence, allowing it to “mimic” natural human speech patterns and generate sentences that approximate human-like writing.
 - It can generate a short story, poem, essay, song lyrics, computer code, legal contracts, etc. in a matter of seconds. It is a potentially transformative technology.
 - It’s useful to think of ChatGPT as “autofill on steroids.” As such, it’s very good at “parlor-tricks”
 - I asked it to write a short story about a bear-fearing bunny in a forest. It did - it wasn’t terrible. I asked it to transform the story into a sonnet. It did so.
 - Note: it began with an ABAB CDCD EFEF rhyme scheme, characteristic of the first 12 lines of a Shakespearean-style sonnet, but then instead of the GG couplet at the end, it added 2 more quatrains. Basically, it hasn’t been in my English classes and didn’t realize a sonnet must be 14 lines).

This Bot Can't "THINK")

- ChatGPT's "autofill skills" mean it can imitate style and it can "cut & paste" from other sources (though with more refinement than students plagiarizing from the internet).
 - Student essays that include sentences "cut and pasted" from internet sources are easily detected by plagiarism checkers ("TurnItIn," etc.). Chat GPT generated essays are more challenging to detect.
- ChatGPT recognizes a template/pattern and it can make substitutions. If B follows A in a sequence, it can look for other instances of A and see a variety of other options that are likely to follow it. It's a little like looking in a thesaurus for a synonym (though at breathtaking speed). It's very good at paraphrasing.
- HOWEVER, it does not really understand what connects A and B. **It cannot THINK.** It does not have the ability to understand the context or implications of a conversation.
- This makes it extremely vulnerable to inaccuracies, and it asserts inaccurate information with great confidence.

Initial Responses to the Academic Implications of ChatGPT:



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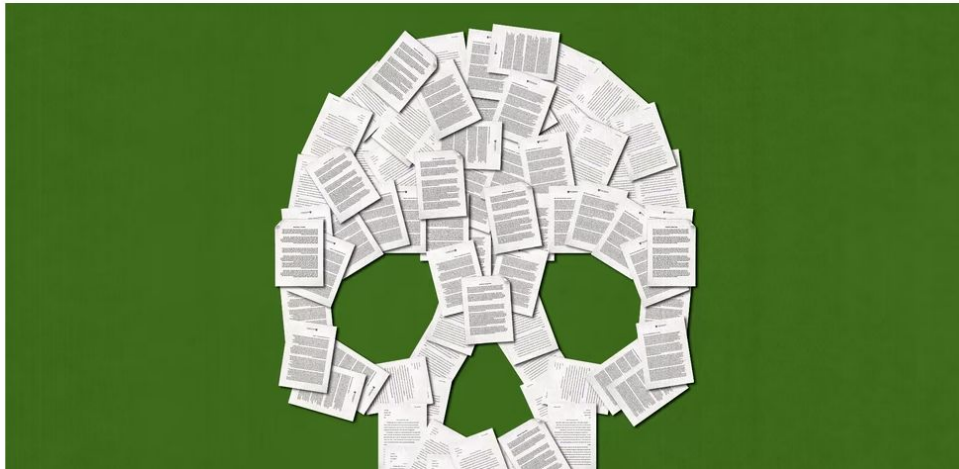
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TECHNOLOGY

The College Essay Is Dead

Nobody is prepared for how AI will transform academia.

By Stephen Marche



Do Students Know about ChatGPT?

Some certainly do – especially those on social media - it's been all over TikTok, Reddit, etc.).

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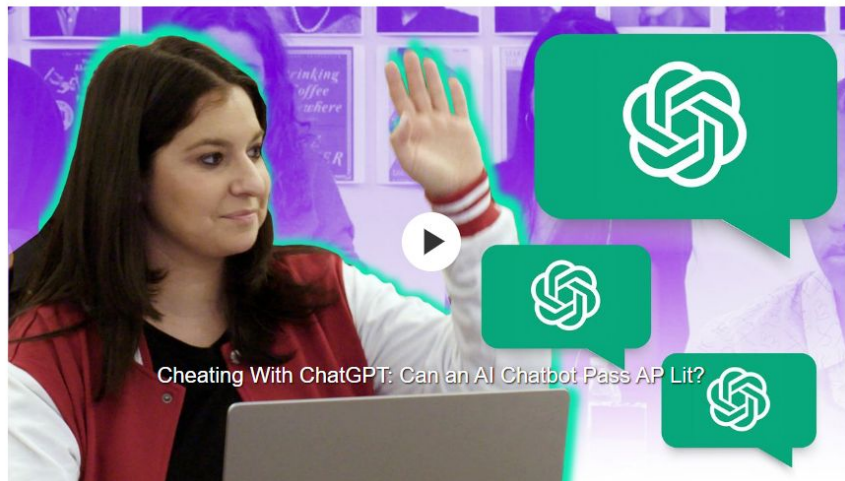
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ChatGPT Wrote My AP English Essay—and I Passed

