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ON THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN THE EDUCATIONAL PROCESS IN DEPARTMENTAL AND MILITARY HIGHER EDUCATION INSTITUTIONS

Abstract. The article considers the issue of the application of artificial intelligence in the educational process in departmental and military higher education institutions. As an example, the experience of employees of the Academy of Law Enforcement Agencies under the General Prosecutor's Office of the Republic of Kazakhstan on the use of some of the systems based on AI for more effective conduct of classes in several disciplines allows us to judge about the prospects of this approach.

The article contains examples of promising developments that are under development, but given as beacons (digital avatars, symbiosis of AI and virtual reality, training on 3D models generated from a limited number of 2D images, etc.).

However, there are some challenges and risks in implementing this approach. For example, the requirements for technological infrastructure, the preparedness of faculty and students, the risk of reducing the qualifications of teachers, and over-reliance on AI judgments.

The article also considers the issues of copyright compliance in the use of artificial intelligence in the Republic of Kazakhstan.

Keywords: artificial intelligence; education; virtual reality; neural network; departmental and military higher educational institutions; technology; information; risk.

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Қазақстан Республикасы Бас прокуратурасының жанындағы Құқық қорғау органдарының академиясы, Қосшы қ., Қазақстан Республикасы

ВЕДОМСТВОЛЫҚ ЖӘНЕ ӘСКЕРИ ЖОҒАРЫ ОҚУ ОРЫНДАРЫНДА БІЛІМ БЕРУ ПРОЦЕСІНДЕ ЖАСАНДЫ ИНТЕЛЛЕКТТІ ҚОЛДАНУ ТУРАЛЫ МӘСЕЛЕГЕ

Аннотация. Мақалада ведомстволық және әскери жоғары оқу орындарында білім беру процесінде жасанды интеллектті қолдану мәселесі қарастырылады. Мысал ретінде Қазақстан Республикасы Бас прокуратурасының жанындағы Құқық қорғау органдары академиясы қызметкерлерінің бірқатар пәндер бойынша сабақтарды неғұрлым тиімді өткізу үшін ЖИ негізіндегі кейбір жүйелерді пайдалану тәжірибесі келтірілген.

Даму сатысында тұрған, бірақ маяк ретінде берілген перспективалық әзірлемелердің мысалдары келтірілген (сандық аватарлар, аі және виртуалды шындық симбиозы, 2D кескіндерінің шектеулі санынан жасалған 3D модельдерінде оқыту және т.б.).

Сонымен қатар, осы тәсілді жүзеге асыруда кейбір қиындықтар мен тәуекелдер бар. Мысалы, технологиялық инфрақұрылымға қойылатын талаптар, профессор-оқытушылар құрамы мен білім алушылардың дайындығы, оқытушылардың біліктілігінің төмендеу қаупі және ЖИ пайымдауларына шамадан тыс тәуелділік.

Мақалада Қазақстан Республикасында жасанды интеллектті пайдалану кезінде авторлық құқықты сақтау мәселелері де қарастырылады.

Түйінді сөздер: жасанды интеллект; білім беру; виртуалды шындық; нейрондық желі; Әскери арнаулы оқу орны (ӘАОО); технология; ақпарат; тәуекел.

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К ВОПРОСУ О ПРИМЕНЕНИИ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В ОБРАЗОВАТЕЛЬНОМ ПРОЦЕССЕ В ВЕДОМСТВЕННЫХ И ВОЕННЫХ ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЯХ

Аннотация. В статье рассматривается вопрос о применении искусственного интеллекта в образовательном процессе в ведомственных и военных высших учебных заведениях. В качестве примера приведен опыт сотрудников Академии правоохранительных органов при Генеральной прокуратуре Республики Казахстан по использованию некоторых из систем на основе искусственного интеллекта для более эффективного проведения занятий по ряду дисциплин, который позволяет судить о перспективности данного подхода.

Приведены примеры перспективных наработок, которые находятся находящихся на стадии разработки, но приведенные в качестве маяков (цифровые аватары, симбиоз искусственного интеллекта и виртуальной реальности, обучение на 3D моделях, сгенерированных из ограниченного количества 2D-изображений и т.д.).

