USE OF ARTIFICIAL INTELLIGENCE IN EDUCATION

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Abstract. Artificial intelligence (AI) has become an integral part of the modern world. Just like the World Wide Web, AI is rapidly covering all areas of human activity, integrating into everyday life and various processes. Education and science are no exception, where AI has rapidly gained popularity and widespread use. However, such use has both its advantages and risks, which makes it important to identify current challenges and possible solutions.

The safe use of artificial intelligence (AI) in education necessitates the identification and formalization of fundamental principles that will form the basis of relationships between participants in the educational process concerning the implementation of innovative technologies.

The introduction of AI, including in education, requires prompt and coordinated efforts to develop and implement policies for its safe and effective use. These efforts aim to minimize negative consequences related to potential impacts on critical thinking skills of learners, violations of the right to privacy due to illegal collection and uncontrolled use of personal data, reduced communication among educational process participants, breaches of academic integrity, and the formation of practices of non-independent task completion.

It has been established that the widespread use of AI for preparing scientific papers, including dissertations, necessitates a reconsideration of the traditional understanding of plagiarism as a violation of academic integrity. This violation typically involves the appropriation of authorship of the creative work or its part by another creator. Although AI is not officially recognized as a creator or legal subject, a new conceptual approach is emerging. According to this approach, the use of AI-generated texts without proper attribution is recognized as plagiarism.

Keywords: artificial intelligence, chat GPT, education, ethical principles, academic integrity, plagiarism.

Introduction. The use of AI in education requires addressing the issues that arise in general with regard to AI, namely, legal, ethical, and organizational aspects. Addressing these issues is currently an international task, as the development and practical implementation of AI is much more dynamic than the legislative and organizational support of these processes.

Many countries around the world have adopted national strategies or concepts at the highest level regarding the development and implementation of artificial intelligence (AI) technologies. Since AI is considered a fundamental condition for the application of technologies, over the past 1.5-2 years, about 20 countries worldwide have approved national AI development strategies. Nearly 10 of these countries have set the following goal within their strategies: to become the world's number one state in AI development. This indicates that AI development is assigned an exceptionally important role in the future of human civilization [1].

20-Year Community Roadmap for Artificial Intelligence Research in the US – strategic document outlines the long-term directions and priorities for artificial intelligence (AI) research in the United States over the next two decades. The goal of the roadmap is to create a national innovation ecosystem in the field of AI, fostering scientific achievements, strengthening the economy and social well-being, and enhancing the global competitiveness of the United States. The main objectives of the roadmap include: development of fundamental AI research: investing in new algorithms, machine learning methods, and data processing models; interdisciplinarity and integration: creating research programs that combine AI with other sciences, such as neuroscience, cognitive psychology, sociology, and economics; ethics and responsibility: developing ethical standards for AI use that ensure transparency, fairness, and safety of technologies; education and workforce training: establishing programs to train a new generation of specialists with diverse interdisciplinary knowledge in the field of AI; technology transfer: encouraging the commercialization of AI innovations and their implementation in economic and social sectors. global collaboration: strengthening international cooperation in AI research and sharing best practices [2].

In Ukraine, the Concept of Artificial Intelligence Development was approved on December 2, 2020. According to this concept, the priority areas where the tasks of state policy for the development of the AI sector are implemented include: education and professional training, science, economy, cybersecurity, information security, defense, public administration, legal regulation and ethics, and justice.

Artificial intelligence is defined as an organized set of information technologies that enables the execution of complex and comprehensive tasks through the use of a system of scientific research methods and algorithms for processing information obtained or independently created during operation. Additionally, AI allows for the creation and utilization of its own knowledge bases, decision-making models, algorithms for working with information, and determining methods for achieving set goals [3].

The Ministry of Education and Science and the Ministry of Digital Transformation of Ukraine, together with experts, have developed recommendations for the responsible use of artificial intelligence in higher education institutions. The document provides advice for educators, students, university administrations, and researchers to effectively integrate AI into educational and scientific processes.

