

THE USE OF AI-POWERED TECHNOLOGIES IN EDUCATION

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Abstract: *This article delves into the role of AI-powered technologies in teaching system and explore the functions they play in order to create effective teaching atmosphere for students.*

Key words: *Artificial intelligence, ChatGPT, games, platforms, automated grading, feedback system, chatbots.*

INTRODUCTION

First, let's define this technology in general terms. Artificial intelligence allows machines to execute tasks that have traditionally required human cognition. AI-powered programs and devices can make decisions, solve problems, understand and mimic natural language and learn from unstructured data. OpenAI's release of ChatGPT—a natural language processing chatbot—in the fall of 2022 brought AI to many people's attention for the first time. However, AI tools have been part of the tech landscape for years. If you have ever played chess against a bot, consulted a virtual assistant like Siri or Alexa or even scrolled through your social media feed, you have already interacted with artificial intelligence.³⁶

The role of AI-powered technologies. From the viewpoint of educators, integrating AI in education brings significant advantages. They provide time-saving assistance by handling routine administrative tasks such as scheduling, grading, and providing information to students, allowing educators to focus more on instructional planning and student engagement. Educators can improve their pedagogy by leveraging AI tools to augment their instruction and offer personalized support to students. By customizing educational content and generating prompts for open-ended questions aligned with specific learning objectives, teachers can cater to individual student needs and enhance the learning experience.³⁷

Incorporating AI in education offers several key advantages from students' perspectives. AI-powered chatbots provide valuable homework and study assistance by offering detailed feedback on assignments, guiding students through complex problems, and providing step-by-step solutions. Furthermore, these chatbots facilitate flexible

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<https://www.forbes.com/advisor/education/it-and-tech/artificial-intelligence-in-school/#:~:text=AI%2Dpowered%20educational%20technology%20encompasses,programs%20cater%20to%20educati on%20professionals.>

³⁷ Krstić, L., Aleksić, V., & Krstić, M. (2022). *Artificial intelligence in education: A review.*

personalized learning, tailoring their teaching strategies to suit each student's unique needs. Their interactive and conversational nature enhances student engagement and motivation, making learning more enjoyable and personalized.³⁸

We are still learning how AI technologies will integrate into the education sector as they develop, and we don't yet have a full picture of how AI will affect critical issues of ethics, equity and data safety. However, we have already pinpointed several key uses for artificial intelligence in education, including the following.

AI-Powered Educational Games. Learning can be an exhilarating adventure with AI and learner can discover the thrill of gaining knowledge in an innovative way by engaging activities. AI-powered educational games make knowledge attainment both fun and effective, catering to diverse learning styles and making education like a chore and more like a challenge to conquer.³⁹ Teachers have long recognized the value of play-based learning, and schools have used educational computer games—such as *The Oregon Trail*, first released in 1974—since the early days of computer gaming. Today's AI-powered games can deliver targeted learning thanks to user-responsive programming.

Adaptive Learning Platforms. Educational technology leaders such as Carnegie Learning and Knewton offer adaptive platforms that customize learning activities and content in real time. Continuous assessment allows for immediate feedback and helps the system adjust its approach. Adaptive learning methodologies vary from simple rules-based systems to multifaceted machine learning algorithms.⁴⁰

Automated Grading and Feedback Systems. By automating grading, planning and administrative work, artificial intelligence systems can free up educators' time and energy for increased student contact. This is a common argument in support of using AI in the classroom. Using AI-powered tools for automated grading and access feedback is a dynamic technique. These tools allow for near-instantaneous feedback and multiple resubmissions, which can increase student satisfaction and provide them more opportunities to succeed.⁴¹

Chatbots for Student Support. AI chatbots can provide immediate support by answering questions, offering explanations, and providing additional resources. Chatbots can also act as virtual teaching assistants, supporting educators through various means.⁴² At many higher education institutions, university chatbots also support learners by responding to admissions queries, connecting students to course information and student

³⁸ Celik, I., Dindar, M., Muukkonen, H., & Järvelä, S. (2022). The promises and challenges of artificial intelligence for teachers: A systematic review of research. *TechTrends*, 66(4), 616–630.

³⁹ <https://www.taskade.com/generate/education/educational-game>

⁴⁰ Almeida José Bacelar, Cunha Alcino, Macedo Nuno, Pacheco Hugo, and Proença José. 2018. Teaching how to program using automated assessment and functional glossy games (experience report). *Proceedings of the ACM on Programming Languages* 2, ICFP, Article 82 (2018), 17 pages.

⁴¹ Ala-Mutka Kirsti M.. 2005. A survey of automated assessment approaches for programming assignments. *Computer Science Education* 15, 2 (2005), 83–102. DOI:arXiv:<https://doi.org/10.1080/08993400500150747>

⁴² Devedzic, V. (2004). Web intelligence and artificial intelligence in education. *Journal of Educational Technology and Society*, 7(4), 29–39

services and delivering reminders. Other chatbots can help students brainstorm ideas, improve their writing skills and optimize their study time.⁴³

Intelligent Tutoring Systems. Often dedicated to a single subject such as math or language, intelligent tutoring systems simulate the one-on-one experience of working with a human tutor. Examples include the Duolingo app and Khan Academy's Khanmigo tutoring system. They also act as study companions, offering explanations and clarifications on various subjects. They can be used for self-quizzing to reinforce knowledge and prepare for exams. Also, AI tools contribute to skills development by suggesting syntactic and grammatical corrections to enhance writing skills, providing problem-solving guidance, and facilitating group discussions and debates with real-time feedback.

Conclusion. Educators can use AI chatbots to create tailored learning materials and activities to accommodate students' unique interests and learning styles. Empowering educators to effectively integrate AI technologies into their teaching methods, fostering critical thinking and fair evaluation, will pave the way for a more effective and engaging educational experience. Empowering educators to effectively integrate AI technologies into their teaching methods, fostering critical thinking and fair evaluation, will pave the way for a more effective and engaging educational experience.

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