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STUDENTS' PERCEPTIONS OF ARTIFICIAL INTELLIGENCE USE IN HIGHER EDUCATION AND ITS IMPACT ON ACADEMIC INTEGRITY

Abstract

This study investigates student perceptions of artificial intelligence (AI) implementation and its implications for academic integrity within Kazakhstan's higher education system. Through a quantitative survey methodology, data was collected from 840 undergraduate students across three major Kazakhstani universities during May 2024. The research examined patterns of AI usage, ethical considerations, and attitudes toward academic integrity in the context of emerging AI technologies. The findings reveal widespread AI adoption among students, with 90% familiar with ChatGPT and 65% utilizing AI tools at least weekly for academic purposes. Primary applications include essay writing (35%), problem-solving (25%), and idea generation (18%). Notably, while 57% of respondents perceived no significant conflict between AI usage and academic integrity principles, 96% advocated for establishing clear institutional policies governing AI implementation. The study situates these findings within Kazakhstan's broader AI development strategy, particularly the AI Development Concept 2024-2029, while drawing comparisons with international regulatory frameworks from the United States, China, and the European Union. The research concludes that effective integration of AI in higher education requires balanced regulatory approaches that promote innovation while preserving academic integrity standards.

Keywords: artificial intelligence, higher education, students, academic integrity, ethical standards.

Introduction. In recent years, artificial intelligence (AI) has become the focus of attention not only in developed countries but also in developing economies, including Kazakhstan. The Republic, realizing the potential of this technology, has developed a multifaceted strategy for the development of AI, covering several key aspects. Kazakhstan's approach to AI is characterized by its complexity. The country strives not only to introduce technologies but also to create an ecosystem that promotes their development. An important element of the strategy is the harmonization of national standards with international norms in the field of AI. This allows Kazakhstan to actively participate in global initiatives aimed at regulating and developing artificial intelligence. It is noteworthy that special emphasis is placed on supporting innovative entrepreneurship. Startups and IT companies specializing in AI developments get access to the necessary resources, including computing power. This approach not only stimulates the development of domestic technologies but also attracts foreign investment in the sector. The implementation of this strategy is aimed at creating a favorable environment for innovation in the field of AI in Kazakhstan. It is expected that this will catalyze technological progress and economic growth, allowing the country to strengthen its position on the international stage in the era of digital transformation.

The recently adopted AI Development Concept for 2024-2029 represents an ambitious plan to integrate advanced technologies into key sectors of the country's economy. This document is not just a declaration of intent, but a detailed roadmap covering a wide range of initiatives. The Concept focuses on creating a robust infrastructure for AI. It is planned to install a powerful supercomputer and build modern data centers. These steps are critical for processing the large amounts of data needed for the development of AI technologies. In addition,

it is planned to create a national AI platform, which will become a key tool for researchers and developers. The emphasis on the development of human capital deserves special attention. The concept implies a significant expansion of educational programs in the field of AI and an increase in the number of specialized specialists. This is not only a response to the growing demand for AI experts, but also a strategic step towards the formation of a new generation of Kazakhstani innovators. An interesting aspect of the Concept is the KazLLM project - the creation of a large language model. This initiative goes beyond purely technological tasks, seeking to preserve and develop Kazakhstan's cultural and linguistic heritage in the digital age (Government of Kazakhstan, 2024). Plans for the introduction of AI cover a wide range of industries, from public administration to the oil and gas and mining sectors. Such an integrated approach is aimed at improving the efficiency and competitiveness of the economy. The importance of AI development is emphasized at the highest level. In his Message to the people of Kazakhstan, President Kassym-Jomart Tokayev outlined a course towards turning the country into a leader in the use of AI and digital technologies. A concrete step in this direction will be the opening of the National Artificial Intelligence Center in Astana in 2025. This center is designed as a universal platform for everyone - from schoolchildren to entrepreneurs, which should stimulate innovation and collaboration in the field of AI (Tokayev, 2022).

The rapid development of artificial intelligence (AI) has had a significant impact on various aspects of society, including education (Shen et al., 2023; Moya & Eaton 2024). In this article, we consider the actual problem of students' perception of the use of AI in academic activities. As intelligent systems are increasingly used in the educational process, scientific research, and publications, several ethical and moral issues arise that require careful study (Alwaqdani, 2024). Of particular concern are aspects related to academic integrity and originality of work when using AI. In this regard, the study of students' attitudes to this issue is extremely important for understanding the essence of the issue and developing effective solutions. The methodology of our research included surveying students. The main goal was to identify the opinions of students about how problematic they consider the use of AI in academic work in terms of honesty and originality.