Вместе с тем, существуют некоторые сложности и риски при осуществлении данного подхода, а именно: требования к технологической инфраструктуре, подготовленность профессорско-преподавательского состава и обучающихся, риск снижения квалификации преподавателей и чрезмерной зависимости от суждений искусственного интеллекта.

В статье также рассматриваются вопросы соблюдения авторских прав при использовании в Республике Казахстан искусственного интеллекта.

Ключевые слова: искусственный интеллект; образование; виртуальная реальность; нейронная сеть; Военные специальные учебные заведения (ВСУЗ); технологии; информация; риск.

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Introduction. Nowadays, we are surrounded by many useful applications and devices based on artificial intelligence (hereinafter referred to as AI). Examples are voice assistants in the home, navigators in the car, assistants in marketplaces, etc. The sphere of education is not left aside, and educators around the world are wondering about possible directions of using AI in the educational process.

For us, as employees of the Law Enforcement Academy under the General Prosecutor's Office of the Republic of Kazakhstan, we are even more interested in the prospects of using AI capabilities taking into account the specifics of training of both law enforcement officers and military personnel in departmental and military higher educational institutions. This applies both to postgraduate education (master's and doctoral studies) and retraining of employees as part of professional development.

Since the beginning of 2022, due to the launch of ChatGPT from OpenAI company, there has been a surge of interest of a wide range of people in AI[1]. The article will not touch upon the technical aspects of AI due to the fact that many scientists have described the technical component of AI to a greater or lesser extent in their works (as of 19.07.2024, on the Google Academy portal in English and Russian only, about 45600 articles published since 2022 and devoted to AI in education have been found).

The purpose of the study is to explore the application of artificial intelligence (AI) in the educational processes of departmental and

[1] Генеративный искусственный интеллект вызвал рост интереса на 3600%, подчеркивая технологические тенденции / AppMaster, 2024 [Electronic resource] – Access mode: https://appmaster.io/ru/news/tendentsii-v-sfere-generativnogo-iskusstvennogo-intellekta (Access data: 18.07.2024).

military higher education institutions, with a focus on its implementation at the Academy of Law Enforcement Agencies under the General Prosecutor's Office of the Republic of Kazakhstan.

The article also studies the prospects and limitations of integrating AI into the educational processes of military and departmental institutions, offering guidance for future developments in this area.

Materials and methods. To explore the topic comprehensively, the study utilises a qualitative literature review method. Given the prospective nature of the study, it also includes the method of ethical and legal modeling to consider potential implications in the future.

Various sources were used in the study: works of scientists devoted to the issues of using AI in education; studies commissioned by the governments of foreign countries; reports of world-famous technology companies; the authors' own opinion, taking into account their teaching experience in departmental higher education institutions, as well as practical experience of the staff of the Academy of Law Enforcement Agencies under the General Prosecutor's Office of the Republic of Kazakhstan.

Results, discussion.

AI in education. AI in education is based on data analysis, automation, and AI-assisted intellectualization. Teachers can gain valuable insights into students' learning styles, allowing them to personalize teaching for each student. This move towards personalized learning has the potential to revolutionize education. By pinpointing areas where students are struggling, AI can help teachers provide targeted support, maximizing learning.

AI is applied in education through personalized learning, intelligent tutoring systems, automated assessments, and fostering teacher – student collaboration, aiming to enhance learning outcomes, boost efficiency, and expand access to quality education globally [1].

The I. Jahić et al. highlights the transformative impact of generative AI on education, emphasizing the need to understand its uses, perceptions, and potential. It concludes that generative AI is seen as a positive force, particularly in higher education and STEM fields, and is predominantly studied through qualitative methods [2].

AI fulfills a dual function for educators. Firstly, it solves tedious tasks such as grading and feedback, freeing up valuable time for more meaningful interactions with students. This is a dramatic game changer, especially for instructors working with large classrooms. But AI's capabilities go beyond efficiency. It can personalize learning with adaptive learning systems. These smart AI-powered tools adjust the complexity and pace of material based on each student's performance, keeping them engaged and motivated by offering assignments that perfectly match their understanding[2].

AI technologies, such as ChatGPT, can perform tasks like answering questions, writing essays, summarizing documents, and generating code [3].

AI through a relational epistemology, describing it as a “black box” that offers judgments about optimal actions without transparency in its decision-making process.

