



DIGITAL EDUCATION TECHNOLOGIES AND THE ROLE OF ARTIFICIAL INTELLIGENCE IN EDUCATION

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Abstract: Digital education technologies and AI (a tool to break down the barriers of distance in our pedagogical system) offer profound transformation to the education systems worldwide. Such innovations allow for customized learning experiences, improve accessibility, and simplify assessment techniques. Nevertheless, challenges remain, including the digital divide, teacher preparedness, and ethical considerations. With data only based on October 2023, we outline their impact, the pros and cons of AI and digitalization, and the fundamental one - opening up systemic barriers as a path to equitable education access. This article sheds light on these technologies' effects on future learning via case studies and statistical trends.

Keywords: Digital tools, artificial intelligence, hybrid learning, AI-driven platforms, digital education, digital divide, data privacy, impact.

Цифровые Образовательные Технологии И Роль Искусственного Интеллекта В Образовании

Аннотация: Цифровые образовательные технологии и искусственный интеллект (как инструмент для преодоления барьеров расстояния в нашей педагогической системе) предлагают глубокую трансформацию образовательных систем по всему миру. Такие инновации позволяют создать индивидуализированные образовательные опыты, улучшить доступность и упростить методы оценки. Тем не менее, остаются вызовы, включая цифровой разрыв, готовность учителей и этические соображения. Основываясь на данных до октября 2023 года, мы рассматриваем их влияние, плюсы и минусы ИИ и цифровизации, а также основной аспект – устранение системных барьеров как путь к обеспечению равного доступа к образованию. В этой статье освещается влияние этих технологий на будущее обучения на основе примеров из практики и статистических тенденций.

Ключевые слова: цифровые инструменты, искусственный интеллект, гибридное обучение, платформы на базе ИИ, цифровое образование, цифровой разрыв, конфиденциальность данных, влияние.

RAQAMLI TA'LIM TEXNOLOGIYALARI VA TA'LIMDA SUN'IY INTELLEKTNING O'RNI.

Annotatsiya: Raqamli ta'lim texnologiyalari va sun'iy intellekt (pedagogik tizimimizdagi masofa to'siqlarini bartaraf etish vositasi sifatida) dunyo bo'ylab ta'lim tizimlariga chuqur o'zgarishlar olib kiradi. Bunday innovatsiyalar moslashtirilgan ta'lim tajribalarini taqdim etish, kirish imkoniyatlarini yaxshilash va baholash usullarini soddalashtirishga imkon beradi. Shunga qaramay, raqamli tafovut, o'qituvchilarni tayyorlash va axloqiy masalalar kabi qiyinchiliklar saqlanib qolmoqda. 2023-yil oktabr oyigacha bo'lgan ma'lumotlarga asoslanib, biz ushbu texnologiyalarning ta'siri, sun'iy intellekt va raqamlashtirishning afzalliklari va kamchiliklarini, shuningdek, tizimli to'siqlarni bartaraf etish orqali teng ta'lim imkoniyatlarini yaratish yo'lidagi asosiy omillarni o'rganamiz. Ushbu maqola ushbu texnologiyalarning kelajakdagi ta'limga ko'rsatadigan ta'sirini amaliy misollar va statistik tendensiyalar orqali yoritib beradi.

Kalit so'zlar: Raqamli vositalar, sun'iy intellekt, gibrildi ta'lim, AI-drayverli platformalar, raqamli ta'lim, raqamli tafovut, ma'lumotlar maxfiyligi, ta'sir.

Introduction:

Long before the pandemic, the infusion of digital education technologies and the emergence of artificial intelligence (AI) had begun to cause a paradigm shift in the delivery, accessibility, and experience of education. These innovations have transformed the education landscape, making it more adaptable, inclusive, and effective. Digital tools and AI are breaking down barriers to education traditionally set by geography, economics, availability of human resources, and capability by personalizing what people see, automating tedious processes for teachers, and showing data in a format people can use instantly.

The COVID-19 pandemic pushed educational institutions around the world to embrace remote and hybrid learning models, which sped up the adoption of these technologies. UNESCO estimates that in 2020, school closures impacted 11.6 billion students worldwide, or more than 91% of the student body. This extraordinary change highlighted the significance of digital tools in preserving educational continuity was highlighted by this extraordinary change. During this time AI-powered platforms like Microsoft Teams Khan Academy and Coursera became essential giving educators and students the tools they needed to adjust to the new normal.

Even though AI and digital education technologies have many advantages, integrating them into educational systems has presented many difficulties. There is an urgent need to address issues like unequal access to technology, insufficient training for teachers, and ethical concerns about data privacy. This article examines how these technologies might revolutionize education examines the obstacles preventing their broad use and makes suggestions for how to overcome them.