As stated in the recommendations, generative AI is a universal tool, and therefore it makes little sense to create an exhaustive list of tasks where generative AI can or cannot be used. Instead, it is essential to describe the rules for its application in the form of policies.

The latest advancements in generative AI allow for performing a vast number of tasks faster, more efficiently, and at a lower cost, which is an undeniable fact. Banning generative AI is essentially equivalent to the historical prohibition of calculators or computers, and therefore, such an initiative should be regarded as shortsighted and harmful [4].

the Beijing Consensus underlined the need to equip people with AI literacy across all layers of society. However, according to a recent survey conducted across 190 countries, only some 15 countries were found to be developing or implementing AI curricula in school education (UNESCO, 2022b). The survey also found that there was wide variation in how countries defined AI literacy, skills and competency. The results of the survey therefore underscored the urgency of developing a harmonized approach to integrating AI-related teaching and learning content in school curricula [5].

Artificial Intelligence (AI) is rapidly transforming our world and changing the way we live, work and learn. To help education systems keep pace, UNESCO is launching two new AI competency frameworks - one for students and one for teachers [6].

The UNESCO AI competency framework for students aims to help educators in this integration, outlining 12 competencies across four dimensions: Human-centred mindset, Ethics of AI, AI techniques and applications, and AI system design. These competencies span three progression levels: Understand, Apply, and Create. The framework details curricular goals and domain-specific pedagogical methodologies [7].

AI competency framework for teachers (AI CFT) is intended to support the development of AI competencies among teachers to empower them to use these technological tools in their teaching practices in a safe, effective and ethical manner. The framework is based on a human-centred approach to the knowledge. Teachers should not and cannot be replaced by technology – it is crucial to safeguard teachers' rights of and ensure adequate working conditions for them in the context of the growing use of AI in the education system, in the workplace and in society at large [8].

The use of Chat GPT raises various issues related to such challenges.

Firstly, the independence of performing tasks when using AI. The use of Chat GPT allows you to quickly find the necessary amount of information, provide well-founded answers to the questions posed, which generally allows you to quickly prepare a certain work (thesis, abstract, etc.). At the same time, the applicant's participation is limited solely to compiling the text generated by the AI, which does not allow applicants to acquire the skills of independent task performance, search and analysis of information.

Second, the reliability and completeness of information. Despite the fact that AI, Chat GPT is constantly improving, increasing the amount of information that AI operates with when generating a response, there are cases when chat did not always provide relevant information. Therefore, the use of AI in the educational process requires an awareness of the importance of verifying the information provided by chatbots. On the other hand, such use allows acquiring skills in analyzing the information received, assessing its relevance and reliability, which may require the processing of various sources, such as regulations, court practice, and statistical documents.

Thirdly, there is the problem of maintaining academic integrity and the legal basis for the use of AI, Chat GPT in educational and scientific activities.

When studying the issues of using AI in education, it seems appropriate to determine the vision of AI itself in this regard.

In response to the question, we have identified the following advantages: 1. Adaptive learning: artificial intelligence can adapt to the level of knowledge of each student, offering individualized tasks and materials, which helps to learn the material more effectively. 2. Accessibility of information: with the help of artificial intelligence, students can instantly get answers to their questions and access to huge databases of legal bibliography and court cases. 3. Automation of routine tasks: artificial intelligence can help in preparing and checking tests, analyzing cases, which allows lecturers and students to focus on more complex aspects of learning. 4. Trial simulation: AI can create virtual trial simulations that help students better understand case law and practice argumentation skills. 5. Feedback: AI systems can automatically analyze students' work and provide instant feedback, pointing out mistakes and offering recommendations for improvement [9].

To the question 'Outline what are the challenges of using chat and artificial intelligence in education', CHAT GPT provided the following answer and highlighted the following challenges.

Academic integrity:

Issue: Pupils and students may use AI to cheat, write essays or even take tests.

Consequences: Loss of critical thinking skills, superficial knowledge acquisition.

Substitution of their own thinking:

The problem: Dependence on AI leads to a decrease in motivation to think for oneself.