Rather than attempting to demystify these black boxes, Bearman M. et al. advocates for a pedagogy that equips students to navigate opaque, partial, and ambiguous situations involving AI. This approach situates AI as socially contextualized, emphasizing its use within specific social and ethical boundaries. The authors propose two strategies: (1) teaching students the explicit and tacit “rules of the game” surrounding AI quality standards and (2) facilitating meaningful, hands-on interactions with AI systems [4].

The use of AI in the educational process of higher education institutions on the example of the Academy of Law Enforcement Agencies under the General Prosecutor's Office of the Republic of Kazakhstan.

It should be noted that the issue of the application of AI in the educational process for students of specialties “Jurisprudence” and

[2] The transformative role of artificial intelligence in revolutionizing education / Aquarius, 2023 [Electronic resource] – Access mode: https://aquariusai.ca/blog/the-transformative-role-of-artificial-intelligence-in-revolutionizing-education (Access date: 17.07.2024).

"Law Enforcement" in departmental educational institutions allows them to master not only new modern computer technologies and practical opportunities to automate several complex processes in their daily practical activities, which previously before their entry took a significant amount of working time and resulted in almost "routine mental" and mechanical labor (for example, for employees of internal affairs bodies it is filling in procedural documents, preparing a list of questions for an expert to assign a particular forensic examination, etc. For employees of prosecutor's offices it is preparing draft submissions on violations of the law, claims in civil proceedings, analyzing the results of an inspection, drawing up diagrams, etc.).

For example, if you look at the statistics, in the 2023-2024 academic year artificial intelligence tools were used for 50 master students in 8 academic disciplines (in the Kazakh and Russian languages of instruction) "Theory and practice of applying the legislation of the Republic of Kazakhstan in law enforcement" (under the section Theory and practice of applying the administrative legislation of the Republic of Kazakhstan), "Modern problems of administrative law of the Republic of Kazakhstan", "Problems of law enforcement practice in the field of anti-corruption", "Problems of law enforcement practice in the field of anti-corruption, "Information security in law enforcement", "Foreign language (professional)", "Legal regulation of information systems and cybersecurity issues in law enforcement agencies", "Management Psychology".

For 9 doctoral students during the academic disciplines in the Russian language of instruction, namely, "Problems of the application of legislation on administrative offenses in the activities of law enforcement agencies of the Republic of Kazakhstan" , "Problematic aspects of the application of the norms of the CPC of the Republic of Kazakhstan in the activities of law enforcement agencies".

Statistics for the current 2024-2025 academic year, the number of postgraduates studying in the disciplines under consideration has reached to 55 people. Full statistics on disciplines will be provided at the end of the academic year in our subsequent articles.

In the 2024-2025 academic year, the number of undergraduates studying in the disciplines under consideration has already increased slightly, in particular to 55 people. Statistics are not provided for doctoral students during the period under review due to the continuation of the educational process.

Teaching staff of the departments from time to time have to explain the material from different angles several times and in different approaches, to scrupulously (daily, weekly, monthly) adjust the grades, to check written cases, essays, written essays, reports and the like. At the same time, the use and gradual introduction of artificial intelligence in the educational process allows us to painlessly entrust a certain part of these everyday tasks to a computing machine, to save and evenly distribute our resources for solving our creative tasks and preparing for classes.

For example, according to the media of the Russian Federation, since 2023 artificial intelligence neural network has already been checking written works of secondary school students in humanitarian subjects within the framework of a pilot project, and since 2024 essays written by school students within the Unified State Exam will be centrally checked with the help of neural network. The purpose of using AI in this case is to check the integrity of students. It is planned that the machine will place marks in students' works, highlighting suspicious places, but the final decision on whether the student cheated or not, whether he or she used cheat sheets will still be made by a live human moderator[3].

About the academic disciplines of the Institute of Postgraduate Education, it will be appropriate to recall that in fact, 45 percent of the educational process for master's and doctoral students are already using the capabilities of neural networks.

[3] Проверять нейросетью нарушения на ЕГЭ будут во всех регионах России / Интерфакс, 2023 [Электронный ресурс] – Режим доступа: https://www.interfax.ru/russia/926503 (дата обращения: 18.07.2024).

