ARTIFICIAL INTELLIGENCE: A NOVEL RESOURCE FOR INTEGRATING CONTEMPORARY LEARNING TOOLS WITHIN HIGHER EDUCATION

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Abstract. This paper explores emerging instruments for incorporating modern learning resources into the educational landscape of universities, spurred by advances in artificial intelligence. It examines findings from current scholarly investigations in this domain. Higher education serves as a testing ground for AI-powered solutions and the reshaping of the educational environment through digitalization. The advantages and potential drawbacks of leveraging artificial intelligence and cutting-edge technologies are highlighted. The paper addresses the limitations and boundaries of neural network influence within higher education. It suggests a discussion concerning legal and ethical considerations arising from the expanding role of artificial intelligence within university learning environments.

Keywords: artificial intelligence, higher education, digital transformation, educational technologies, innovative technologies.

Introduction

Today's neural networks are achieving remarkable feats in artificial intelligence, even in areas traditionally considered uniquely human. AI can now produce insightful and well-structured texts, visuals, and even compose music in defined styles, effectively entering creative fields that are rapidly changing. These advancements are impacting areas seemingly distant from technology. The widespread adoption of artificial intelligence across diverse sectors may herald a new age of innovation; AI and education are increasingly viewed as a potential

"new ecosystem." AI technologies, with their capacity to process extensive datasets, facilitate the rapid identification of problems in educational pathways, as well as adjustments to teaching approaches and learning materials. The integration of artificial intelligence into the organization of university education is a topic of growing discussion, underscoring the importance of this study. It has recently emerged as a potent force in education, science, and technology.

Current efforts are focused on exploring the application of artificial intelligence in educational activities. A noteworthy aspect of societal expectations regarding the implementation of AI in education, informed by student surveys, is detailed in the work of Yu.V. Gavrilova, I.E. Motorina, and T.E. Pavlova [1]. M.A. Yegorova and A.V. Minbaleev emphasize the unique aspects of teaching international students using digital and innovative methods [3]. I.E. Zhukovskaya addresses the significance of digitalization in higher education, particularly concerning the adoption of advanced digital platforms [4], and identifies key trends in enhancing university operations within a digital transformation context [5].

Numerous studies, such as those by G.V. Zakharov and O.V. Korostelyov [6], T.A. Ivashkina [7], A.D. Daragan, G.L. Yezhova, G.A. Yezhova [2], I.S. Sinogeev [14], and others, examine digitalization and the digital transformation of contemporary education. N.A. Korovnikova [8] investigates the challenges and opportunities presented by artificial intelligence in the modern educational sphere. M.V. Kudina, L.B. Logunova, and Yu.Yu. Petrunin analyze issues related to safeguarding national education during a global digital revolution [9], while E.S. Pavlyuk [11] provides a thorough examination of international experiences regarding the impact of artificial intelligence on the educational process in higher education. The influence of artificial intelligence products on youth development is examined by K.B. Mukhamadieva [10]. A.S. Semchenko [12] details the incorporation of technological methods in the operations of educational

institutions. E.G. Svetlichny, M.M. Khamgokov, and V.V. Shabayev [13] address the enhancement of the educational process through artificial intelligence and digital platforms. E.Sh. Shefiyeva and T.E. Isaeva [15] investigate the application of artificial intelligence specifically within foreign language acquisition.

In 2019, the President of the Russian Federation endorsed the Decree "On the Development of Artificial Intelligence in the Russian Federation," establishing a key document for this field domestically.

Digital transformation represents the ongoing integration of advanced digital technologies across the entire lifecycle of human knowledge, fundamentally reshaping human existence. This trend is particularly prominent in higher education today. By leveraging digital technologies, universities can provide students with access to a wider array of learning opportunities while potentially lowering the overall cost of education.

The introduction of digital technologies began to reshape teaching methodologies and approaches in the late 1980s and early 1990s. The concept of a "digital curriculum" emerged alongside the integration of computers into the educational sphere. Digital curricula and their components were progressively implemented to enrich the learning environment.

