New AI tools that can write student essays require educators to rethink teaching and assessment

AI tools are available today that can write compelling university level essays. Taking an example of sample essay produced by the GPT-3 transformer, **Mike Sharples** *discusses the implications of this technology for higher education and argues that they should be used to enhance pedagogy, rather than accelerating an ongoing arms race between increasingly sophisticated fraudsters and fraud detectors.*

With all the focus in artificial intelligence and education on AI personalised learning and tutoring systems, one AI technology has slipped by unnoticed. It could become a gift for student cheats, or a powerful teaching assistant, or a tool for creativity. It's called a Transformer, it acts as a universal language tool and it is set to disrupt education. Here's how.

Take a minute to read this graduate student essay on the controversial topic of "learning styles". If this were your student, how would you assess the essay? What mark would you give? What are its strengths and weaknesses?

∞∞∞

Learning Styles

The construct of "learning styles" is problematic because it fails to account for the processes through which learning styles are shaped. Some students might develop a particular learning style because they have had particular experiences. Others might develop a particular learning style by trying to accommodate to a learning environment that was not well suited to their learning needs. Ultimately, we need to understand the interactions among learning styles and environmental and personal factors, and how these shape how we learn and the kinds of learning we experience.

Learning styles and learning modes

In the 1970s, learning styles became an important feature of educational practice. In the 1990s, "learning modalities" became a major focus of learning style research. This is the idea that we process information in different ways. For example, some individuals may be auditory learners, benefiting from listening to lectures and using recorded materials. Others may be visual learners, who gain from using visual materials such as textbooks, handouts, and computer graphics. Still others may be kinesthetic learners, who benefit from learning by movement and doing. Numerous experiments have been conducted to test this idea, and a number of different classifications of learning modalities have been proposed.

In a review of this research, Dunn and Dunn (1997) found that the evidence does not support the idea that people have a particular learning mode that is dominant or that they process information in a particular way. In their study, the authors found that when students were given a particular instructional treatment, they could be classified in a particular learning modality category. But when they were given a different instructional treatment, they were classified in a different category. In a follow-up study in which they gave students a number of instructional treatments, Dunn and Dunn found that students could be placed in a particular category in some treatments, but not others.

Dunn and Dunn also found that the results varied by age. Older students generally fit the results of more than one modality, whereas younger students were more likely to fit the results of just one modality. This led them to conclude that style preferences are learned over the course of development. This is consistent with the idea that people are flexible in responding to the way they are taught.

References

Dunn, R., & Dunn, K. (1997). Learning styles: Research and practice. Journal of Research in Education, 7(2), 139-151.

Date originally posted: 2022-05-17

Permalink: https://blogs.lse.ac.uk/impactofsocialsciences/2022/05/17/new-ai-tools-that-can-write-student-essays-require-educators-to-rethink-teaching-and-assessment/

Blog homepage: https://blogs.lse.ac.uk/impactofsocialsciences/

∞∞∞

The entire "student essay" was written by a Transformer AI program, GPT-3. I gave it the prompt "The construct of 'learning styles' is problematic because" and it produced the rest, including headings and references. Plagiarism software will not detect essays written by Transformers, because the text is generated, not copied. A Google search of the essay shows that each sentence is original.

Note its reference for "Dunn and Dunn (1997)". There is a journal of Research in Education, but no issue 7(2) in 1997. Dunn and Dunn did publish on learning styles, but not in that journal. GPT-3 has fashioned a plausible-looking but fake reference. It has also invented a fictitious research study from Dunn and Dunn to critique learning styles.

Anyone can sign up for an account with the GPT-3 Transformer then go to its "Playground", type the opening words of an assignment, press Submit and let it do the rest. A student can now generate an entire essay or assignment in seconds, at a cost of around 1 US cent. Other companies and universities are developing Transformer systems that write in multiple languages and learn as they go.

Some Transformers, such as GPT-3, can filter bad language. But they are essentially amoral. They don't know what they have written – they can't reflect on their output. Can a powerful but amoral text generator be used for good in education? Here are some suggestions.

Just as a student can generate an essay in seconds, so a teacher can assess it. Add "Here is a short assessment of this student essay:" to the end of the text and GPT-3 writes a review.

∞∞∞

The essay discusses the idea of learning styles, and how they may be developed over time. It cites research by Dunn and Dunn which suggests that learning styles are not fixed, and that people can learn in different ways depending on the situation.

The essay is well-organized and flows smoothly. It makes a clear argument and supports it with evidence from research.

One potential criticism is that the essay does not discuss the implications of learning styles research, or how this research can be used to improve learning. However, this is not necessarily a flaw, as the essay is only meant to be a brief overview of the topic.

∞∞∞

It does a reasonable job. The program transforms surface text into a review but it doesn't get to the essay's meaning, nor does it find the fake reference or the made-up research study.

Students will employ AI to write assignments. Teachers will use AI to assess them. Nobody learns, nobody gains. If ever there were a time to rethink assessment, it's now. Instead of educators trying to outwit AI Transformers, let's harness them for learning.

> If Transformer AI systems have a lasting influence on education, maybe that will come from educators and policy makers having to rethink how to assess students

First, Transformers can quickly show students different ways to express ideas and structure assignments. A teacher can run a classroom exercise to generate a few assignments on a topic, then get students to critique them and write their own better versions.

Second, AI Transformers can be creativity tools. Each student writes a short story with an AI. The student writes the first paragraph, AI continues with the second, and so on. It's a good way to explore possibilities and overcome writer's block.

Date originally posted: 2022-05-17

Permalink: https://blogs.lse.ac.uk/impactofsocialsciences/2022/05/17/new-ai-tools-that-can-write-student-essays-require-educators-to-rethink-teaching-and-assessment/

Blog homepage: https://blogs.lse.ac.uk/impactofsocialsciences/

Third, teachers can explore the ethics and limits of AI. How does it feel to interact with an expert wordsmith that has no morals and no experience of the world? Does a "deep neural network" have a mind, or is it just a big data processor?

Finally, as educators, if we are setting students assignments that can be answered by AI Transformers, are we really helping students learn? There are many better ways to assess for learning: constructive feedback, peer assessment, teachback. If Transformer AI systems have a lasting influence on education, maybe that will come from educators and policy makers having to rethink how to assess students, away from setting assignments that machines can answer, towards assessment for learning.

For more on AI Transformers and computers as story generators, see Mike Sharples and Rafael Pérez y Pérez, Story Machines: How Computers Have Become Creative Writers, to be published by Routledge in July 2022.

Image Credit: Adapted from Openclipart.

Date originally posted: 2022-05-17

Permalink: https://blogs.lse.ac.uk/impactofsocialsciences/2022/05/17/new-ai-tools-that-can-write-student-essays-require-educators-to-rethink-teaching-and-assessment/

Blog homepage: https://blogs.lse.ac.uk/impactofsocialsciences/