For example, in the educational discipline “Foreign language (professional)” for master's students of the profile direction within the framework of development of professional competencies the abilities and skills of collecting information in a foreign language, its processing (analysis and systematization, fixation, etc.), editing, annotation, abstracting of foreign-language texts are considered, for which purpose all kinds of programs for automatic translation of English-language texts are used for direct purpose.

In the academic discipline “Legal regulation of information systems and issues of cyber security in law enforcement agencies”, during practical classes with students, the possibilities of using artificial intelligence in the practical activities of internal affairs bodies and other law enforcement agencies are considered and used in one way or another.

For example, it was helpful to combine the usage of Gemini AI from Google and ChatGPT from OpenAI because they look at the prompt with different angle. The prompt: “What suggestions can you give for conducting an interesting topic on “artificial intelligence” for undergraduates” the Gemini AI gave the tips with the scientific point of view - applied aspects of AI (Development of machine learning algorithms), theoretical Foundations of AI (Neural Network Research, exploring the ethical aspects of AI), interdisciplinary Studies (AI and cognitive science, AI and Philosophy, AI and Society)[4]. Whereas ChatGPT gives the lesson plan: Introduction (Brief history of AI), Theoretical Foundations (Models and Methods), Practical part (Simple demonstration, Mini-project), Interactive element (Discussion), Future of AI[5].

In the educational discipline “Management Psychology” artificial intelligence is already used in the preparation of popular methods of psychological research (questionnaires) in determining opinions, motives, expectations, empathy, plans, evaluative judgments, etc. Neural networks can also be used in the preparation of a competency map for a law enforcement officer.

We believe that the broad possibilities of artificial intelligence should be widely used and applied in the academic discipline “Modern problems of administrative law of the Republic of Kazakhstan” (in the preparation of texts of statements of claim, the layout of the administrative case with materials, in the preparation of presentations of creative projects, etc.), “Tactics of proving in criminal cases” (in the preparation of problem lectures, in the analysis of specific practical situations, as well as in the preparation and consideration of individual and group assignments, including the following: “Tactics of proving in criminal cases”, “Tactics of proving in criminal cases”.

Prospective directions of using AI in higher education institutions.

AI-based virtual avatars for practising necessary skills. The technology of creating realistic digital figures – avatars, characters and agents with artificial intelligence – has made significant progress in recent years. For example, researchers in Norway are developing an AI-controlled virtual child (avatar) to train police officers in the skills needed to interview potential victims of abuse in a more sensitive manner, as the success of the interview depends heavily on the interviewer's ability to conduct the conversation effectively [5].

Similar avatars could also be created to train officers to negotiate with terrorists, crowd control, etc.

Symbiosis of virtual reality with AI. The benefits of virtual reality (hereinafter – VR) are most pronounced when used in various training, education, and retraining of employees. Existing forms of VR involve pre-training.

The video game industry has been the driving force behind the development of artificial intelligence. From the beginning, AI has been necessary to create realistic and challenging opponents. Although AI was relatively simple in the early stages, there has been a constant effort to create more complex AI systems that could provide exciting and competitive gameplay.

At the same time, the application of AI may allow, similar to video games, adaptation, and

[4] Gemini AI / Google [Electronic resource] – Access mode: https://gemini.google.com/ (Access date: 11.11.2024).

[5] ChatGPT / OpenAI [Electronic resource] – Access mode: https://chatgpt.com (Access date: 11.11.2024).

training in the use of these technologies directly within the virtual environment. In video games, there are no separate instructions on how to play the game outside of the game itself; the learning and narration takes place directly within the game itself[6].

The ability of virtual reality to create interactive characters from learning materials opens up opportunities for personalized learning. Capabilities such as natural language processing and sentiment analysis can be added, and the potential for virtual reality to revolutionize learning becomes undeniable. For example, a virtual training session is run by AI and the learner receives instant feedback and positive reinforcement of what they have learned in real time. The information collected by the AI about the training process of a particular employee allows to make a personalised plan to improve the missing skills.

Virtual training in symbiosis with AI can influence the solution of the problem of generational gap in the personnel structure, when experienced employees retire before they have time to pass on their accumulated experience to the younger generation. Training in VR can become the quintessence of knowledge and experience of the best law enforcement officers.