Consequences: Deterioration of analytical, speaking, and research skills.

Ambiguity of sources and facts:

The problem: AI may provide inaccurate or outdated information.

Consequences: Students may learn false ideas or facts.

Privacy and data protection:

Issue: When using chatbots, children/students may unknowingly share personal information.

Consequences: Risks of privacy and cybersecurity violations.

Inequality of access to technology:

Issue: Not all students have equal access to the internet or devices.

Consequences: Deepening educational inequality between students from different socioeconomic groups [10].

The foundation of a model for higher education instruction that can adapt to the age of AI is based upon consideration of three factors. The first is a consideration of the practical outcome of higher education: employment. The second component is centered on a taxonomy of the cognitive domains associated with learning. Bloom's Taxonomy (1956 and following revisions) provides a useful framework for considering the different ways in which a student can use what they have been taught, which is helpful for understanding where intelligent systems can, and cannot, supplant or supplement current practices. The final component is a brief review of a growing literature documenting the risks associated with "offloading" cognitive performance to technology. What will emerge from this analysis is emphasis on the importance of equipping students with the metacognitive beliefs and abilities they need to use technology appropriately in a changing work environment [11].

AI is being utilized in diverse ways within the educational landscape. Here are some of the most notable trends:

1. **Personalized Learning**: AI algorithms analyze students' learning habits, strengths, and weaknesses to tailor educational content to individual needs. Platforms like DreamBox and Knewton offer adaptive learning experiences, providing customized lessons that evolve as students progress.
2. **Intelligent Tutoring Systems**: AI-powered tutoring systems, such as Carnegie Learning and Squirrel AI, provide personalized instruction and feedback to students. These systems can identify areas where students struggle and offer targeted interventions to help them improve.
3. **Automated Grading and Assessment**: AI is streamlining the grading process by automating the assessment of assignments and exams. Tools like Gradescope use machine learning to grade written responses, saving educators time and providing consistent, objective evaluations.
4. **Natural Language Processing (NLP).**
5. **Data Analytics** [12].

In October 2023, Forbes Advisor surveyed 500 practicing educators from around the U.S. about their experiences with AI in the classroom. With respondents representing teachers at all

career stages, the results reveal a snapshot of how artificial intelligence is impacting education. What concerns do you have about the use of AI in education? Plagiarism in essays/work – 65%, Reduced human interaction in learning – 62%, Data privacy and security – 42%, Job displacement for teachers – 30%, Unequal access to AI-powered resources – 30%, Automation of manual tasks – 23 % [13].

Given the possible negative impact of AI on society and education, and especially on more vulnerable populations, especially children, principles and policies are being developed at the international and national level to enhance the benefits and minimize the negative effects of AI.

One of the most important principles, which we believe to be fundamental, is the human-centered approach, which implies that the use of AI should serve to develop human capabilities, protect human dignity and autonomy, and promote equity and sustainable development throughout the entire AI life cycle and in all possible forms of human-AI interaction.

Human-Centric Artificial Intelligence (AI) refers to AI systems designed with a primary focus on enhancing human well-being, aligning with human values, and complementing human capabilities. Unlike traditional AI approaches that prioritize efficiency and task automation, Human-Centric AI emphasizes the creation of systems that collaborate with humans, respect ethical norms, and adapt to the complexities of human emotions, decision-making, and behaviors. The core idea behind Human-Centric AI is to ensure that AI technologies are not only effective but also empathetic, ethical, and inclusive, placing human needs, preferences, and societal benefits at the center of AI development [14].

The problem that may arise is the decline in the ability to think and find solutions to issues. The massive use of AI is driven, in particular, by the quick search for answers to various questions and tasks. Solving practical problems with AI allows to get the result without spending time, intellectual, and mental resources. The quick result attracts students who do not think about the consequences of this approach to learning. The negative consequences of unlimited use of AI by students are as follows: first, the risk of learning inaccurate information; second, the lack of information retrieval skills; third, the lack of development of critical thinking skills, analytics, problem definition and problem solving, and solution finding. This is a global threat that will pose a challenge both at the level of individual countries and at the international level.