The key issues of the study covered several aspects. First, we studied how students perceive the use of AI when writing essays or conducting research. Secondly, we were interested in the opinions of students about the impact of AI on the level of plagiarism and the quality of academic work. Finally, we sought to understand how deeply students are aware of the ethical and moral aspects of using AI and what, in their opinion, mechanisms should be in place to regulate these aspects in the academic environment. The conducted research represents an important step in understanding the ethical and moral issues related to the use of AI in education. Understanding the position of students and their perception of this issue can be the key to improving the practice of using AI in the academic environment. This will not only improve the effectiveness of the educational process but also ensure compliance with the principles of academic integrity and originality in the digital age.

The concept of academic integrity in the scientific literature is undergoing constant evolution, reflecting the changing realities of the educational environment. Various researchers and institutions offer their interpretations of this concept, which allows us to consider it from different angles.

East and Donnelly (2012) offer a concise definition, characterizing academic integrity as honesty in academic work and acceptance of responsibility. This approach focuses on two key aspects: directly on honesty in educational and scientific activities, as well as on conscious acceptance of responsibility for one's actions. Fishman (2014) expands this understanding by viewing academic integrity through the lens of fundamental values: honesty, trust, fairness, respect, responsibility, and courage. This allows us to perceive academic integrity not just as a set of rules, but as a holistic ethical system. An

institutional view of the problem is presented in the Australian Higher Education Standards 2021. Here, academic integrity is interpreted as a comprehensive principle for the entire academic community, based on five key values: honesty, mutual trust, fairness, respect, and responsibility. Calovic Nenezic et al., (2023) emphasize that the principle of academic integrity is based on honesty. Developing this idea, Amrane-Cooper et al. (2021) identify six fundamental values, adding courage to those mentioned above. The authors also note that academic dishonesty refers to practices that contradict these values.

The emergence of ChatGPT at the end of 2022 created several serious challenges for the education system (Brown et al., 2020), which echoes Turing's (1950) prediction about the competition of machines with humans in intellectual spheres. This is due not only to AI's ability to generate compelling texts, but also to fundamental questions about the nature of learning, assessment, and authorship in an academic environment. Given the scale of the problem, this study highlights the need to develop strict regulations to preserve academic integrity in the face of the growing influence of AI in education. It is important to note that AI tools should not be considered as a means of obtaining ready-made solutions but as an auxiliary resource for deepening understanding of the studied area.

To identify relevant publications on the topic, a targeted search was conducted in the Scopus database for the period 2014-2024 using the keywords «Academic Integrity» and «Higher Education». The analysis of the results shows a steady increase in the number of publications on this topic, which indicates the growing interest of the scientific community in the issues of academic integrity in the context of modern technological challenges.

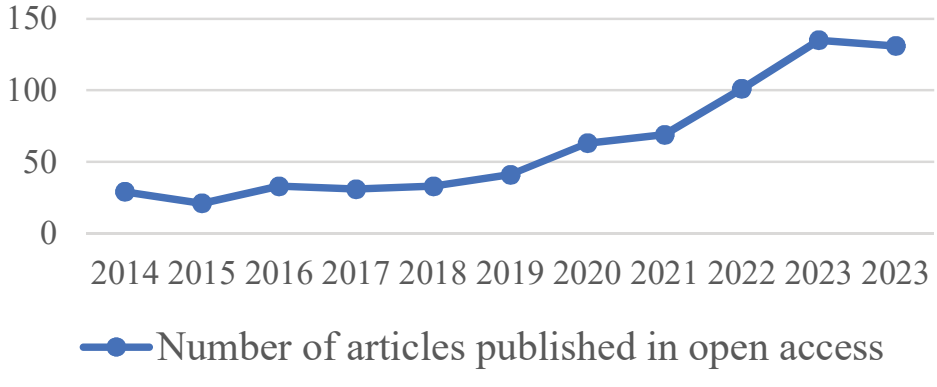

Figure 1: Number of open-access articles published on the topic of Academic integrity in higher education

An analysis of the publication activity in the field of academic integrity in recent years reveals interesting trends, especially in the context of global events and technological innovations. The COVID-19 pandemic, which caused a massive shift to distance learning, has made it much more difficult to monitor compliance with academic standards. This led to a noticeable increase in scientific interest in the issue of academic integrity: if 63-69 articles were published in 2020-2021, respectively, then in 2023 this number increased to 135 publications.

Such a sharp jump in publication activity in 2023 can be attributed to the appearance of ChatGPT at the end of 2022, which created new challenges for the educational system and science in general. This fact highlights the relevance of research on the impact of artificial intelligence (AI) on academic integrity in the modern educational landscape.

