


Chapter 1

Reimagining Education With Advanced Technologies: Transformative Pedagogical Shifts Driven by Artificial Intelligence

Seema Yadav

 <https://orcid.org/0000-0002-8477-5895>

Bhopal School of Social Sciences, India

ABSTRACT

AI in education offers numerous benefits, including improved data analytics, teacher support, personalized and adaptive learning, and educational mainstreaming. This chapter explores the transformative role of artificial intelligence (AI) in education, emphasizing its potential to innovate teaching methods, personalize learning experiences, and enhance educational outcomes. Key themes include the ethical considerations of AI integration, the importance of teacher professional development in leveraging AI tools effectively, and the promotion of student engagement through interactive technologies. The discussion underscores the critical need for educators to navigate the ethical complexities of AI, foster student-centered learning environments, and integrate innovative pedagogical approaches to prepare learners for a technologically advanced future. By examining these themes, the chapter advocates for a balanced approach that harnesses AI's capabilities while addressing challenges to ensure equitable and ethical educational practices in the digital age.

DOI: 10.4018/979-8-3693-0884-4.ch001

Copyright © 2025, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.

INTRODUCTION

Innovation is the cornerstone of development, it brings unparalleled breakthroughs and revolutionary shifts that restructure industries and reshape societal landscapes. Its core is the never-ending quest for progress, which propels sectors to reinvent procedures, goods, and services in ways that raise bar expectations and redefine conventions (Aithal & Maiya, 2023). Innovation acts as a catalyst for evolution in all sectors of the economy, advancing technology to unprecedented heights, increasing operational effectiveness, and encouraging the creation of ground-breaking solutions (Aithal & Maiya, 2023). Education is moving more and more towards digital platforms. Digital tools like computers, iPads, and interactive whiteboards are becoming standard in K–12 classrooms. New technologies have the power to completely transform schooling (Hrastinski et al., 2019). The advent of AI is revolutionizing various sectors, including education (Tapalova & Zhiyenbayeva, 2022). The incorporation of AI has become a revolutionary force that cuts beyond geographic borders in the ever-changing landscape of higher education (Fazil et al., 2024).

Education in the 21st century faces a series of challenges, including training in mobile and ubiquitous contexts, and the improvement of the didactic processes associated with online and face-to-face teaching. For this, teachers and students can and should take advantage of the potential of tools based on artificial intelligence (Vázquez-Cano, 2021). In the last several years, artificial intelligence (AI) has drawn much interest from the educational community. Using language models for instruction and learning is one of the newest uses of AI (Inker et al., 2023). The use of technology, particularly AI, in the educational domain, has attracted a lot of interest lately. AI's ability to process a wide range of data, supported by learning sciences research, opens up new possibilities for teacher support, scaffolding, and customized student help (Zhang & Tur, 2024). The language model ChatGPT was created by OpenAI and has demonstrated promising performance in a range of natural language processing tasks (Maia Japoshvili-Ghvinashvili & Dr. Nazia Suleman, 2023).

Throughout the past few years, AI has advanced significantly and grown more prevalent in many areas of our lives. AI is the ability of computer systems to do operations that typically require human intelligence, such as learning, reasoning, solving problems, and making decisions (Zhang & Tur, 2024). AI technology has revolutionized education in a way never seen before, and the COVID-19 pandemic has made it possible to offer hybrid online and offline learning. The use of AI technology has resulted in subversive modifications to instructional environments, material, and procedures during the pandemic prevention and control phase (Yao, 2021). Many nations have recently proposed new guidelines for the proper application and promotion of AI education. People have seen the greatest disruptive

24 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/reimagining-education-with-advanced-technologies/358764

Related Content

Fuzzy Ontology Based Activity Recognition for Assistive Health Care Using Smart Home

K.S. Gayathri, K.S. Easwarakumaran and Susan Elias (2020). *International Journal of Intelligent Information Technologies* (pp. 17-31).

www.irma-international.org/article/fuzzy-ontology-based-activity-recognition-for-assistive-health-care-using-smart-home/243368

Artificial Intelligence in Sustainable Entrepreneurship: Implications for Inclusive Business and Regional Cohesion

Aryan Aryan, R. Chawngsangpuii, Rahul Prakash and Susmi Biswas (2025). *AI Strategies for Social Entrepreneurship and Sustainable Economic Development* (pp. 69-86).

www.irma-international.org/chapter/artificial-intelligence-in-sustainable-entrepreneurship/366882

A Comprehensive Study on Bias in Artificial Intelligence Systems: Biased or Unbiased AI, That's the Question!

Elif Kartal (2022). *International Journal of Intelligent Information Technologies* (pp. 1-23).

www.irma-international.org/article/a-comprehensive-study-on-bias-in-artificial-intelligence-systems/309582

Building a Content Moderation Framework to Provide a Safe and Secure Experience for Omnichannel Commerce

Siddhartha Paul Tiwari (2025). *Content Moderation in the Age of AI* (pp. 55-84).

www.irma-international.org/chapter/building-a-content-moderation-framework-to-provide-a-safe-and-secure-experience-for-omnichannel-commerce/376470

Cryptocurrency Transaction Fraud Detection Based on Imbalanced Classification With Interpretable Analysis

Pei Yin, Wen-long Jiang, Zi-jie Ma and Li-ke Zhang (2024). *International Journal of Intelligent Information Technologies* (pp. 1-21).

www.irma-international.org/article/cryptocurrency-transaction-fraud-detection-based-on-imbalanced-classification-with-interpretable-analysis/357696