Chapter 22
Shaping Tomorrow's Minds: The Future of Education in an AI (Artificial Intelligence)–Augmented World

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ABSTRACT

The chapter explores the evolution of AI, distinguishing it from generative AI, and examines its current applications in education, spanning from primary to higher education levels. Unveiling the multifaceted landscape of AI technologies, such as machine learning, deep learning, and natural language processing, the narrative delves into personalized learning, smart tutoring systems, and administrative efficiency. The chapter anticipates a future where AI collaborates seamlessly with educators, offering hyper-personalized learning journeys, immersive experiences through augmented and virtual reality, and fostering collaborative and project-based learning. Challenges, including ethical concerns, digital inclusion, and teacher training, are acknowledged, emphasizing the importance of addressing these issues for an inclusive and equitable AI-augmented educational future. As we stand at the brink of this transformative era, the chapter envisions a harmonious fusion of technology and human ingenuity shaping the minds of tomorrow.

INTRODUCTION

"Shaping Tomorrow's Minds: The Future of Education in an AI-Augmented World" embarks on a captivating exploration of the evolution, current landscape, and future possibilities of artificial intelligence (AI) in education. This chapter unfolds the historical tapestry of AI, tracing its origins from ancient myths to the formal inception in the mid-20th century, highlighting key milestones and challenges faced along its dynamic journey. Distinguishing between traditional AI and the transformative realm of generative AI, the narrative unfolds the multifaceted nature of AI technologies such as machine learning,

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deep learning, and natural language processing (Kankanhalli, 2024). The present role of AI in education is illuminated, showcasing its applications from primary to higher education levels, encompassing personalised learning, smart tutoring systems, and administrative efficiency. As the chapter peers into the future, it envisions the role of AI in 2040, foreseeing hyper-personalised learning, immersive experiences, and collaborative educational landscapes. However, the narrative remains grounded, addressing the ethical considerations, data privacy concerns, and the imperative need for teacher training. Through a comprehensive lens, this chapter offers readers a panoramic view of the past, present, and potential future of AI in education, advocating for a balanced approach that harnesses AI's transformative power while navigating the ethical complexities that accompany it.

The journey of Artificial Intelligence (AI) from its inception to its current state is a testament to the relentless pursuit of innovation (Abukmeil et al., 2021). Initially conceived as a concept in the mid-20th century, AI has undergone transformational evolution, transcending its theoretical roots to become an integral part of our daily lives. In recent years, the application of AI in education has garnered significant attention, presenting both opportunities and challenges. This chapter explores the evolution of AI, distinguishing it from generative AI, and delves into the current and future role of AI in education, emphasising the integration of generative AI to achieve Sustainable Development Goals (SDGs).

The goal of the computer science field of artificial intelligence (AI) is to build intelligent machines that can mimic human behavior and cognitive processes. Fundamentally, artificial intelligence (AI) is the creation of algorithms and systems that are able to sense their surroundings, analyze them, and make choices to accomplish particular objectives. Artificial Intelligence comprises several subfields, such as robotics, computer vision, natural language processing, and machine learning. These days, artificial intelligence (AI) is being incorporated into more and more areas of our life, from online shopping sites and streaming platforms to virtual assistants like Siri and Alexa. AI-powered solutions are transforming a number of industries, including manufacturing, healthcare, finance, and transportation. They do this by streamlining workflows, increasing productivity, and fostering creativity. But while AI develops quickly, it also brings with it ethical and cultural issues, such as privacy concerns, job displacement, and biases in algorithmic decision-making. AI is still developing despite these difficulties, offering revolutionary potential in the future (Doshi et al., 2023; Hiran et al.; 2023).

Looking toward the future, the chapter envisions a 2040 educational landscape enriched by hyper-personalised learning, immersive experiences, and collaborative environments. However, a balanced perspective is maintained, addressing ethical considerations, data privacy concerns, and the imperative need for teacher training. The exploration of AI's past, present, and potential future in education offers readers a comprehensive view, advocating for harnessing AI's transformative power while navigating the ethical complexities accompanying it.

This chapter also explores the dynamic evolution of AI and its transformative impact on education. Distinguishing between traditional AI and generative AI, we unravel the current role of AI in education, showcasing its potential to revolutionise learning experiences. Looking forward, we advocate for a future where generative AI collaborates with educators to achieve Sustainable Development Goals. However, we acknowledge the challenges that come with this paradigm shift, emphasising the need for ethical considerations and safeguards. As we stand on the cusp of an AI-augmented educational world, this chapter envisions a future where technology and human ingenuity combine to shape tomorrow's minds (Doshi et al., 2023; Mishra et al., 2021).