


Chapter 7

Generative AI–Powered Adaptive Assessment

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ABSTRACT

An extensive examination of the use of artificial intelligence (AI) in educational assessment is provided in this chapter. It explores the revolutionary influence artificial intelligence has had on the development of teaching and learning approaches, showing how AI is being applied in education to improve student outcomes and experiences through a range of initiatives, from intelligent tutoring systems to personalized learning algorithms. The chapter explores the transition from more individualized, AI-powered tests to more conventional, standardized testing procedures. These tests provide a more accurate picture of students' knowledge and abilities because they adjust in real time based on students' answers. The emphasis on skill-based evaluation, constructive feedback, and ongoing and formative assessments highlights how assessment techniques have evolved. Future directions in artificial intelligence and educational assessment are explored, emphasizing the possible influence of cutting-edge technologies such as natural language processing and sophisticated machine learning models. According to the chapter, assessments will become more comprehensive, personalized, and adaptive so they can be easily incorporated into the teaching and learning process and support students' lifelong learning goals.

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INTRODUCTION TO AI IN EDUCATION

A major turning point in the development of teaching and learning approaches has been reached with the introduction of Artificial Intelligence (AI), more especially Generative AI (GenAI), into the field of education (Baidoo-Anu & Ansah, 2023; Rane, 2023). Thus, the existing discourse on Generative AI (Gen AI) and its effects on education centers on two main points of contention: the difficulties it presents for teachers (e.g., Stokel-Walker, 2022; Terwiesch, 2023) and the advantages it offers for teachers and students (e.g., Pavlik, 2023; Zhai, 2022). At the extremes of this argument, one side sees Gen AI as a potential Ragnarök-like catalyst for the collapse of the educational system, while the other sees it as a transformative force that will usher in a new era marked by automation and easily accessible information, ultimately expanding the scope and quality of education. Nonetheless, the author will discuss the possibility of utilizing Gen AI for assessment during the teaching and learning process in this chapter. To improve educational outcomes and experiences, artificial intelligence (AI) in education covers a wide range of applications, from intelligent tutoring systems to personalized learning algorithms (Altememy et al., 2023; Crompton & Burke, 2023). The development of intelligent systems that can carry out tasks that normally require human intelligence is known as artificial intelligence (AI-Amoudi, 2023). Artificial Intelligence is being used in educational settings to make learning more personalized, inclusive, interactive, and engaging (Skenderi & Skenderi, 2023). There are numerous uses of AI in education:

1. **Personalized Learning:** By analyzing a student's performance and learning preferences, AI algorithms customize the course material to meet each student's specific requirements. Each learner will receive content that is most appropriate for their particular learning journey thanks to this customized approach.
2. **Intelligent Tutoring Systems (ITS):** These programs mimic one-on-one conversations between a tutor and a pupil. They respond to inquiries, give prompt feedback, and modify the difficulty of the problems on the student's progress.
3. **Automated Grading and Assessment:** Essays, quizzes, and assignments can all be graded by AI-driven tools for both correctness and content quality. Additionally, GenAI makes it easier for teachers to create assessments for their students (Chiu, 2023). Teachers save time thanks to this automation, which also gives students prompt feedback.
4. **Learning Analytics:** Artificial Intelligence (AI) tools facilitate proactive intervention by identifying learning gaps and forecasting future performance through the collection and analysis of data on student engagement and performance.

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