Recent research in this area presents a mixed picture. Lee et al., (2024), studying the impact of AI technologies on academic honesty among high school students, concluded that the introduction of tools such as ChatGPT did not

lead to a significant increase in cases of academic dishonesty. Interestingly, students tend to find using AI to generate ideas and explain concepts more acceptable than using it to complete entire tasks. Despite a slight increase in the use of unauthorized digital devices, most students still report not using such technologies. These observations highlight the need to prioritize improving AI literacy and developing nuanced policies in educational institutions. In turn, Johnston et al., (2024) focused on students in higher education institutions. Their research shows that generative AI is already widely used by students for both academic and personal purposes. The authors conclude that banning these technologies or switching exclusively to exam forms of assessment would be impractical and potentially harmful to the future career training of students. Instead, universities are encouraged to focus on developing skills to use these technologies productively and effectively. An interesting suggestion is to involve students in the joint development of guidelines for the use of AI. The study also highlights the need to create flexible policies that take into account various aspects of the use of AI, its potential benefits for different groups of students, and the importance of ensuring equal access to these tools.

Developing the topic of using AI in higher education, Zillmann et al., (2024) in their study revealed that a significant majority of students (79.5%) used AI systems for educational purposes, while their perception of the usefulness and ethical consequences of using these tools varies. Students who have used AI to complete the assessed tasks tend to treat them more favorably, however, there is a common understanding among all students of the reasons for using these tools, despite expressed skepticism about the reliability of the information provided by AI (Walan, 2024). These results point to the need for universities to develop clear guidelines and encourage open discussions about the ethical use of AI in the academic environment.

Waltzer et al., (2024) in their study identify another significant problem in higher education. College teachers, on average, score only 70% on the AI identification test, which indicates significant difficulties in distinguishing texts written by students and texts generated by AI. This finding, combined with the fact that AI itself has demonstrated higher confidence and a favorable attitude towards its educational use, highlights the complex implications of introducing these technologies into the academic environment. The discrepancy between the perception of humans and AI indicates an urgent need for educational institutions to develop new strategies for maintaining academic integrity and effective assessment. Liu et al., (2024) in their work focus on the need to develop effective methods for regulating the use of AI in the academic field. Their research demonstrates the high accuracy of some AI detectors in detecting texts created or paraphrased using artificial intelligence. For example, the tool Originality. ai showed impressive results, achieving 100% accuracy in detecting such texts. Another detector, ZeroGPT, demonstrated 96% accuracy with an AUROC score of 0,98.

It is interesting to note that human expertise has also shown high efficiency: the review professors were able to accurately identify at least 96% of the texts paraphrased by AI. However, they made a mistake in 12% of cases, classifying texts written by humans as created by AI. These results indicate the potential of using certain AI detectors to maintain academic integrity both in the work of students and in the publications of university staff. Another approach to solving the problem of academic integrity was proposed by Goddiksen et al., (2024); They have developed a gamified platform Integrity Games, which focuses on difficult ethical situations (gray areas) in the academic environment. The researchers conducted a large-scale randomized controlled trial involving 257 students from three European countries. The aim was to assess the impact of this tool on the motivation of students to study issues of academic integrity and their sensitivity to the problems of gray areas and violations.

The results of the study showed that students found Integrity Games an exciting tool and were ready to recommend it to teachers. The use of

the platform has indeed led to an improvement in the sensitivity of students to the problems of gray areas and violations of academic integrity. However, these improvements were not significantly higher than in the control group, which studied the same topics using traditional, non-gamified text materials. Although the approach has shown some effectiveness, the results have not been unambiguous, which underscores the need for further research in this area. Perhaps combining gamified approaches with traditional teaching methods can have a more pronounced effect. Thus, modern research offers a variety of approaches to solving the problems of academic integrity in the age of AI, from technological solutions for detecting non-author content to innovative educational methods. However, as practice shows, none of these solutions is universal, which underlines the need for an integrated approach to this problem.

The purpose of this study was to identify and analyze the perception of students of higher educational institutions of the use of AI in academic work, as well as to study their attitude to issues of academic integrity in the context of the use of AI technologies.

Materials and methods. As part of our research, a comprehensive questionnaire was developed that takes into account current trends in the study of academic integrity and the use of artificial intelligence (AI) in the educational environment. The questionnaire structure included both closed-ended questions for quantitative analysis and open-ended questions to gain a deeper understanding of students' opinions. Special attention was paid not only to the practical aspects of using AI but also to the ethical issues of its application in the academic environment.