Currently, artificial intelligence can be incorporated into online educational programs and platforms, designed to streamline educational activities by creating interactive learning spaces. A key benefit of this system is its ability to adapt to the unique learning styles of each student. Furthermore, AI can identify and correct errors made by learners when utilizing modern educational materials, such as e-books, multimedia resources, and simulations.

An AI-powered platform can provide feedback to participants, monitor academic progress, and continuously refine itself and the educational content. Another example of utilizing artificial intelligence as an innovative tool is its capacity to generate and provide students with supplementary learning materials. For instance, AI can consolidate diverse educational resources into unified online platforms for both educators and learners, improving access to subject-specific content and facilitating more effective instruction, allowing educators to synthesize materials from various sources into a cohesive whole.

Artificial intelligence can also significantly assist in evaluating student work, particularly in areas requiring precise calculations, such as surveys and tests. This allows educators to reduce grading time and expand the scope and variety of assessments. When conducting

pedagogical experiments or gathering data, AI minimizes human bias, resulting in a more efficient and accurate process.

We believe that modern technologies and innovative teaching approaches related to artificial intelligence hold considerable promise in education, particularly in the following areas:

– Education for individuals with disabilities (adaptive technologies catering to individual learner needs);

– Personalized learning pathways (methodological approaches and learning pace tailored to each student's unique requirements, abilities, and preferences);

– Self-assessment systems;

– Testing systems and analysis of test outcomes;

– Tailored feedback;

– Spaced repetition learning;

– Distance education;

– Problem identification and suggestion of optimal solutions;

– Examination administration;

– Smart campus; etc.

The integration of artificial intelligence technologies into the education system presents unprecedented opportunities for flexible, accessible, and personalized learning, fostering a more humanized educational experience. This aligns with the Federal State Educational Standards of Higher Education, laying the groundwork for the full development of students' abilities and individualized learning pathways.

Recent student surveys reveal a positive reception to neural networks within the university setting. Notably, nearly all respondents demonstrated familiarity with artificial intelligence technologies, with 80% demonstrating a solid understanding of their core principles, features, and distinction from broader AI concepts [1]. A significant portion recognized AI's ability to mimic cognitive functions (28%), while others identified it as self-learning algorithms (28%) or technologies leveraging artificial intelligence (24%), indicating a general readiness to embrace AI-enhanced learning [1].

The benefits of artificial intelligence extend beyond education, offering solutions to a wide range of social challenges. As technology becomes increasingly accessible, numerous sectors are poised to benefit from AI-driven advancements.

AI's capacity to address societal issues is particularly compelling. Many problems stem from human error, and AI systems can mitigate these by improving decision-making processes. Universities are leveraging AI to cultivate more effective and engaging learning environments, while healthcare organizations are utilizing neural networks for early disease detection and treatment, demonstrating tangible improvements in patient outcomes. Furthermore, AI streamlines technological development, reducing costs and accelerating innovation. Human-led development is often resource-intensive and time-consuming, whereas AI systems can accomplish many tasks with minimal additional labor or time investment.

The potential applications of neural networks and artificial intelligence continue to expand, encompassing:

– Computer vision

– Natural language processing

– Machine translation

– Speech recognition

– Speech synthesis

– Recommendation systems

– Decision support systems

– Modeling

– Neuroprosthetics

– Brain-computer interfaces

– Neurostimulation, and more.

However, the advancement of AI also introduces the risk of unethical applications. As artificial intelligence becomes increasingly sophisticated, it raises complex ethical dilemmas. While neural networks offer significant convenience and advancements across numerous fields, their potential to pose serious challenges to humanity cannot be ignored.

In recent years, artificial intelligence has garnered considerable scientific and practical attention. Intelligent systems are now capable of performing tasks requiring common sense and human-like intelligence. With the advent of modern equipment, concepts like machine learning, language processing (machine translation), computer analysis, and robotics are rapidly becoming accessible to universities, solidifying AI's transition from theory to tangible reality.