Training on 3D models generated from a limited number of 2D images. Neural radiance field (NeRF) method allows using neural networks to generate complex 3D scenes from a small set of photos[7].

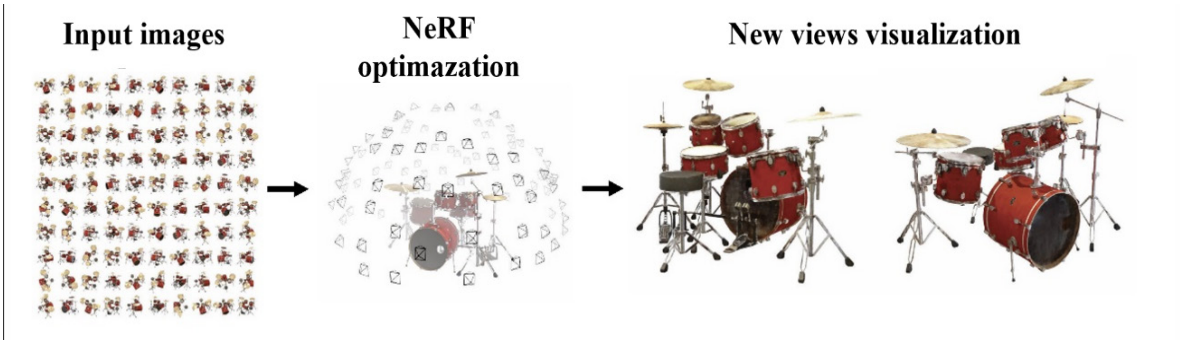

Figure 1. The process of creating 3D models through the NeRF method [6]

The approach has great prospects for application in the educational process of training and retraining of both law enforcement officers and military personnel. Such a model can be assessed as adequate.

The NeRF method can be applied by law enforcement officers both in practice and during training. For example, before starting an incident scene examination (hereinafter – ISE), it is necessary to take as many pictures as possible and later process them using NeRF for their detailed examination by the investigator and attachment to the case file (in addition to the photo table and diagram of the ISE). This approach can be particularly useful if the case is handed over to an investigator who was not part of the investigative team that traveled to the scene.

In the educational process, 3D models obtained with the help of NeRF method can be used in the analysis of specific criminal cases in various disciplines taught to bachelor, masters, and doctoral students, as well as to adopt the experience of investigation of unique criminal cases in the advanced training of employees. The use of 3D models in the writing of master's and doctoral theses by students of higher educational establishments is expected to be promising.

In turn, for military personnel, 3D models can be used in command and staff exercises and other military games.

Difficulties and risks of using AI in the educational process in higher education

[6] AI in Virtual Reality / IEEE Digital Reality, 2022 [Electronic resource] – Access mode: https://digitalreality.ieee.org/publications/ai-in-virtual-reality (Access date: 18.07.2024).

[7] NVIDIA Research Turns 2D Photos Into 3D Scenes in the Blink of an AI / NVidia, 2022 [Electronic resource] – Access mode: https://blogs.nvidia.com/blog/instant-nerf-research-3d-ai/ (Access date: 18.07.2024).

institutions.

Despite the numerous positive aspects of using AI in the educational process in higher education institutions, some difficulties should be considered. Technological breakthrough requires excellent infrastructure in educational institutions, such as high-speed Internet, and 100% provision of both teaching staff and students with the most modern computer equipment. In addition, a high bar is set for computer literacy of both teachers and students. Without proper prior technological training, it is virtually impossible to maximize the use of innovative technological approaches to learning.

In addition, the risk of teacher de-skilling should be considered if over-reliance on AI for tasks such as grading and lesson planning may devalue teachers' experience and skills. The human element in teaching, such as empathy, motivation and the development of critical thinking skills, is indispensable.

The risk of over-reliance on AI for assessment should not be forgotten: AI should be used as a tool to support teachers, not completely replace their judgment. There are limitations to what AI can effectively assess, such as creativity, critical thinking, and social-emotional skills.

As noted in a report commissioned by the United States Government, humans, not technology, should be the focus [7].

Issues of copyright compliance and protection of intellectual property rights in the use of AI.

We would also like to discuss copyright compliance with AI.