AI and the preservation of traditional communication formats. Education is not only a process of acquiring and developing knowledge and practical skills. It is an integral part of the process of socialization of students, acquisition of communication skills, teamwork and teamwork skills. Increasing the amount of time and tasks that students can work on independently using AI should not affect the maintenance and existence of established formats for organizing the educational process, during which the communication link ‘teacher/lecturer – student’, ‘student – student’, ‘student - group, class, team’ is maintained.

It is equally important to maintain and support communication between teachers/lecturers, researchers, and educators to exchange experience in implementing innovations in the educational process, including the use of modern technologies and AI. The comprehensive introduction of AI in education can in no way replace the communication between lecturers and students. As rightly emphasized in Beijing Consensus on Artificial Intelligence and Education ʙᴇ mindful that while AI provides opportunities to support teachers in their educational and pedagogical responsibilities, human interaction and collaboration between teachers and learners must remain at the core of education. Be aware that teachers cannot be displaced by machines, and ensure that their rights and working conditions are protected. Dynamically review and define teachers’ roles and required

competencies in the context of teacher policies, strengthen teacher training institutions, and develop appropriate capacity-building rogrammes to prepare teachers to work effectively in AI-rich education settings [15].

The value of traditional forms of education, which are vital in the relationship between teacher/lecturer and student and between students, is also emphasized in the Recommendations on the Ethics of AI. Member States should encourage research initiatives on the responsible and ethical use of AI technologies in teaching, teacher training and e-learning, among other issues, to enhance opportunities and mitigate the challenges and risks involved in this area. The initiatives should be accompanied by an adequate assessment of the quality of education and impact on students and teachers of the use of AI technologies. Member States should also ensure that AI technologies empower students and teachers and enhance their experience, bearing in mind that relational and social aspects and the value of traditional forms of education are vital in teacher-student and student-student relationships and should be considered when discussing the adoption of AI technologies in education. AI systems used in learning should be subject to strict requirements when it comes to the monitoring, assessment of abilities, or prediction of the learners' behaviours. AI should support the learning process without reducing cognitive abilities and without extracting sensitive information, in compliance with relevant personal data protection standards. The data handed over to acquire knowledge collected during the learner's interactions with the AI system must not be subject to misuse, misappropriation or criminal exploitation, including for commercial purposes [16].

An important issue that needs to be addressed with regard to the use of AI in education is the determination of age limits, up to which it is advisable to limit the use of AI.

A 2024 survey conducted in United Kingdom (UK) showed that 77.1 % of 13- to 18-year-olds had used generative AI, and findings suggest that they are twice as likely as adults to use it. The most common use is for helping with homework and seeking entertainment. Google has recently adapted its Gemini AI chatbot by lowering the minimum age requirement from 18 to 13 years (for their student accounts only), and adopting additional protection measures, such as excluding those young users' data from its AI model training. Brazil adopted a similar protection measure by banning social media platform X from training its AI using children's personal data [17].

The Guidelines on Generative Artificial Intelligence in Education and Research state the following regarding the age limits for the use of AI. Currently, the terms of use for ChatGPT require that users must be at least 13 years old, and users under 18 must have their parent or legal guardian's permission to use the services.52These age restrictions or thresholds are derived from the Children's Online Privacy Protection Act of the United States of America (Federal Trade Commission, 1998). Passed in 1998 before widespread social media use and well before the creation of easy-to-use and powerful GenAI applications such as ChatGPT, the US law specifies that organizations or individual social media providers are not allowed to provide services for children under the age of 13 without parental permission. Many commentators understand this threshold to be too young and have advocated for legislation to raise the age to 16. The GDPR of the European Union (2016) specifies that users must be at least 16 years old to use the services of social media without parental permissions. The emergence of various GenAI chatbots demand that countries carefully consider – and publicly deliberate – the appropriate age threshold for independent conversations with GenAI platforms. The minimum threshold should be 13 years of age. Countries will also need to decide if self-reporting age remains an appropriate means of age verification. Countries will need to mandate the accountabilities of GenAI providers for age

verification and accountabilities of parents or guardians for monitoring the independent conversations of underage children [18].