The survey was conducted over three weeks in May 2024 using the Google Drive platform. The study involved 840 students of 1-4 bachelor's degree courses from three leading universities of the Republic of Kazakhstan: Al-Farabi Kazakh National University, Abai Kazakh National Pedagogical University, and Turan-Astana University. It is important to note that the sample included students from various faculties, which provided a variety of perspectives and opinions.

To preserve the objectivity of the research and protect the confidentiality of the participants, the survey results were presented in a generalized form, without highlighting data on individual universities. This approach to data collection and analysis allowed us to gain a comprehensive understanding of student's perceptions of the use of AI in the academic environment and their attitudes to issues of academic integrity in the context of new technological challenges.

Results. The distribution of participants by field of study showed a wide range of different specialties. The socio-humanitarian sector accounted for the largest share - 37% of respondents. The physics and mathematics field were represented by 33% of the participants, and the remaining 30% were in other specialties (Figure 2).

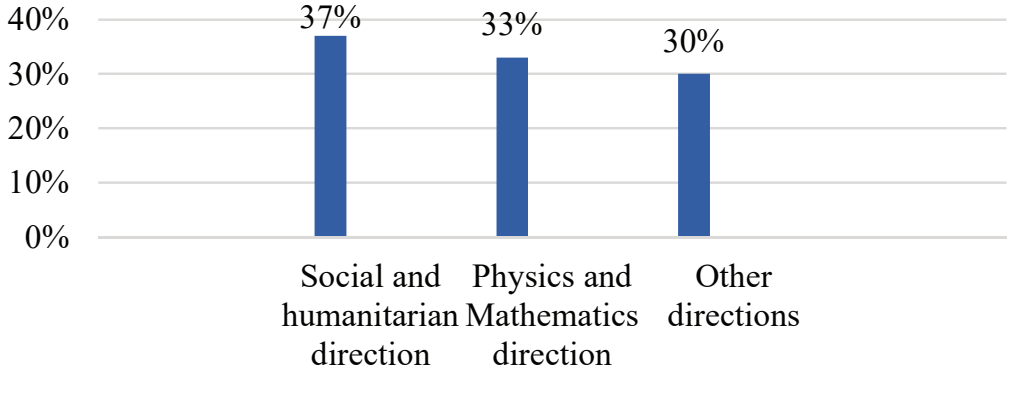

Figure 2: Indicators of the direction that took part in the survey

This diversity allows us to consider the opinions of students with different academic backgrounds. It is important to note that the study covered students from different courses, which ensured that the sample was representative in terms of educational level (Figure 3). This makes it possible to analyze how attitudes towards AI and academic integrity change at different stages of learning.

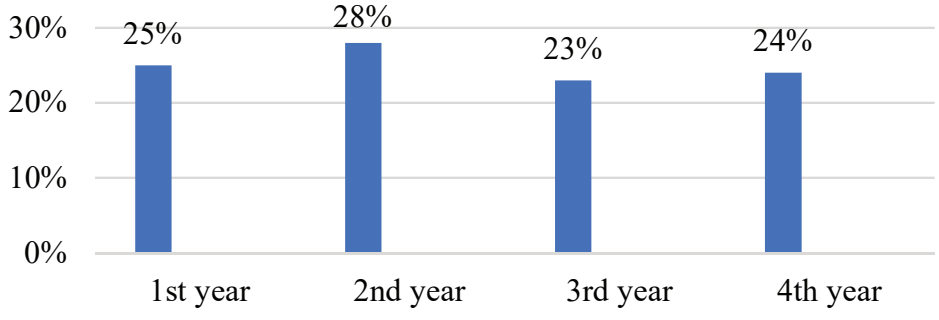

Figure 3: Indicators of years of study who took part in the survey

Of particular interest are the results of the question about the familiarity of students with various AI tools. The vast majority of respondents (90%) indicated that they know about ChatGPT, which is not surprising, given its popularity recently. Other tools turned out to be less well-known: DALL-E was chosen by 2% of respondents, Midjourney - 1%, and Copilot - 3%. Another 4% of respondents indicated other AI tools (Figure 4).

