

Chapter 25

Impact of Generative AI in Education 2030

Subhajit Adhikari

Institute of Engineering and Management, Kolkata, India

Dulal Kumbhakar

Vivekananda Mahavidyalaya, Haripal, India

Nabanita Indra

Dinabandhu Andrew's Institute of Technology and Management, Kolkata, India

Sunil Karforma

The University of Burdwan, India

ABSTRACT

This book chapter contains the basics of generative AI, evaluation of generative AI, working process of generative AI, and applications of generative AI in Education 2030. In this chapter, the authors will introduce the emerging concept of large language model (LLM), reinforcement learning, response generation, neural network, and tokenization as the building blocks of generative AI. In this context, the authors will analyze the role of AI based ChatGpt technology in Education. The applications of generative AI in educational policy making, infrastructure development, research, innovation, activity building, and content generation for the students at schools and colleges will be discussed. But the contents of above mentioned activities must be guided by a teacher of school and college because such contents have more context wise decision making abilities rather than AI based solutions.

INTRODUCTION

Artificial intelligence (AI) is a transformative technology which is increasingly integrated into various industries and sectors, impacting everything from business operations to societal concerns. This may lead various challenges and risks, particularly security. Therefore, the use of AI must be reliable, fair, transparent, and trustworthy. To achieve this, the authority ISO has published ISO/IEC 42001:2023 (De-

DOI: 10.4018/979-8-3693-2440-0.ch025

ember 18, 2023), a comprehensive standard that provides a structured approach to managing the unique challenges and risks associated with AI technologies. It addresses ethical considerations, transparency, and continuous learning challenges in AI. The advantages include transparency, demonstrating responsible AI use, traceability, a framework for managing risk and opportunities, cost savings, reliability, and efficiency gains. Implementing ISO/IEC 42001 ensures responsible AI use, reputation management, AI governance, practical guidance, and innovation (ISO/IEC, 2023).

BACKGROUND

Despite a huge history of AI research and applications has found in education, it took the fast success of ChatGPT to encourage educators, students, and university administrators all across the world to address its practical implications. A framework has been developed which is applicable for higher education in Australia and tested the tools based on the concept of generative AI to design and access the online tests (Smolansky et al., 2023). Artificial intelligence (AI) serves the essential role in the digitalization of society. The ability of artificial intelligence to automate procedures, handle data in massive volumes, and produce predictive insights will eventually revolutionize many facets of our everyday life (Cooper, 2023). The applications of creative writing in education are demonstrated using the concept of asking conceptual questions, math questions, story writing, essay writing (outlined), code generation and many more (Qadir, 2022). One new framework titled as IDEE is proposed using ChatGPT tool where IDEE stands with the objectives of (1) Finding of desired outputs (2) Automation level determination (3) Ethical implications (4) Effectiveness evaluation (Su & Yang, 2023).

INTRODUCTION TO GENERATIVE AI

The generative version of AI concentrates on generating data or content that is new (Chan, 2023). The generative pre-trained transformers which is known as GPT, takes the help of deep learning to create content in natural language. The most recent improvements from GPT, version of GPT 3.5 to version of GPT 4, are models of large language processing trained on a huge text corpus (Chan, 2023). In education, generative AI systems can provide various benefits, like increasing learner involvement in learning activities, generating feedback on time, making collaboration, and enhancing ease of access (Smolansky et al., 2023). In the humanities and arts, ChatGPT has a wide range of functions, including promoting artistic expression and creativity as well as research, teaching, and cultural preservation. In order to stimulate creativity and artistic expression, artists can work together with the model to co-create artwork, try out various writing styles, and brainstorm ideas. Scholars in the humanities frequently sift through vast amounts of textual material in quest of significant discoveries. In this situation, ChatGPT is quite helpful since it can summarize intricate literature, generate theories, and offer a variety of viewpoints on a certain subject. It enhances learning and makes education more approachable and interesting by customizing study materials, essays, and practice questions to each student's needs. In the humanities and arts, ChatGPT plays a transformational and diverse function. It stimulates innovation, advances analysis and research, transforms education, protects cultural heritage, promotes intercultural understanding, and ignites crucial moral and social debates (Rane, 2023).

21 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/impact-of-generative-ai-in-education-2030/348818

Related Content

Multi-Distribution Characteristics Based Chinese Entity Synonym Extraction from The Web

Xiuxia Ma, Xiangfeng Luo, Subin Huang and Yike Guo (2019). *International Journal of Intelligent Information Technologies* (pp. 42-63).

www.irma-international.org/article/multi-distribution-characteristics-based-chinese-entity-synonym-extraction-from-the-web/230876

Symmetric Uncertainty Based Search Space Reduction for Fast Face Recognition

C. Sweetlin Hemalatha, Vignesh Sankaran, Vaidehi V, Shree Nandhini S, Sharmi P, Lavanya B, Vasuhi Sand Ranajit Kumar (2018). *International Journal of Intelligent Information Technologies* (pp. 77-97).

www.irma-international.org/article/symmetric-uncertainty-based-search-space-reduction-for-fast-face-recognition/211193

Personalized Medicine and AMR: AI's Impact on Treatment Efficacy

Puneet Gupta, Pavan Krishna Chand Kusampudi and Sri Akash Pendam (2025). *AI-Driven Breakthroughs in Antimicrobial Resistance* (pp. 209-230).

www.irma-international.org/chapter/personalized-medicine-and-amr/374863

AI-Driven Pedagogical Transformation in Entrepreneurship Education: An Integrative Literature Review on Mindset, Creativity, and Self-Efficacy

Syed Haider Ali Shah, Eman Zameer Rahman, Fatma Selen Madenolu and Syed Bilawal Ali Shah (2026). *Decision Making, Learning, and Collaboration in AI-Driven Entrepreneurship* (pp. 89-108).

www.irma-international.org/chapter/ai-driven-pedagogical-transformation-in-entrepreneurship-education/408822

A Visual Detection Method for Foreign Objects in Power Lines Based on Mask R-CNN

Wenxiang Chen, Yingna Li and Chuan Li (2020). *International Journal of Ambient Computing and Intelligence* (pp. 34-47).

www.irma-international.org/article/a-visual-detection-method-for-foreign-objects-in-power-lines-based-on-mask-r-cnn/243446