"... in Kazakhstan the need for legal regulation of AI was first stated in 2021 in the Concept of Legal Policy until 2030. In particular, it was determined that there are at least two factors that necessitate the adoption of regulation of AI and robotics technologies:

1) addressing issues of apportioning liability for harm caused by AI and robots; and

2) solving the problem of determining the ownership of intellectual property rights to works created with the participation of AI.

Thus, despite the lack of special regulation of AI, Kazakhstan has identified two main directions of legal work on the development of rules for the functioning of AI.

It should be noted that the above issues of liability for damage caused by AI and intellectual property (namely, who should be considered the author of a work created by AI) are actively discussed all over the world. To this day, the international community as a whole has not yet developed a unified approach to the regulation of AI." [8].

Simonova et al. raises a number of issues of legislative nature, affecting the issues of fixing and regulating the copyright market in the sphere of use of artificial intelligence technologies. In particular, it notes that "in Kazakhstan there is an urgent need for legislative regulation of the use of AI. Kazakhstan law should define at least the following basic provisions for further development of AI:

1) What is and what attributes are inherent in AI?

2) Who can be recognized as the author and right holder of AI?

3) Who is liable for harm caused by the use of AI?

4) What data can be collected and used by AI and under what conditions?

In our opinion, these same issues should be considered by businesses when implementing any AI systems, based on the current legislation.

Kazakhstan, in turn, has a Law on Personal Data, and as we can see from recent court cases, companies are liable for violations of this Law. At the same time, Kazakhstan has not yet attempted to directly regulate the use of AI in terms of data protection. But given some of the requirements of the current Law, we understand that businesses will be significantly limited in the use of AI, for example, if the same biometric data is required for AI operation (in Kazakhstan, biometric data falls under the concept of personal data, and therefore consent is also required for the use of such data)".

Supporting the position on the need for legislative fixation on the issue of AI use, we believe that the issue of AI regulation in the Republic of Kazakhstan should initially be preceded by the experience of its testing by state authorities, economic entities (business),

and society, after which, having analyzed directly the subject of regulation, the object of copyright, the scope of AI, the effectiveness of its use and other issues, it will be possible to address the issue of the need to introduce appropriate legislative norms into the Law of the Republic of Kazakhstan.

As Tlembayeva notes, “The primary task faced by the legislator in the development of the conceptual apparatus in this area is the legal definition of the concept of AI. Currently, there is a large number of scientific developments demonstrating different approaches to the definition of this concept. At the same time, a universal conventionally recognized definition of the concept of “artificial intelligence” has not yet been developed.

The creation of a legal framework in the field of development and use of artificial intelligence should be carried out gradually, based on clearly developed approaches to regulation, taking into account the specifics of the use of artificial intelligence in different areas and possible risks, as well as the need to develop new technologies in the interests of man, society and the state” [9].

Conclusion. The use of AI in the educational process of departmental and military higher education institutions opens up a wide range of opportunities for more effective transfer of knowledge, as well as its consolidation. The use of AI technologies will allow in the future to create more personalised educational programmes, which should have the most favourable impact on the level of knowledge obtained by students of higher education institutions.

The experience of the staff of the Academy of Law Enforcement Agencies under the General Prosecutor's Office of the Republic of Kazakhstan in using some of the AI-based systems for more effective conduct of classes in a number of disciplines suggests that this approach is promising.

Of even greater interest are promising developments that are still under development, but which we have cited as beacons (digital avatars, symbiosis of AI and virtual reality, training on 3D models generated from a limited number of 2D images, etc.).

For balance, despite the many positive aspects of AI in education, we have also cited some of the challenges and risks in implementing this approach. For example, the requirements for technological infrastructure, faculty, and learner preparedness. We have not ignored the risk of faculty de-skilling and over-reliance on AI judgment.

It should also be noted that to date in Kazakhstan the legislator has not yet attempted to directly regulate the use of AI, including on issues of compliance with copyright and related rights.

