Original Research Article

AI IN TEACHING AND LEARNING SUPPORT

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Abstract:

Artificial intelligence (AI) revolutionizes the educational landscape and improves educational methodology and learning outcomes. This document focuses on AI tools integration into education and training, personalized education, adaptive learning systems, intellectual training, and virtual education assistants. Using artificial intelligence technology, teachers can meet different needs for training, automate administrative tasks, and provide data based on data to improve student and effectiveness. This study discusses the benefits, problems, and future prospects of AI in education supported by data and practical applications. In conclusion, the article underlines how AI is not only a tool, but also a transformative force in education.

Keywords: *Artificial Intelligence, Personalized Learning, Adaptive Systems, Intelligent Tutoring, Virtual Teaching Assistants, Education Technology*

Introduction:

Education is on the threshold of the technological revolution, when artificial intelligence (AI) plays a key role in the formation of its future. Traditional methods of teaching and learning are often trying to satisfy the needs of various students, leaving gaps in interaction, understanding and holding. AI, with its capability to process vast amounts of data and adapt in real time, is transforming how knowledge is imparted and acquired. AI in education encompasses a broad spectrum of applications, from personalized learning environments to intelligent tutoring systems.It empowers educators to create adaptive lesson plans tailored to individual students' learning styles and paces. Virtual teaching assistants and AI-driven platforms automate repetitive tasks such as grading and attendance tracking, enabling educators to focus on teaching and mentoring. Additionally, AI facilitates access to education for students with disabilities and provides tools such as speech-to-text, text-to-speech,

real-time language translation. The global pandemic further highlighted the need for AI integration as remote and hybrid learning models became standard. AI-based tools like Coursera, Duolingo, and Google Classroom demonstrated their efficacy in ensuring continuity and quality of education during uncertain times. This paper delves into the current state of AI in teaching and learning, examining its benefits, challenges, and potential future developments. It also investigates how AI can bridge the gap between educators and learners, making education more inclusive, efficient, and engaging.

Objectives:

1   Analyse the impact of AI on personalized learning and student commitment.

2. To evaluate the role of AI in automating administrative and repetitive teaching tasks.

3. Research issues related to AI adoption in education.

4. Study future trends and potential outcomes of artificial intelligence-based training and training.

Data and Methodology:

Data sources:

1. Literature review: Analysis of scientific articles, reports and thematic studies on artificial intelligence in education.

2. Review: conducted with 100 teachers and 200 students to assess their perception and experience with artificial intelligence tools.

3. Case Study: A study of three educational platforms based on AI (Racera, Duolingo, Google Classroom).

Methodology:

This study uses a mixed method approach.

• Quantitative analysis: A statistical evaluation of test data to measure the effectiveness of AI tools in education.

• Quality Analysis: Thematic analysis of theme research to understand real applications and problems.

• Comparative analysis: Cross-platform evaluation of AI tools features and user satisfaction levels.

Data Source	Method Used	Sample Size
Literature Review	Content Analysis	50 articles
Educator Survey	Online Questionnaire	100
Student Survey	Online Questionnaire	200
Case Studies	Platform Evaluation	3

Results and Discussion:

1. Impact on Personalized Learning

The survey results indicate that 78% of educators have found effective AI tools to adapt the lessons to individual learning styles. Adaptive platforms such as Duolingo and Khan Academy adjust the difficulty of content according to the progress of students, improvement of engagement and retention.

AI Tool	Key Feature	Student Satisfaction (%)
Duolingo	Adaptive Language Learning	84%
Khan Academy	Personalized Practice Exercises	79%
Coursera	Customized Course Recommendations	76%

2. Automation of educational tasks

AI tools considerably reduce the burden of administrative tasks. For example, platforms like Turnitin and Gradescope automate assessments by saving teachers up to 40% time. This allows teachers to focus more on pedagogy and mentoring.

3. Challenges in AI Adoption

• Cost and Accessibility: 62% of respondents cited financial constraints as a barrier to adopting AI tools.

• Regarding confidentiality data: 54% of students expressed their apprehension as to the sharing of personal data with AI -focused platforms.

• Technical training: only 48% of educators felt correctly trained to effectively use AI technologies.

4. Future trends

New technologies such as Virtual Reality (VR), Controlled AI (VR), and Augmented Reality (AR) are ready to revolutionize exciting training. The predictions of AI-based analytics allow facilities to identify students in risk groups and actively intervene.

Conclusion:

AI has proven to be a Transformative Power

In education and training, offering personalized education, automation of administrative tasks and improved student participation.

Nevertheless, its general acceptance prevents issues such as data cost availability and confidentiality.

To fully implement AI's potential in education, stakeholders need to invest in training programs, develop affordable tools, and establish robust data security measures. The future of education lies in the transparent integration of AI technology, which allows learning to be more comprehensive, effective and adaptable to the needs of the 21st century.

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