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Generative AI

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Artificial Intelligence, or AI, was not always thought of as being synonymous with ChatGPT. AI has evolved significantly in the last 10 years and will continue to grow and change. However, even though AI has many benefits, and can be used as educators to improve our teaching, it also has ethical considerations to be aware of.

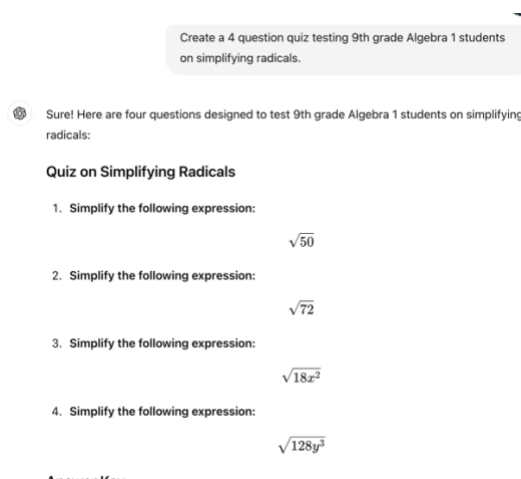
As Ethan Mollick explains, before 2017 AI was often thought of as “machine learning algorithms and predictions”, such as Amazon's consumer algorithms (Wharton School, 2023). Now, AI has shifted to what we call large language models. According to Lou Ludwig from the Dennison Center for Teaching and Learning (2023), large language models are neural networks that were trained on large amounts of text. Through training the models, companies have refined them to better understand and generate human language, leading to what we now know as generative AI. Whereas traditional AI focused on analyzing and recognizing patterns in existing data, these generative AI models create, or generate new output. Using the massive amounts of text that they were trained on, the new models, such as ChatGPT, are able to create contextual content. For instance, models like ChatGPT can create coherent articles from specific prompts because they have been trained on numerous articles. Generative AI is not just limited to text. Generative AI can be used to create art, video or even audio (Wharton School, 2023).

Generative AI does raise many ethical issues that must be addressed. First, bias is a major concern. Because of the data sets that these models are trained on, generative AI can often amplify existing biases that are present in the training sets. For example, there have been cases of racial bias in facial recognition software. Because many of the faces that were used in the training sets were of white individuals, these systems perform less accurately on individuals with darker skin tones. This could lead to misidentification, which is a problem if these applications are being used in law enforcement applications. Another ethical concern that I have from

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generative AI is the legality of the data being used as training sets. Many datasets are sourced from the internet but are not always careful about using things that are not specified under fair use. For example, if you are trying to create an AI art piece based on art from a specific artist, was their art scraped legally? Was this artist compensated for their work being used? Another concern that generative AI raises for me is the technology's ability to create what are often called deepfakes. Our society already struggles with widespread misinformation, manipulation, and lack of trust in media and information sources, so the fact that this technology can create realistic looking content further exacerbates this issue. I worry about this technology being weaponized against people and damaging their personal and professional reputations.

One task that I asked ChatGPT to perform was to create a short Mastery Quiz on simplifying radicals. This is a quiz that I give to my students that they get to retake as many times as they like using different but similar problems that allow them to show mastery on specific algebra concepts. I began by asking ChatGPT to create a 4-question quiz on simplifying radicals. I was pleased that it automatically included variables in the quiz questions, as I thought it might be something that I had to ask for after the fact.



The image shows a screenshot of a chat interface. At the top, a user prompt reads: "Create a 4 question quiz testing 9th grade Algebra 1 students on simplifying radicals." The AI response begins with "Sure! Here are four questions designed to test 9th grade Algebra 1 students on simplifying radicals:" followed by the title "Quiz on Simplifying Radicals". The quiz contains four questions, each asking to simplify an expression:

1. Simplify the following expression:
 $\sqrt{50}$
2. Simplify the following expression:
 $\sqrt{72}$
3. Simplify the following expression:
 $\sqrt{18x^2}$
4. Simplify the following expression:
 $\sqrt{128y^3}$

(Open AI, 2024)

I then asked ChatGPT to give me larger numbers for Questions 1 and 2, and to have question 4 contain a perfect square.

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Can questions 1 and 2 have slightly bigger numbers? Question 4 should also contain a perfect square

Certainly! Here are revised questions 1, 2, and 4 with larger numbers and a perfect square in question 4:

Quiz on Simplifying Radicals

1. Simplify the following expression:
 $\sqrt{98}$
2. Simplify the following expression:
 $\sqrt{200}$
3. Simplify the following expression:
 $\sqrt{18x^2}$
4. Simplify the following expression:
 $\sqrt{144y^3}$

(Open AI, 2024)

Finally, I asked for Chat GPT to give me 2 versions of this quiz. Version 1 was the same quiz that I had been modifying, while version 2 had similar difficulty.

Can you create 2 versions of this quiz with similar difficulty levels for each?

Sure! Here are two versions of the quiz, each containing questions of similar difficulty levels.

Quiz Version 2

1. Simplify the following expression:
 $\sqrt{128}$
2. Simplify the following expression:
 $\sqrt{245}$
3. Simplify the following expression:
 $\sqrt{32x^2}$
4. Simplify the following expression:
 $\sqrt{100y^3}$

(Open AI, 2024)

Overall, ChatGPT was able to complete this task quickly and gave me problems that I would in fact use with my students. While I don't ever anticipate ChatGPT being able to replace me, this tool allows for me to have problems created for me, which then I can modify and use as I need.

While generative AI offers substantial benefits, such as enhancing educational practices through customizable materials, it also raises critical ethical concerns. Issues like biases, the legality of data sources, and the potential for misuse through require us to cautiously approach these technologies. As we continue to explore the potentials of generative AI, we must also make sure we address these challenges to ensure responsible and equitable use across all sectors.

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References

Denison Center for Learning and Teaching. (2023, August 1). *2023 08 01 Chat GPT Intro*

[Video]. YouTube. https://www.youtube.com/watch?v=jLcTSXt_0eY

OpenAI. (2024). ChatGPT (June 27 version) [Large language model].

<https://chat.openai.com/chat>

Wharton School. (2023, July 31). *Practical AI for Instructors and Students Part 1: Introduction*

to AI for Teachers and Students [Video]. YouTube.

<https://www.youtube.com/watch?v=t9gmyvf7JYo>