The search for optimal solutions to take into account age restrictions on the use of various AI applications requires each institution to develop its own AI policies. For example, Woking College has gained consent by sending a letter to all parents and guardians in which they explain their approach to AI. The college then assume consent is given unless they are contacted to opt-out. The letter explains that the college is proactively developing strategies to guide the safe, effective, and responsible use of AI tools. It then outlines the college's AI principles and specifies which AI tools will be used, along with the goals and reasoning for their use. **University of the Highlands and Islands** as part of the enrolment process, lecturers will distribute parent and guardian consent forms. They are then responsible for obtaining and retaining these forms. The consent form includes information on how the tool will be used and the reasoning behind it. Only AI tools that have been approved by the university can be used and listed on the consent form, with a section at the bottom to address age-related access [19].

Among the risks of using AI in education, the problem of ensuring the security and confidentiality of personal information that can be accumulated by various programs when assessing students' learning outcomes deserves special attention. Information security in this context can be viewed from a broad perspective. First, it means avoiding the dissemination of information that may be based on discriminatory provisions, misleading or encouraging students to commit dangerous or unethical actions. When generating answers to various queries, AI can use information posted on the Internet as a source. In the unlimited amount of information products that are publicly available, the AI field may include information that is unreliable, dangerous in terms of its impact on applicants due to the peculiarities of age, mental, and psychological indicators. Instead, due to insufficient knowledge and skills in evaluating information, in the case of generating appropriate texts, AI can be perceived as quite reliable. Secondly, it ensures the preservation of confidential information about students, their achievements, peculiarities of mastering certain educational components, identified psychological and emotional characteristics, etc.

Digital Promise reviewed guidance documents from seven states—California, North Carolina, Ohio, Oregon, Virginia, Washington state, and West Virginia—on how to approach artificial intelligence (AI) in education. We found similar messages across the documents, such as the importance of taking a human-centered approach to AI, but also found that the documents vary considerably in their focus and audience. All of the documents address the importance of protecting student data privacy and ensuring the security of personal information used by AI systems. They discuss the need for robust data governance and cybersecurity measures to mitigate potential risks. Most also discuss plagiarism. Oregon provides a table that aligns mitigation strategies to risks. Virginia states, 'When it comes to using AI or any other technologies in school, it is important to establish conditions for effective use. Clearly outline the school or system's policies and protocols around data privacy, honor code, student code of conduct, acceptable use, and ethical considerations when using AI, including those related to plagiarism and proper use of secondary sources' [20].

In defense of AI, it should be noted that, along with the risks of violating the right to security, on the other hand, AI is seen as an effective assistant in the field of detecting and preventing cyber threats. The use of AI in the field of protection against cyber threats is due to the ability to quickly process large amounts of information, accumulate it and differentiate it according to various criteria. AI can continuously learn and adapt. As it is exposed to more data, it can improve its

ability to identify legitimate users and detect and prevent cyber-attacks. This can help it stay up-to-date with the latest threats and more effectively protect against them. There are also some challenges to using AI in cyber security solutions. One challenge is that it requires a large amount of data to train the algorithms accurately. This can be difficult to obtain, especially for rare or novel types of cyber attacks. Another challenge is that AI can sometimes make mistakes, particularly when it is exposed to data that is significantly different from the data it was trained on. This can lead to false positives or false negatives, which can have serious consequences in the cybersecurity context. [21].

