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EDITORIAL

Artificial intelligence in teaching and learning: what questions should we ask of ChatGPT?

The recent release of ChatGPT, a flexible and accessible form of artificial intelligence, raises a multitude of questions for those of us interested in interactive learning environments. The purpose of ChatGPT is to invite questions, but many of the questions being asked in relation to teaching and learning tend to focus on the potential risks of students misusing ChatGPT, for example, by using it to write essays. It is important for the journal to examine and question the questions we ask about the use of technologies in learning environments. This editorial will explore some of the questions being asked of ChatGPT and identify areas of inquiry that may provide value to those thinking about the relationship between artificial intelligence and learning.

What is ChatGPT?

This question is crucial in setting the context and establishing the terms of reference. ChatGPT is an app that utilizes powerful machine learning software called Generative Pre-trained Transformer (GPT-3), developed by the OpenAI organization. GPTs are a type of large language model that use deep learning to train and improve their output. They are trained on a large corpus of existing data, such as text and images obtained from the internet, and identify patterns that enable them to suggest appropriate words and phrases, or generate relevant images, in response to a user's question. GPT-3 powers a range of apps, such as DALL-E, which generates images from a text description, but it is ChatGPT that is the focus of many questions from those interested in interactive learning environments and the subject of this editorial.

Why does ChatGPT raise questions?

The purpose of ChatGPT is to interact through conversation, which involves a series of questions from users and responses from the app. The interaction ChatGPT is designed to facilitate is centered around questions and follow-up questions. This type of interaction encourages the use of ChatGPT for learning by asking questions and considering the answers, which are activities at the heart of interactive learning. ChatGPT stimulates follow-up questions through a sustained dialog, which creates a different experience compared to using a search engine. Search engines typically do not retain an evolving history of an answer but return a list of discrete links to resources based on the ranking of specific keywords used as search terms. ChatGPT, on the other hand, offers follow-up questions that develop and expand answers and respond to challenges posed by the questioner.

How does asking questions lead to learning with ChatGPT?

Asking questions as a form of interactive learning has a long history, dating back to the teachings of Socrates. In the field of technology for interactive learning environments, the importance of interactive dialog was established nearly half a century ago through conversation theory (Pask, 1976). This theory remains at the core of our understanding of effective learning environments. In the early days

of this journal, renowned artificial intelligence researcher Seymour Papert wrote about the importance of *Software Design as a Learning Environment*. Along with Idit Harel, he proposed three key characteristics of interactive learning environments: appropriability, evocativeness, and integration, which all help explain how asking questions can lead to learning (Harel & Papert, 1990).

How does appropriability improve with ChatGPT?

Harel and Papert believed that learning is enhanced when it is "made one's own", which they called appropriability (1990, P3). With ChatGPT, students can ask questions in their own words and receive responses tailored to their specific formulation. The ability to engage in a sequence of questions, follow-ups, and clarifications allows students to personalize the information they receive, making it their own.

How does evocativeness improve with ChatGPT?

Evocativeness refers to the capacity of a learning activity or material to give rise to "personal thought" (Harel & Papert, 1990, P3). Through conversation, questions scaffold learning and promote awareness and thought. ChatGPT's conversational format enables students to exchange questions and answers, leading to deeper personal reflection.

How does integration improve with ChatGPT?

ChatGPT's ability to respond to follow-up questions allows students to challenge and clarify information. This encourages integration with existing knowledge and promotes a deeper understanding of multiple meanings and concepts. Papert and Harel emphasized the importance of learning materials that can integrate "multiple meanings and multiple concepts" (1990, P3)), and ChatGPT's conversational format enables just that.

In conclusion, the purpose of this editorial is not to offer a comprehensive guide to using ChatGPT in teaching and learning, but rather to encourage questions and discussions about its role. As artificial intelligence becomes increasingly integrated into new learning environments, such as the metaverse (Rospigliosi, 2022), it is essential that we consider the ethical implications and potential risks associated with its use such as the perpetuation of historical injustices (Rospigliosi, 2021). This editorial seeks to start a conversation about ChatGPT and artificial intelligence in interactive learning environments and to encourage further inquiry and exploration.

This is my first editorial as co-editor of Interactive Learning Environments, and I am honored to join Dr. Joseph Psotka in this role. I would like to express my gratitude to my mentor, Dr. Susan Greener, for her guidance and support throughout my time as an associate editor. Thank you, Sue and Joe, for your contributions to this journal.

Please note: this article was written with the help of ChatGPT.

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