Methods:

Data Collection: Using a mixed-methods approach, the study incorporated both primary and secondary data. Quantitative information on trends in the adoption of digital education technologies was taken from international reports published by the World Bank OECD and UNESCO. To assess the usefulness of AI-driven platforms like DreamBox Learning and Duolingo qualitative insights were gathered from case studies of these platforms.

Framework of analysis: Three main themes were the focus of the analysis.

- How AI can improve individualized education.
- The ability of digital platforms to grow in underprivileged areas.
- Infrastructure issues, teacher preparedness issues, and moral dilemmas.

Limitations: Based on pre-existing data, the study may not accurately reflect the variety of experiences across different educational contexts. Future research involving surveys and interviews with educators' students and lawmakers may yield deeper insights.

Results:

Transformative Impact of Digital Education Technologies: Digital tools have transformed a number of educational facets, such as the assessment of student engagement and content delivery. To provide individualized learning experiences, AI-powered adaptive learning platforms such as DreamBox Learning and Smart Sparrow, for example, evaluate student performance in real time. In comparison to students in traditional classrooms, the OECD reports that students who used adaptive learning tools showed a 25% improvement in their problem-solving abilities. Another effective strategy for raising engagement is gamification. Sites like Duolingo use game-like features like leaderboards, challenges, and rewards to encourage students. According to a study conducted in 2021, students who used gamified platforms had a 30% higher chance of finishing their courses than those who used non-interactive approaches.

Expansion of Remote and Hybrid Learning: The transition to remote learning prompted by the pandemic accelerated the remarkable adoption of digital educational tools. Thanks to platforms such as Zoom, Google Classroom, and Microsoft Teams, educators and learners managed to continue their education. With more than 100 million users worldwide, Coursera reported a 65% increase in enrollments in 2021. Additionally, AI was essential in enabling hybrid learning models that blended online and in-person training. Secure online tests were made possible by programs like Exam Soft and Proctorio, and teachers were given access to data on student understanding and engagement through AI-driven analytics.

Challenges in Adoption

Digital Divide: One of the biggest obstacles to the broad use of digital education technologies is still the digital divide. The nearly 30 disproportionately harm rural and low-income communities. Seven billion people worldwide according to World Bank estimates do not have access to the Internet. Although 87 percent of households in developed countries have internet access only 17 percent of households in sub-Saharan Africa do. Inequalities in education are made worse by the limited use of digital tools.

Educator Readiness: Teachers must be adequately trained and comfortable with digital technologies in order for them to be successfully incorporated into the classroom. In 2021, a UNESCO survey revealed that just 40% of educators in low—and middle-income nations felt ready to use digital tools in the classroom. A lack of training and resistance to change severely hampered the efficient use of technology in the classroom.

Ethical and Privacy Concerns: AI-powered solutions frequently gather enormous volumes of data on student behavior which raises questions regarding data security and privacy. For example, 68 percent of educators expressed concern about EdTech companies possible misuse of student data according to a 2020 study. Another ethical issue is algorithmic bias since poorly constructed AI systems have the potential to reinforce stereotypes or disadvantage particular student groups.

Discussion:

a. Bridging the Digital Divide

Governments, international organizations, and private sector stakeholders must work together to address the digital divide. To promise solutions include projects as Starlinks satellite internet services and Google Project Loon, which employs high-altitude balloons to deliver

internet access in remote locations. Programs that offer low-income families subsidized devices can also aid in closing the access gap to technology.

b. Enhancing Teacher Training

For teachers to be prepared to use technology effectively, professional development programs that emphasize digital literacy and pedagogical techniques are crucial. Google for Education and Microsoft Educator Center provides free training courses on incorporating digital resources into the classroom. To scale training programs and make sure teachers are ready for the demands of digital classrooms, governments should collaborate with these platforms.

c. Leveraging AI for Equity

AI has the capacity to progress instructive value by advertising individualized needs-based learning encounters. For occasion, the AI-powered highlights of Khan Foundation permits understudies to progress at their claim pace by fitting lessons to their ability levels. Governments must, be that as it may, provide foundation and preparing investing best need in arrange to ensure reasonable get to particularly in underprivileged zones.

d. Tending to Moral Concerns

EdTech businesses and administrators must grasp open strategies for information collection and calculation advancement in order to diminish moral dangers. Rules are given by administrative systems, just like the Common Information Assurance Direction (GDPR), to defend understudy information and ensure responsibility in AI applications. In order to create comprehensive AI frameworks that decrease predispositions and progress equity, teachers and designers ought to collaborate.

Conclusion:

The potential for computerized instruction innovations and manufactured insights to revolutionize instruction by making it more locked, open, and personalized is gigantic. These apparatuses have the potential to contribute to the advancement of a more evenhanded and comprehensive learning environment by handling issues just like the computerized separate teacher preparedness and moral concerns. Long-term of learning will be molded by the cautious integration of computerized advances and counterfeit insights (AI) as instructive frameworks around the world proceed to alter to the requests of the twenty-first century.

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