An important area that requires attention when it comes to the use of AI is academic integrity. As with information processing, in the area of academic integrity, AI can be both useful and pose risks and threats. On the positive side, AI can be used to identify textual matches and determine the level of uniqueness of texts. Simplification of access to information on the Internet has become one of the factors that contributed to the spread of plagiarism in the works of participants in the educational process. This has necessitated the development of special software that would allow for the effective detection of textual borrowings without proper references. The use of text match detection software has become an important component of the formation of academic integrity policies in educational institutions. Checks of students' work can be both mandatory and optional. Performing a preventive function, plagiarism checks can be carried out as an important component of education in the field of compliance with the principles of academic integrity. As noted in the paper Brad Stappenbelt, Chris Rowles pagiarism detection software (or more accurately, text-matching software) is commonly employed in a punitive capacity, detecting plagiarism after assignment submission. As an alternative to this approach, online plagiarism detection software was adopted as a learning tool for students instead. A trial was conducted in the foundation unit of the professional development component of the engineering degree at the University of Western Australia. As part of the trial, students were given individual access to the software to self-assess their work as often as required prior to submission. The plagiarism detection algorithm assignment-originality statistics across three substantial written assignments throughout semester revealed continual and substantial improvement in student ability to avoid plagiarising. Through the use of this software, students were facilitated to learn how to properly acknowledge sources and improve their paraphrasing. This was accompanied by a dramatic decrease in the reportable incidence rates of plagiarism. Student perception of the use of plagiarism detection software in this capacity was also very positive [22].

Australian higher education institutions submitted action plans for responding to the risks posed by generative AI to academic integrity in July 2024. Assessment Reform for the Age of Artificial Intelligence was developed to assist with crafting these plans. Many educational institutions and sectors have implemented AI detector tools to attempt to police AI use. Testing of these tools continually demonstrates that they are unreliable and tend to produce false positive results. In one example, an AI detection tool flagged The Bible as being written by Chat GPT. Relying on these tools will lead to some unfair accusations against innocent students while potentially missing sophisticated misuse by students who deliberately seek to avoid detection [23].

This approach seems to be more useful, because plagiarism can be effectively prevented by first developing the proper level of knowledge and skills in the correct use of sources, working with various resources, and their proper formatting. Moreover, in this aspect, AI can become a real assistant at the stage of training and preliminary detection of texts that are not properly formatted or without references. This will allow students to work with AI to detect errors in working with

various sources and develop the skills of their proper use, as well as a responsible attitude to the tasks, realizing the possibility of detecting violations and their responsible correction.

The integration of AI in educational environments has transformed how institutions monitor and address academic dishonesty, providing tools like Turnitin and Grammarly to detect plagiarism more effectively. It further exposes the fact that the use of AI in education raises concerns about privacy, fairness, and academic freedom, especially when surveillance systems are involved. In other words, ethical dilemmas arise when AI over-monitors students or exhibits bias against non-native speakers therefore, alancing the benefits of AI with student rights is crucial, calling for transparency, human oversight, and minimal data collection. Despite these challenges, AI remains a powerful tool for upholding academic standards [24].

Turnitin, the company that created the AI detector KU uses on Canvas, has been especially careful to avoid making claims of perfection in its detection tool. Turnitin's AI detector was producing different results in daily use than it had in lab testing. For instance, work that Turnitin flags as 20% AI-written or less is more likely to have false positives. Introductory and concluding sentences are more likely to be flagged incorrectly, Chechitelli said, as is writing that mixes human and AI-created material. As a result of its findings, Turnitin said it would now require that a document have at least 300 words (up from 150) before the document can be evaluated. It has added an asterisk when 20% or less of a document's content is flagged, alerting instructors to potential inaccuracies [25].

The other side of using AI is the potential risks of violating the principles of academic integrity, which is due to the following. Given the wide capabilities of AI, students can use it to solve problems, solve plots; write research papers, texts, essays; prepare answers to various questions; perform tests; prepare presentations, etc. As noted above, such use may be permissible and useful within certain limits if the applicant does not conceal this fact and subsequently analyzes and evaluates the information provided by the AI. If such use occurs without proper consideration and completely replaces the work of the applicant on the tasks and material, such actions are a violation of academic integrity, which follows from the analysis of the law. In accordance with the Law of Ukraine 'On Education' (Article 42), the observance of academic integrity by students provides for:

- independent performance of learning tasks, tasks of current and final control of learning outcomes (for people with special educational needs, this requirement is applied taking into account their individual needs and capabilities);
- references to sources of information in case of using ideas, developments, statements, information;
- compliance with copyright and related rights legislation;
- providing reliable information about the results of their own educational (scientific, creative) activities, used research methods and sources of information [26].