List of used literature:

1. Kamalov, F., Santandreu Calonge, D., & Gurrib, I. New Era of Artificial Intelligence in Education: Towards a Sustainable Multifaceted Revolution / F. Kamalov, D. Santandreu Calonge, I. Gurrib // Sustainability. – 2023. № 15 (16). – Pp. 12451.
2. I. Jahić, et al. Exploring the Use of Generative AI in Education: Broadening the Scope. In: Zaphiris, P., Ioannou, A. (eds) // Learning and Collaboration Technologies. HCII 2024. Lecture Notes in Computer Science.– Vol 14724. – Springer, Cham, 2024.
3. H. Allam, et al. Artificial Intelligence in Education: An Argument of Chat-GPT Use in Education / 2023 9th International Conference on Information Technology Trends (ITT). – Dubai, United Arab Emirates, 2023. – Pp. 151-156.
4. Bearman, M. Learning to work with the black box: Pedagogy for a world with artificial intelligence / M. Bearman, R. Ajjawi // British Journal of Educational Technology. – 2023. – Vol. 54. – № 5. – Pp. 1160-1173.
5. Salehi, P. Synthesizing a talking child avatar to train interviewers working with maltreated children / P. Salehi, et al. // Big Data and Cognitive Computing. – 2022. – № 2 (6). – Pp. 1-22.
6. Mildenhall, B. Nerf: Representing scenes as neural radiance fields for view synthesis / B. Mildenhall, et al. // Communications of the ACM. – 2021. – № 1 (65). – С. 99-106.

7. Cardona, M.A. Artificial intelligence and the future of teaching and learning: Insights and recommendations / M.A. Cardona, et al. // Office of Educational Technology, 2023. – 71 p.
8. В. Симонова, А. Сеитова, Ж. Аубакир. Правовое регулирование искусственного интеллекта в Казахстане и за рубежом [Электронный ресурс] – Режим доступа: https://online.zakon.kz/Document/?doc_id=32145977&pos=6;-106#pos=6;-106 (дата обращения: 08.12.2024).
9. Тлембаева, Ж.У. О некоторых подходах к правовому регулированию искусственного интеллекта / Ж.У. Тлембаева // Вестник Института законодательства и правовой информации Республики Казахстан. – 2021. – № 2 (65). – С. 61-74.

References:

1. Kamalov, F., Santandreu Calonge, D., & Gurrib, I. New Era of Artificial Intelligence in Education: Towards a Sustainable Multifaceted Revolution / F. Kamalov, D. Santandreu Calonge, I. Gurrib // Sustainability. – 2023. – № 15 (16). – Pp. 12451.
2. I. Jahić, et al. Exploring the Use of Generative AI in Education: Broadening the Scope. In: Zaphiris, P., Ioannou, A. (eds) // Learning and Collaboration Technologies. HCII 2024. Lecture Notes in Computer Science.– Vol. 14724. – Springer, Cham, 2024.
3. H. Allam, et al. Artificial Intelligence in Education: An Argument of Chat-GPT Use in Education / 2023 9th International Conference on Information Technology Trends (ITT). – Dubai, United Arab Emirates, 2023. – Pp. 151-156.
4. Bearman, M. Learning to work with the black box: Pedagogy for a world with artificial intelligence / M. Bearman, R. Ajjawi // British Journal of Educational Technology. – 2023. – Vol. 54. – № 5. – Pp. 1160-1173.Salehi, P. Synthesizing a talking child avatar to train interviewers working with maltreated children / P. Salehi, et al. // Big Data and Cognitive Computing. – 2022. – № 2 (6). – Pp. 1-22.
5. Mildenhall, B. Nerf: Representing scenes as neural radiance fields for view synthesis / B. Mildenhall, et al. // Communications of the ACM. – 2021. – № 1 (65). – S. 99-106.
6. Cardona, M.A. Artificial intelligence and the future of teaching and learning: Insights and recommendations / M.A. Cardona, et al. // Office of Educational Technology, 2023. – 71 p.
7. V. Simonova, A. Seitova, Zh. Aubakir. Pravovoe regulirovanie iskusstvennogo intellekta v Kazahstane i za rubezhom [Jelektronnyj resurs] – Rezhim dostupa: https://online.zakon.kz/Document/?doc_id=32145977&pos=6;-106#pos=6;-106 (data obrashhenija: 08.12.2024).
8. Tlembaeva, Zh.U. O nekotoryh podhodah k pravovomu regulirovaniju iskusstvennogo intellekta / Zh.U. Tlembaeva // Vestnik Instituta zakonodatel'stva i pravovoj informacii Respubliki Kazahstan. – 2021. – № 2 (65). – S. 61-74.

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