



THE ROLE OF ARTIFICIAL INTELLIGENCE IN SHAPING THE FUTURE OF DIGITAL EDUCATION

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Abstract: *The continuous development and advancement of technology have given rise to the creation of Artificial Intelligence (AI). This process is ongoing and continually improving with the evolution of technology. In recent years, there has been a significant increase in the use of AI in education, presenting the potential to revolutionize the methods of learning and teaching. Artificial Intelligence in education aims to bridge the gap between traditional classroom teaching and independent student learning, ultimately reducing the barriers that currently exist. This has the potential to transform the way knowledge is imparted and acquired.*

This article delves into the development of AI in education and its profound impact on learning policies, governance frameworks, accessibility, and ethical considerations. It meticulously examines how AI is shaping the decision-making process in education policymaking and its connection to transparency, accountability, and equity issues. The integration of AI in education has far-reaching implications for students, educators, and policymakers alike. It is crucial to understand how this technology is reshaping the educational landscape and the implications it carries for the future. In addition, this article aims to shed light on the transformative potential of AI in education while also highlighting the importance upholding ethical standards and ensuring equitable access for all.

Keywords: *Artificial Intelligence, traditional education, personalized learning, intelligent tutoring systems, educational inequity.*

Introduction: The educational process can be significantly enhanced by digital technologies such as artificial intelligence (AI), the Internet of Things (IoT) and other developments in information and computer technology (OECD Education Working Papers, 2024; Rosak-Szyrocka et al., 2022b; Santos et al., 2022). AI is being promoted as a means of improving education through more personalized, adaptable, inclusive, and engaging learning experiences, leveraging the abundance of real-time data (Big Data) (Bhutoria, 2022; Halagatti et al.). Artificial Intelligence in education is a rapidly evolving field within educational technology, as indicated by numerous global studies (Rosak-Szyrocka et al., 2022a). The broad definition of artificial intelligence is "computers which perform cognitive tasks, usually associated with human minds, particularly learning and problem-solving" (Baker et al., 2010). It's important to note that the term AI does not refer to a specific technology. These advancements in digital technology have the potential to revolutionize how we approach education, making learning more accessible, engaging, and tailored to individual needs. As we continue to explore the possibilities of AI and other digital



technologies, it is essential to consider their implications for the future of education and the opportunities they present for learners of all ages.

On top of that AI is revolutionizing the field of education, offering numerous advantages that are transforming the way we learn and teach. AI technologies have the potential to personalize the learning experience, making education more accessible and effective for students of all ages and abilities.

How AI can shape Modern Education

1. Personalized Learning: personalized learning with AI involves the use of data analysis to gain insights into each student's unique learning style, strengths, and areas of improvements. For example, an AI-driven platform can identify if a specific student struggles with reading comprehension and then offer customized exercises to enhance the student's skills.

2. Intelligent tutoring systems: AI technology has a significant role to play in the field of education, extending far beyond just personalized learning. It encompasses the use of intelligent tutoring software, data-driven educational insights, and automated administrative processes. Smart tutoring systems, in particular, have proven to be highly effective in delivering personalized tutoring experiences that complement traditional classroom settings. This, in turn, allows teachers to concentrate on fostering collaborative and interconnected learning environments (Kulik & Fletcher, 2016).

3. Reducing educational inequity: AI, or artificial intelligence, has the potential to significantly enhance the equity of education. In schools facing financial constraints, where students may lack access to the latest learning materials, AI can play a crucial role in providing high-quality resources tailored to their specific needs. An excellent example of this can be found in China, where the AI platform Squirrel AI Learning has played a pivotal role in granting students access to personalized lessons and materials that were previously unavailable to them. As a result, there have been notable improvements in student performance. This demonstrates the transformative impact that AI can have in addressing educational disparities and providing all students with the resources they need to succeed.

Impact of Artificial Intelligence

The field of research in Artificial Intelligence in Education (AIED) explores the effects of AIED applications on various facets of learning, such as academic performance, emotional perception, learning behavior, and learning ability. Numerous studies have underscored the notably positive influence of AI technology on students' academic performance. Additionally, students have exhibited favorable attitudes



towards the integration of AI in education (Özyurt et al., 2013), expressing heightened interest in learning (Liu et al., 2022) and improved concentration (Rong et al., 2022) as a result of these applications. These findings highlight the potential of AI to positively impact education, though further research is still needed to fully understand its undefined potential.

Challenges of AI

This research stream explores the ongoing issues and challenges in AIED with a focus on achieving a balanced, social-technical perspective. Several papers in this category address a variety of challenges related to AIED development. For instance, Perrotta and Selwyn (2020) concentrated on the challenges associated with the application of deep learning in education. These challenges include concerns about data quality, the reductionist approach of deep learning-based applications, and the integration of educational knowledge in application development. Luckin et al. (2016) emphasized the importance of establishing partnerships between AI developers, educators, and researchers to create effective AIED applications. These papers advocate for placing humans at the center of application development and taking into account the motivations, involvement, and expertise of stakeholders to address the challenges and ensure meaningful and impactful AIED solutions. This approach is crucial for the continuous advancement of AIED.

Conclusion: The potential of AI in transforming the educational sector is vast, encompassing personalized learning processes and the introduction of more accessible and engaging learning methods. However, to fully harness the benefits of this cutting-edge advantage, all relevant aspects must progress in tandem. Students need access to AI technology, while educators must be well-trained and adept at utilizing it to create a safe and stimulating learning environment. It is important to understand both the potential and the negative effects of AI in education. By doing so, we can take steps to maximize the benefits while mitigating any drawbacks. In this way, we can ensure that AI serves as a valuable tool for enhancing the learning experience for students of all ages and backgrounds.

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