Accordingly, non-compliance with these rules leads to violations of academic integrity, which are also defined in the article, namely: academic plagiarism; self-plagiarism; fabrication; falsification; cheating; deception; bribery; biased assessment; providing students with assistance or creating obstacles not provided for by the terms and/or procedures for such assessment; influence in any form (request, persuasion, instruction, threat, coercion, etc.) on a pedagogical (scientific and pedagogical) employee in order to conduct a biased assessment of learning outcomes. From the above list, the use of AI without proper reflection by students can lead to violations such as plagiarism, cheating, deception, and fabrication. Since the use of AI violates the

basic principles - non-independent performance of tasks; provision of inaccurate information about the results of their own educational and scientific work; improper reference to the sources used and, as a result, copyright infringement. Despite the fact that AI, in particular chat GPT, generates text files with links, it is not uncommon for these links to be to generated works. Even if the author's surname is correct, the title of the work or the source of the publication may be generated. In such cases, the work is filled with unreliable sources.

In addition to the fact that applicants will not be aware of the state of research on the issue at the doctrinal level due to the processing of non-existent sources generated by AI, the question arises of violations of the rights of scientists who are attributed authorship to non-existent sources.

One of the violations of academic integrity that is worth paying attention to is academic plagiarism. According to the Law of Ukraine 'On Education', academic plagiarism is defined as the publication (in part or in full) of scientific (creative) results obtained by other persons as the results of one's own research (creativity) and/or reproduction of published texts (published works of art) of other authors without attribution. Based on the definition, plagiarism involves the use of a person's results. According to the Law of Ukraine 'On Copyright and Related Rights' [27], the author of a work is an individual who has created a work through his or her creative activity.

At the legislative level, AI is not recognized as a person. Regarding the possibility of recognizing AI as a person, O. Kharytonova notes that artificial intelligence should be considered as an object of intellectual property relations. The author criticizes the understanding of artificial intelligence or robots endowed with artificial intelligence as subjects equivalent to a natural person. Instead, it is proposed that in the future, when artificial intelligence achieves absolute independence, they should be granted the status of quasi-legal entities [28].

The Law of Ukraine 'On Copyright and Related Rights' for the first time at the national level defined the legal basis for acquiring rights to objects generated by a computer program.

It should be noted that the Law does not use the term 'AI' to refer to an object generator. At the same time, at the level of scientific doctrine, AI is considered to be a result of intellectual activity.

Exploring the essence of AI, O. Zozuliak notes that since artificial intelligence is the result of intellectual technological activity of a person, as it is a device or computer program designed by a person, there is every reason to consider its legal nature from the standpoint of intellectual property law. It is the disclosure of the specific features of artificial intelligence within the framework of the institution of intellectual property law that will facilitate its separation from related categories and legal protection through the tools of intellectual property law [29].

Artificial intelligence is a certain set of methods, techniques, tools and technologies, primarily computer-based, that imitates (models) cognitive functions that have criteria, characteristics and indicators equivalent to those of the corresponding human cognitive functions [30].

Based on the doctrinal approaches to determining the nature of AI, the provisions of copyright law may generally be applied to relations in the field of generating new objects.

With regard to the acquisition of rights to objects generated by a computer program, it should be noted that their scope and grounds for the acquisition of sui generis rights depend on several conditions defined at the legislative level and have their own peculiarities.

First, it is the degree of participation of the author in the creation or generation of a new object by a computer program. For the sui generis right to arise, the work must be generated independently by a computer program without the participation of the creator.

Secondly, the use of other results of creative activity or generated objects by a computer program when generating a new object. Such use must be carried out in compliance with the

requirements of copyright law established for the free use of works and the use of works that require permission from the copyright holder.

