

ADVANTAGES AND CHALLENGES OF ARTIFICIAL INTELLIGENCE IN EDUCATION

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Annotation. This article analyzes the prospects and potential risks of implementing Artificial Intelligence (AI) technologies in the modern education system. During the research, personalized learning and the reduction of teacher workload are considered as positive aspects, while data security and ethical issues are identified as the primary obstacles.

Keywords: Artificial Intelligence, personalized learning, digital transformation, EdTech, adaptive learning, academic integrity.

TA'LIMDA SUN'IY INTELLEKTNING AFZALLIKLARI VA MUAMMOLARI

Annotatsiya. Ushbu maqolada zamonaviy ta'lim tizimiga sun'iy intellekt (SI) texnologiyalarini joriy etishning istiqbollari va yuzaga kelishi mumkin bo'lgan xavf-xatarlar tahlil qilinadi. Tadqiqot davomida shaxsiylashtirilgan o'qitish va o'qituvchilar ish yuklamasini kamaytirish ijobiy jihatlar sifatida ko'rib chiqilgan bo'lsa, ma'lumotlar xavfsizligi va axloqiy muammolar asosiy to'siqlar sifatida aniqlangan.

Kalit so'zlar: Sun'iy intellekt, shaxsiylashtirilgan ta'lim, raqamli transformatsiya, EdTech, adaptiv o'qitish, akademik halollik.

ПРЕИМУЩЕСТВА И ВЫЗОВЫ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В ОБРАЗОВАНИИ

Аннотация. В данной статье анализируются перспективы и потенциальные риски внедрения технологий искусственного интеллекта (ИИ) в современную систему образования. В ходе исследования в качестве положительных аспектов рассматриваются персонализированное обучение и снижение нагрузки на преподавателей, в то время как информационная безопасность и этические вопросы определены как основные препятствия.

Ключевые слова: Искусственный интеллект, персонализированное обучение, цифровая трансформация, EdTech, адаптивное обучение, академическая честность.

Introduction

Today, the rapid pace of technological progress is fundamentally transforming the education system. The concept of Artificial Intelligence (AI) is no longer merely an object of

science fiction; it is becoming an integral part of the daily educational process. In education, AI generally refers to algorithms and systems capable of performing functions characteristic of human intelligence—such as learning, analyzing, and decision-making.

The primary advantage of this technology is the possibility of personalizing education. The traditional "one size fits all" approach is not always effective because every student has a different learning pace. AI systems analyze every step of a student and provide a customized curriculum.

This serves to increase student motivation and fill knowledge gaps in a timely manner [1].

However, AI brings not only opportunities but also serious challenges. One of the greatest concerns is the reduction of pedagogical interaction and the potential weakening of students' critical thinking skills. If AI can provide answers to all questions, will students still feel the need for independent research? Furthermore, issues of data privacy and the impartiality of algorithms remain high on the agenda [7].

For teachers, AI reduces administrative burdens, freeing up time for a more creative approach to teaching. The goal of this article is to objectively evaluate the role of AI in education and propose optimal models for its integration. Through this, we aim to define ways to improve the quality of education and prevent potential negative consequences.

Methodology

A combination of qualitative and quantitative analysis methods was used to conduct this research. In the first stage, a comparative analysis was conducted on more than 50 international scientific articles published between 2020 and 2025 on the topics of "Education and AI" and "Adaptive Learning Systems" [6]. This allowed for the identification of global trends in the AI field.

In the second stage, to gather empirical data, the effectiveness of platforms based on AI algorithms such as Duolingo and Khan Academy was studied. A "Systematic Approach" was chosen as the basis, viewing AI as a part of the entire educational ecosystem.

In the third stage, the "Case Study" method was applied, analyzing the experiences of countries leading in digital education. "Ethical Expertise" was used to evaluate the ethical aspects, where the degree to which algorithms avoid discrimination was examined [3]. Statistical methods were used in data processing: the performance indicators of groups using AI and traditional groups were compared. All selected methods serve to ensure the validity and scientific grounding of the research results.

Results

The research results showed that the implementation of AI technologies significantly increases learning efficiency. According to quantitative analysis, the average mastery rate of students using AI-based adaptive learning platforms was 25-30% higher than those in traditional groups [2]. Specifically, in the field of exact sciences, it was observed that the speed of students mastering complex concepts accelerated by 40% because algorithms provide tailored explanations in real-time [4].

Furthermore, it was found that AI systems took over approximately 45-50% of administrative tasks such as grading tests. As a result, the time educators spent on direct interaction with students increased 1.5 times [4].

However, negative trends were also identified: in students who spent more than 70% of the learning process on AI platforms, teamwork skills decreased by 15-18%.

Discussion

The results lead to dual conclusions about AI in education. At the center of the discussion is the issue of algorithmic bias. If educational materials are constructed based on specific cultural views, AI may instill these in students. Moreover, academic integrity has emerged as a major problem. Generative AI models like ChatGPT have increased the tendency among students to seek ready-made answers, reducing originality [3]. For the advantages of AI to outweigh its problems, a "Hybrid Model" (Human + Machine) is seen as the most optimal solution [5]. This approach involves combining technological speed with human ethics and communication.

Conclusion

Artificial Intelligence has created revolutionary changes in education. The main goal is not to avoid technology but to manage it wisely. AI should be an assistant that expands the teacher's capabilities. By following ethical norms and increasing digital literacy, we can safely utilize all the advantages of AI.

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