Education is changing: new methodologies and approaches are being developed. Today, universities have access to powerful computers that are used for educational purposes. These

machines can process vast amounts of data much faster than ever before. In addition, cloud services provide easy access to high-performance computing resources on the Internet. This enables the execution of complex machine learning algorithms at large scale.

AI technologies are rapidly becoming a reality in higher education thanks to innovations in both hardware and software.

On the one hand, innovative technologies create the conditions for more effective and even engaging learning, enhancing the educational process and allowing for more efficient and productive satisfaction of the needs of students and society. By utilizing neural network-based tools, universities can develop adaptive learning systems and construct individualized educational pathways. E-learning provides easy access to study materials regardless of location or time zone. Personalized e-learning enables accelerated learning, as it is tailored to each learner's needs.

Artificial intelligence technologies are also used for research purposes, helping to better understand human thinking and behavior. This is especially useful in studying human motivation, decision-making, and more complex mental processes. A high-tech learning and research environment leads to significant breakthroughs in fields such as psychology, neuroscience, cognitive science, and social science research. These results have far-reaching implications for society as a whole—both positive and negative—as demonstrated by recent advancements in artificial intelligence development.

However, the use of AI technologies in higher education also raises ethical concerns. For instance, where are the boundaries of using technology in the learning process? Should students be aware that they are being assessed by computer algorithms? Are there any safeguards against fraud when using these tools? Should faculty be informed about how machine algorithms are evaluating their work? These questions will need to be addressed soon, as AI technologies become increasingly available in higher education.

Scientific and technological progress is increasingly becoming an integral part of learning. The greatest challenge in this area is defining how machines should behave from a moral standpoint. Most of us use AI developments for beneficial purposes, but applying them ethically is not an easy task. The biggest ethical dilemma lies in how artificial intelligence should behave ethically—and who will oversee this? How can we prevent the potential loss of human control over neural networks and their causing harm to people? We must be prepared to address these issues before they become a reality.

The way humanity uses artificial intelligence directly affects the future of higher education. Some experts argue that AI could take control over humans if it ever becomes powerful enough to match human intelligence. In recent years, there have been many speculations about how future AI will impact humanity. Many specialists believe that humanity must take precautionary measures when developing new technologies and working with neural networks.

Researchers claim that the field of ethics is only beginning to explore how machines might influence human behavior. We are only starting to create laws and regulations for the use of artificial intelligence, and none of them are yet perfect. Developing and testing new technologies is, of course, exciting, but we must always consider the consequences before implementing them in real-life scenarios.

Conclusion.

Thus, the use of artificial intelligence technologies in the educational process holds great potential for developing the necessary competencies in universities, enhancing the competitiveness of educational programs, improving the quality and accessibility of the educational environment, and initiating the emergence of innovative learning formats. In essence, artificial intelligence is useful in many ways, but higher education institutions have yet to fully grasp its potential.

We propose summarizing the innovative potential of artificial intelligence technologies as tools for implementing modern learning means in higher education by the following aspects:

- Implementation of elements of "artificial intelligence-based learning";

- Integration of remote "AI-powered learning";

- Hybrid information platforms;

- Robotization of assessment and evaluation activities;

- Communicative interfaces of educational computer systems;

- Interactivity of the educational environment;

- Personalization of learning;

- Development of individualized educational trajectories that adapt to learners' personal characteristics;

- "Living intelligent textbooks" that integrate and synchronize with the pace and quality of content acquisition by a specific learner;

- Adaptation of lessons based on individual progress and development dynamics;

- Virtual AI-powered tutors, and so on.

Today, modern students possess the digital competencies and technological literacy necessary to adapt to the evolving educational environment. However, for the successful integration of innovative technologies into the sphere of higher education, the preparedness of the educational system itself is essential. This includes not only the readiness of students but also that of educators, the digital competence of administrative and supervisory bodies, appropriate understanding and support from the government, as well as the technical and software-hardware compatibility of the technologies. Society as a whole must be prepared for the integration of artificial intelligence technologies, both in the educational environment and in other spheres of human life.

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