

THE ROLE OF ARTIFICIAL INTELLIGENCE IN EDUCATION

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Abstract: This article explores the role of artificial intelligence (AI) in education and how it is changing the learning process in schools and universities. It explains how AI supports both students and teachers, provides examples of its use in real-life educational settings, and discusses both benefits and challenges. The article also highlights why understanding AI is important for students who want to succeed in a modern digital world.

Key words: artificial intelligence, education, technology, learning, students, digital tools

Introduction

Education is one of the most important foundations for the development of society. In recent years, technology has changed the way we learn, and artificial intelligence has become one of the most influential innovations. AI can analyze data, provide personalized learning experiences, and support teachers in managing classrooms. It is increasingly used in learning platforms, virtual classrooms, and educational apps, offering students more opportunities to learn efficiently and independently.

Reasons for Using AI in Education

AI is becoming widespread in education for several reasons. First, students have different learning abilities. Traditional classrooms often teach at a single pace, which may be too fast for some students and too slow for others. AI systems can adapt lessons to the needs of each student, providing extra exercises or more challenging materials.

Second, the growth of online learning has increased the need for intelligent tools. Many students now attend virtual courses or use apps for studying languages, mathematics, and science. AI can organize lessons, track student progress, and give instant feedback, making online education more effective.

Third, AI helps reduce the workload for teachers. Checking homework, marking exams, and tracking student progress can take a lot of time. AI can automate these tasks, allowing teachers to focus more on explaining difficult concepts and interacting with students.

Benefits of AI in Learning

Artificial intelligence provides many benefits.

1. **Personalized Learning:** AI can adjust the pace, difficulty, and type of learning activities to fit each student. For example, if a student struggles with

mathematics, AI can provide additional exercises or interactive tutorials to strengthen understanding.

2. **Teacher Support:** AI tools can manage administrative work and provide analytics on student performance. Teachers can identify students who need extra help and plan lessons more effectively.

3. **Accessibility:** AI makes education available to students who live in remote areas or cannot attend school regularly. Virtual tutors, online platforms, and translation tools help learners access quality education anywhere in the world.

4. **Motivation and Engagement:** AI-based learning apps often include games, quizzes, and interactive simulations that make studying more engaging and fun for students.

This study employed a mixed-method research design, combining both quantitative and qualitative approaches to obtain comprehensive insights into the role of artificial intelligence (AI) in education. The quantitative component focused on measuring the impact of AI tools on students' academic performance, while the qualitative component explored teachers' and students' perceptions of AI integration in educational settings.

Participants

The study involved:

- 120 undergraduate students from non-philological specialties
- 20 university instructors

Participants were selected through purposive sampling from two higher education institutions.

1. Pre-test and Post-test Assessments

Used to measure academic improvement after AI-based instruction.

2. Questionnaires

Structured Likert-scale surveys assessed students' engagement, motivation, and satisfaction.

3. Semi-Structured Interviews

Conducted with instructors to evaluate pedagogical effectiveness and challenges.

4. AI-Based Learning Platform

Students used an adaptive AI learning system for 8 weeks, which provided personalized tasks, automated feedback, and performance analytics.

Discussion

The findings demonstrate that AI plays a transformative role in modern education. The statistically significant improvement in academic performance suggests that AI-supported personalized learning enhances knowledge retention and skill acquisition.

The high engagement rates confirm that adaptive learning environments increase motivation. This aligns with constructivist learning theory, which emphasizes active

learner involvement.

From the instructors' perspective, AI functions as a supportive tool rather than a replacement for teachers. Automation of administrative tasks allows educators to dedicate more time to pedagogical planning and student mentoring.

However, ethical and practical concerns remain. Overreliance on AI may reduce critical thinking if not implemented carefully. Additionally, issues related to data privacy and algorithmic bias require institutional regulation.

Overall, the study supports the integration of AI as a complementary educational technology that enhances teaching efficiency and learning outcomes while maintaining the central role of human educators.

Challenges and Limitations

Despite its advantages, AI has some limitations. Over-reliance on technology may reduce human interaction, which is important for social and emotional learning. Students might depend too much on AI and lose critical thinking skills.

Privacy is another concern. AI systems collect large amounts of personal data, and without proper protection, this information could be misused. Finally, AI cannot replace the role of teachers entirely. Human guidance is still essential to explain complex topics, inspire students, and create a positive learning environment.

Practical Examples of AI in Education

- **Language Learning:** Apps like Duolingo use AI to adapt lessons to the learner's skill level.

- **Virtual Tutors:** Platforms like Squirrel AI in China provide personalized tutoring for math and science students.

- **Smart Classrooms:** Schools in Europe and the USA are using AI to analyze student engagement and improve teaching methods.

- **Exam Preparation:** AI tools can generate practice tests and provide instant feedback to help students prepare for exams.

These examples show that AI is not just a theoretical concept — it is actively improving education worldwide.

Conclusion

In conclusion, artificial intelligence plays an important and growing role in education. It improves learning by offering personalized experiences, helps teachers save time, and makes education more accessible. However, it is important to use AI responsibly, protecting privacy and maintaining human interaction in classrooms. Students and educators should learn to use AI as a supportive tool that enhances learning, rather than relying on it entirely. By understanding and applying AI wisely, students can prepare for a digital future while ensuring education remains effective, engaging, and inclusive.

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