Our columnist went back to high school, this time bringing an AI chatbot to complete her assignments



Cheating With ChatGPT: Can an AI Chatbot Pass AP Lit?

ChatGPT, OpenAI's new artificially intelligent chatbot, can write essays on complex topics. WSJ's Joanna Stern went back to high-school AP Literature for a day to see if she could pass the class using just AI. Photo illustration: Elena Scotti

Teaching Writing in the Age of AI

- There is a danger that some students will try to forgo the time-consuming and challenging task of learning to write well and ask ChatGPT to produce text for them.
- Learning to write well requires a lot of hard work. It requires students to cull information (though not in the way ChatGPT does). They have to draw together their own knowledge, find other sources of knowledge, analyze those materials, make connections, build ideas, synthesize all they've learned, structure their ideas with an outline, and then articulate those ideas effectively and persuasively (and with clarity and conciseness). It's a tall order and it takes many years to master.
- Verifying research sources is already an important skill for students. ChatGPT will increase the difficulty of doing so. It is likely to be manipulated as a source of misinformation, so we must prioritize teaching students how to find reliable sources and emphasize why that skill is so essential.

How do we prevent students from using ChatGPT for their academic work?

The screenshot shows the top navigation bar of The Guardian website with links for 'Print subscriptions', 'Sign in', 'Search jobs', 'Search', and 'US edition'. Below this is a 'Support the Guardian' banner with a 'Support us' button. The main navigation menu includes 'News', 'Opinion', 'Sport', 'Culture', 'Lifestyle', and 'More'. A secondary menu lists 'US', 'World', 'Environment', 'Soccer', 'US Politics', 'Business', 'Tech', 'Science', 'Newsletters', and 'Fight to vote'. The article section features the 'New York' category, the headline 'New York City schools ban AI chatbot that writes essays and answers prompts', and a sub-headline 'ChatGPT tool will be forbidden across all devices and networks in public schools over 'concerns about negative impacts on learning''. The author is 'Maya Yang' and the date is 'Fri 6 Jan 2023 13.19 EST'. A social media sharing bar is visible. The main image shows a smartphone displaying a ChatGPT chat interface with the question 'Do computers have the ability to be creative?' and a partial response: 'Creativity is a complex and unique trait that is difficult to define and more difficult to replicate in a computers are range'. To the right, a 'Most viewed' section lists several trending articles with circular thumbnails.

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New York City schools ban AI chatbot that writes essays and answers prompts

ChatGPT tool will be forbidden across all devices and networks in public schools over 'concerns about negative impacts on learning'

Maya Yang
Fri 6 Jan 2023 13.19 EST

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chat.openai.com
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Helping Students Navigate this New Technology

Will Bans Work?

- The NYC School District's ban will be easy to evade and therefore ineffective.
- More importantly, as educators we know that bans are counterproductive because students will need to learn to use this tech productively. It will be part of their future.

Steps Parents Can Take:

- At the most basic level, parents will need to supervise how students use this new technology, just as we do with every other kind of tech available to our kids.
- More importantly, parents should help students understand WHY they should resist the temptation to let ChatGPT write essays for them. Frame that conversation around the need to develop critical thinking skills. Help kids understand why learning to write and think critically is important for their future:
 - Critical thinking skills are essential for academic success, for success in the career world, and for making wise and well-reasoned decisions in every part of one's life.
 - When students learn to articulate their ideas effectively, their confidence grows. They explore and test new ideas. They become innovators.

Misusing ChatGPT

- Students need to understand the risks of any sort of plagiarism (Students caught plagiarizing an essay can get put on academic probation or even expelled at many schools).