Thirdly, given that a computer program is an object of law and is not currently recognized as a subject of law, sui generis rights may arise from

- the author of such a computer program;
- the author's heirs;
- persons to whom the authors or their heirs have granted (alienated) property rights to a computer program;
- legitimate users of the computer program. It should be noted that the Law defines a legitimate user of a computer program as a person who legally owns a copy of a computer program made in a lawful manner. The concept of 'legal user' is used in Article 25 of the Law 'On Copyright and Related Rights' in determining the ways of free use of a computer program without the permission of the copyright holders.

Fourthly, despite the fact that the author of a computer program may be the subject of the right to the generated object, the sui generis right includes only property rights, while non-property rights do not arise.

Fifthly, a special procedure for calculating the term of validity of property rights, which is calculated from January 1 of the year following the year in which the non-original object was generated and expires in 25 years. The sui generis right begins to operate from the moment the object is generated.

Thus, despite the fact that AI is recognized as a generator of certain results, the rights to them may arise from the copyright holders of the respective computer program.

Based on this, it can be concluded that AI cannot be a person whose works are appropriated through plagiarism. And this concept is fully consistent with the concept of authorship and plagiarism as its violation.

Instead, the widespread use of AI in the scientific field for writing qualifying, scientific articles requires the establishment of effective mechanisms to counteract and determine responsibility for such actions. And for this purpose, it is important to determine the qualification of actions to 'appropriate' the results generated by AI. In this regard, it is worthwhile to analyze the provisions of the draft Law of Ukraine 'On Academic Integrity', which significantly expands the approach to defining violations of academic integrity and their essential understanding.

According to Article 24 of the draft Law of Ukraine 'On Academic Integrity', academic plagiarism is also recognized as the publication of texts and/or results generated by a computer program in an automatic mode as the results of one's own academic activity, unless this fact is indicated in the academic work or accompanying materials to it [31].

The use of AI leads to a change in the established approach to understanding plagiarism as the misappropriation of the results of a person's (author's) creative activity, since in the future the use of texts generated by AI will be recognized as academic plagiarism.

Conclusions

The study allows us to draw the following conclusions. AI has become an integral part of educational activities, and in the near future its use by all participants in the educational process will only increase.

The use of AI has both its advantages and risks and necessitates a review of established approaches to understanding the essence of certain categories and practices of regulating relations in this area.

The advantages of using AI include: optimization of the educational process, training of future specialists who will have the skills to use AI, which has covered not only education and production, the economy and all spheres of public life; analytical processing of learning outcomes and, on their basis, determination of individual educational trajectories, taking into account the abilities and skills of applicants; organization of the educational process in a remote format and self-study with constant support of the process by AI technologies, use in the field of prevention.

Risks from the introduction of AI: reduction of critical thinking abilities due to the performance of tasks and provision of information to AI; violation of the right to privacy and illegality of the use of personal data on participants in the educational process and their learning outcomes; formation of false ideas about certain phenomena and events due to the generation of inaccurate information by AI; negative impact on the socialization of students due to reduced communication between teachers and students by increasing the volume of tasks to be performed using AI; violation of risks from the use of AI can be divided depending on the content and potential scale of impact on: general social ones, taking into account their impact on society and the state as a whole; individual ones, taking into account their impact on each individual participant in the educational process.

The active use of AI affects compliance with the principles of academic integrity and necessitates a revision of the established approaches to defining the essence of academic plagiarism. Despite the fact that AI is not recognized as a subject of law, the use of texts generated by AI without proper indication of this may in the future be equated to the appropriation of authorship of the results of the author's creative activity and recognized as plagiarism.

AI, actively developing, will continue to influence the education sector, contributing to its development and creating risks for all participants in the educational process. Finding a balance of rational implementation of AI in the educational sphere is possible with an integrated approach both at the institutional international and national level to further develop policies for the use of AI and legislative regulation of relations, and at the local level through measures taken by educational institutions to create a culture and awareness of the benefits and dangers of AI for all participants in the educational process.

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