Chapter 6
Personalized Learning Through AI:
The Power of Tailored Education

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ABSTRACT

AI-powered applications hold the potential to craft learning experiences that are tailored to the unique needs of each learner, boosting both engagement and performance. By embracing AI, educational institutions can move beyond the traditional one-size-fits-all model, providing personalized learning pathways that align with individual strengths, weaknesses, and interests. Furthermore, machine learning (ML) algorithms can analyze large volumes of academic data to predict learning behaviors, habits, and outcomes, allowing L&D professionals to design targeted learning solutions that address each learner's specific needs. With this in mind, this chapter aims to delve into the influence of AI-driven applications on enhancing the effectiveness of personalized learning.

INTRODUCTION

Personalized learning is an educational approach that tailors the learning experience to meet the individual needs, strengths, preferences, and goals of each student. It involves customizing the curriculum, pace, and teaching methods to align with the unique characteristics of every learner, ensuring that the educational journey is both effective and engaging. The U.S. Department of Education (U.S. Department of Education, 2016)defines personalized learning as an approach where the pace

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and strategies of learning are adjusted to suit the specific needs of each student. This includes flexibility in learning goals, content, and delivery, making learning more adaptable and relevant to each student's interests and abilities. In a personalized learning environment, activities are designed to be meaningful and connect to students' personal interests, encouraging autonomy and self-directed learning.

Key components of personalized learning include relevance, interest-based engagement, and self-driven motivation (Walkington & Bernacki, 2020). These aspects highlight the importance of crafting learning experiences that resonate with students, fostering greater motivation and deeper understanding. Research in educational psychology suggests that when learning experiences are linked to students' interests, it can significantly boost both motivation and achievement (Bernacki & Walkington, 2018). According to other authors like (Bray & McClaskey, 2014), personalized learning empowers students to take an active role in their educational journey. They have the freedom to choose the content they explore, tailor their learning paths to their preferences, and decide how to demonstrate their knowledge and showcase their progress.

However, over the years there has been a paradigm shift in the realm of personalized learning perspectives with the implementation of sophisticated technologies like artificial intelligence (AI). AI is transforming education by customizing learning experiences to meet the unique needs of each student, surpassing traditional teaching methods once widely regarded as standard. By analyzing extensive data, AI personalizes instruction, enhancing engagement and boosting overall learning outcomes (Pratama et al., 2023). AI is reshaping personalized education by tailoring learning experiences to meet the individual needs of students, increasing engagement, and improving overall learning outcomes. Building on this introductory overview, this chapter explores the significant role and impact of AI in shaping personalized learning and the modern education system.

REVIEW OF LITERATURE

AI's impact goes beyond boosting productivity and automating tasks; it also affects areas like ethics, social structures, environmental sustainability, and corporate governance (Mutsuddi, 2024). Artificial Intelligence (AI) has had a profound impact on various industries, and its role in education, particularly in the realm of personalized learning, continues to grow. Personalized learning seeks to cater to the unique needs, learning styles, and abilities of each student, leading to more effective educational outcomes. AI-powered tools and technologies can revolutionize traditional education by delivering adaptive and tailored learning experiences that enhance student engagement, increase learning efficiency, and improve the overall