Can ChatGPT-written work be Detected?

- There are certain characteristics of AI generated writing that make it fairly easy to spot:
 - ChatGPT is very good at generating a reasonably well-organized essay with fairly flawless grammar but generally shallow/surface-level ideas.
 - Right now, ChatGPT (on its own) can write a fairly solid middle-school essay, a low to average high school essay, and a poor college-level essay.
 - It can and does confidently assert inaccurate information.
- HOWEVER, I was able to feed the bot targeted prompts to help it revise its initial response into something more complex (and something more difficult to detect). I even asked it to re-write the essay at an 8th grade level with a few grammatical errors. It did so, creating an essay with fewer red flags.
- ChatGPT will undoubtedly improve rapidly. ChatGPT uses GPT-3, but GPT-4 is set to release in the next few months and it promises substantial improvements. GPT-3 uses 175 billion parameters to generate text, but GPT-4 will use 170 TRILLION! It will be able to create more natural and more fluent text that will allow it to generate far more persuasive responses. However, this does not necessarily mean those responses will become more trustworthy!

Constantly Evolving AI

A few days ago, a young Princeton student, Edward Tian, released an app (GPTZero) that does a pretty good job of detecting AI generated texts.

- It evaluates a text by gauging the “perplexity” of sentences (how random the text in a sentence is and whether its construction is unusual or surprising to the app) and their “burstiness” (how similar sentences are to one another. Humans write text with greater variation, sentence to sentence).
- It does a pretty good job. I asked ChatGPT to create a response to a Discussion Prompt I will assign in my high school class next week. It took the bot about 15 seconds to produce over 200 words of text, and it was a fairly reasonable response to the prompt. GPTZero was able to detect that it had been generated by AI. I then submitted a response from a student, and GPTZero predicted it was most likely written by a human.

This form of AI will also improve, so people’s initial fears about “The End of the Essay” are likely a bit premature. Nevertheless, I know that many teachers, across every discipline, plan to require **far more in-class writing** (with a pen and a blue book) than they have in the past.

Teachers Are Absolutely Loving The Student Who Made A Tool That Shows If Your Essay Was Written By AI

GPTZero can tell if an essay about *Hamlet* was written using a bot.



Katie Notopoulos
BuzzFeed News Reporter

Specific Steps for Parents to Take:

- Have conversations about the importance of learning to think critically and write well.
- Discuss Reading and Writing Projects in detail with students.
 - Ask thought provoking questions. Even if you haven't one of the longer works of literature your child is studying, look over my "Weekly Homework Pages" notes to see which areas were focused on in class, and have your student explain our discussion to you.
 - Ask them what ideas they added to the discussion.
 - Have them to consider what they might when we meet the following week.
 - Ask them if they are confused about any of the ideas discussed in class.
 - Look over your student's writing projects at various stages of the writing process. Ask students to explain the thinking behind revisions they've made.
- Remind students that ChatGPT cannot THINK. It doesn't really "know" if the information it has culled from datasets available on the internet is accurate. (I asked it to write an essay about *The Great Gatsby* and it included the name of a character that does not appear in the novel.)
 - This means that as a form of research – gathering information – it is inherently flawed. Students MUST find reliable sources for their work and verify everything from ChatGPT.
- Help students recognize that the transmission of misinformation (already a problem on social media) will increase. They must approach what they read on social media with skepticism.
- And on a side note... promote strong penmanship skills → In-class writing assignments will increase. Student writing needs to be legible.

Moving Forward...

I'm eager to find ways to use this new technology to enhance students' understanding of the writing process. There are many possibilities for this. The technology is new, and I'm excited to work on it myself and see what approaches my colleagues take.

- More specifically, I'm eager to see how the technology can be used to help teach critical thinking skills. Students will need to “curate” the responses they get from ChatGPT, so learning what revisions to request will be essential.
- One possibility is to use a ChatGPT generated essay as a starting point and ask students to critique that essay, improve it, experiment with alternative lines of inquiry and analysis, try structuring the information differently. There's a great deal of potential here, and I plan to develop lesson plans that take advantage of this.

This technology holds great potential. It will undoubtedly transform aspects of academia and business, so those who follow its development and application will be well-positioned for future success. That said, this tech is also likely to be misused in a variety of ways. It is essential to help students understand its potential and its very serious limitations.