

An Inquiry Into the Use of Generative AI and Its Implications in Education: Boon or Bane

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ABSTRACT

The emergence of generative AI technologies has provoked considerable debate among educators regarding their role in education. This study is an investigation of the benefits, disadvantages, and potential strategies for integrating generative AI in educational settings by analyzing societal impacts based on a literature review. We have surveyed the influence of generative AI in education through sources from peer-reviewed journals. The main findings show that generative AI can enhance accessibility and customization in learning for individual learners' needs and pacing. But there are problems with algorithmic biases, discrimination, and data privacy issues, too. This study advocates for mitigating bias, data transparency, and promotion and evaluation of AI policy and research. Generative AI in education hinges on how it is responsibly integrated and observes ethical guidelines, by way of the constant assessment that will guarantee its potential in revolutionizing learning.

KEYWORDS

Generative AI, Artificial Intelligence, ChatGPT, Opportunities, Challenges, Possible solutions, Education

INTRODUCTION

The recent introduction of generative artificial intelligence (AI) has evoked much interest and debate in almost all fields of practice but most within the educational community. ChatGPT, one of generative AIs, has gained over 100 million users within two months of its launch in November 2022 (Hu, 2023). ChatGPT marks an enormous breakthrough in the area of natural language processing and machine learning, unexpectedly creative in the domains of content creation and human-like writing capabilities. It potentially offers personalized and accessible learning experiences that fit the diversity of students, thereby changing how we teach and how they learn in the future (Hwang, 2022; Jeong, 2022; Mishra & Heath, 2024; Mogavi et al., 2024; Trust et al., 2023).

However, integration attempts with generative AI are not easy, with challenges involving algorithmic bias, potential discrimination, and concerns over data privacy posing very huge obstacles to broad adoption (Asgary, 2023; Salazar et al., 2024; Strowel, 2023). The transparency in sharing that data becomes a major concern due to the fact that OpenAI's ChatGPT derives data from its user base. In view of this, integration in education requires an understanding of the ethical and pragmatic aspects if integration is to be possible (Akgun & Greenhow, 2022; Mogavi et al., 2024). This calls for educators and researchers to consider the possible implications such advanced technologies would

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bring in shaping the future of education. The debate about the role of generative AI in education is still in the infancy of its development and is marked by diverse opinions and limited empirical studies (Mogavi et al., 2024).

This current study, therefore, takes a review of the literature of recent publications to provide a contemporary, comprehensive assessment of the educational impact of generative AI. First, the nature of this fast-paced and constantly emerging technology requires continuing analysis and examination. The discussion aims to give a view of the societal effects brought about by generative AI technologies within the educational sphere, highlighting its potential for innovation and the associated challenges. After all, this discussion seeks to balance the benefits and risks and to guide the thoughtful incorporation of AI in education with the objective of a seamless fusion of technology and educational practices.

PROSPECTS FOR CHATGPT IN EDUCATION

Artificial Intelligence (AI) is a component of computer science that studies, theorizes, and designs machines with human-like capacities and intelligence (Buchanan, 2005). Recently, AI systems have been defined by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) as intelligent systems that use data and information to perform tasks with human-like intelligence through learning algorithms, reasoning techniques, and capabilities such as perception, prediction, control, and planning. (UNESCO Recommendation on the Ethics of Artificial Intelligence document, adopted on November 23, 2021). The document further states that there is a wide range of AI system adaptations, including machine learning, deep learning and reinforcement learning, and machine reasoning including planning, scheduling, knowledge representation and reasoning, search, and optimization.

While studies on Generative AI in education are just beginning, the literature to date has already pointed out its wide range of applications, which rely on learning patterns and data structures unlike those used in traditional AI. These include supporting teaching methodologies, facilitating student assessment, enhancing learning experiences, fostering creative thinking, and improving reading, writing comprehension, and critical media literacy skills (Tate, et. al., 2023). From aiding in brainstorming sessions to combating writer's block, AI has veritably demonstrated its value as an indispensable aid to researchers and writers (Gordijn and Have, 2023). Beyond improving learning outcomes, AI can also address teacher and resource scarcity, and optimize educational effectiveness which can lead to better student success in academic, social, and career opportunities (Hwang, 2022).

Generative AI can personalize content for students, allowing them to take control of their learning at their own pace, and assist in students' understanding of difficult concepts by providing them with extra support through writing aids (Trust, et. al., 2023). Initiatives such as "AI for K-12 (AI4K12) by the Association for the Advancement of Artificial Intelligence (AAAI) and the Computer Science Teachers Association (CSTA), are all for using AI in educational spaces (AI4K12, 2020), emphasizing the benefit of future-safing students for the job market by making them understand and appreciate its practical applications; providing them training on how to incorporate AI literacy in the K-12 setting (Relmasira, et. al., 2023); educate students on the ethical "design of autonomous decision-making systems;" and also, helping them acquire AI-related competencies as life hacks (Touretzky, et. al., 2022).

CHALLENGES OF CHATGPT IN EDUCATION

As a form of Generative AI, Language Models (LLMs) undergo training through self-supervision using extensive datasets tailored for customization. They can be fine-tuned to perform specific natural language tasks, eliminating the need for distinct models for each task (Sejnowski, 2023, p. 309). LLMs are evolving along with challenges that require careful analysis in navigating these tools and

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