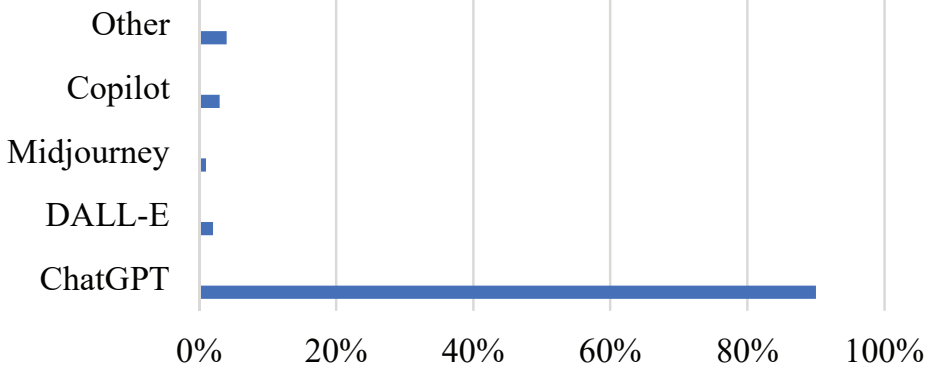

Figure 4: The results of respondents to the question «Which AI tools do you know from the suggested options?»

The study of the frequency of using artificial intelligence (AI) tools by students for educational purposes has revealed interesting trends in the modern academic environment. The survey results show that AI has already become an integral part of the educational process for a significant part of students.

An analysis of the answers to the question How often do you use AI tools for educational purposes? Gave the following distribution: Never - 0%; Rarely (1-2 times a semester) - 10%; Sometimes (1-2 times a month) - 25%; Often (1-2 times a week) - 30%; Very often (almost every day) - 35%. It is noteworthy that none of the surveyed students indicated that they never use AI for educational purposes. This indicates that AI technologies have already firmly entered the arsenal of tools used in the learning process.

The largest proportion of respondents (35%) noted that they use AI almost daily,

which indicates a high degree of integration of these technologies into everyday educational activities. Another 30% of students use AI tools 1-2 times a week, which also indicates regular use. A quarter of the respondents (25%) turn to AI 1-2 times a month, which may indicate a more selective approach to its use, perhaps for solving specific tasks or in certain educational situations. Only 10% of respondents noted that they rarely use AI, 1-2 times a semester. This may be due to various factors, such as the specifics of the disciplines being studied, personal preferences, or lack of awareness of the possibilities of AI in an educational context.

The results obtained allow us to conclude that AI has become an important tool in the academic life of modern students. However, it is worth noting that its use is not widespread and evenly distributed (Figure 5).

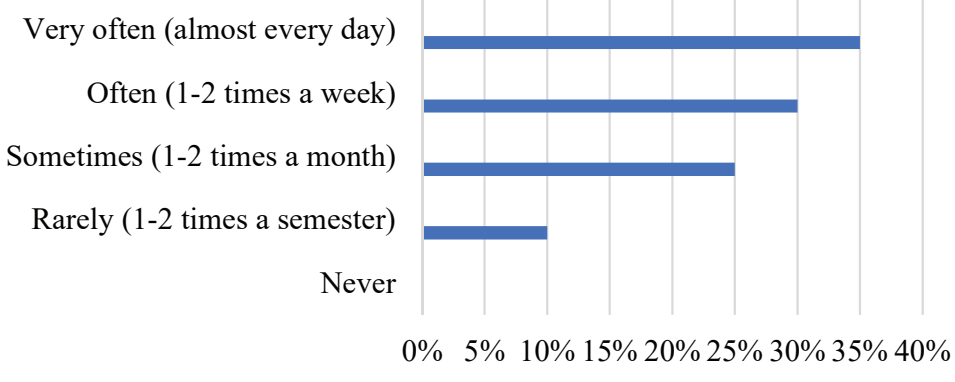

Figure 5: Respondents' answers to the question «How often do you use AI tools for educational purposes?»

The present study also raised the issue of specific learning tasks for which students use artificial intelligence (AI) tools. The survey results on this aspect turned out to be very revealing and highlighted several interesting trends.

Of particular interest are the results of the question of the perception of the use of AI in the context of academic integrity. To the question "Do you think that the use of AI for educational purposes contradicts the principles of academic integrity?" The answers were distributed as follows: Yes, completely contradicts – 10%; «Rather contradicts – 18%; Neutral – 15%; Rather not contradicts – 40%; No, doesn't contradict at all – 17% (Figure 5). These data, presented in Figure 5, show that the majority of students (57%) do not see a significant contradiction between the use of AI and the principles of academic integrity. This may indicate the formation of a new understanding of academic ethics in the digital age.

However, a significant proportion of respondents (28%) still believe that the use of AI to some extent contradicts the principles of academic integrity. This indicates the need for further discussion and the development of clear recommendations on the ethical use of AI in the educational process.

The analysis of the results of the present study revealed several significant trends in the use of artificial intelligence (AI) by students of higher educational institutions:

1. The dominant field of AI application turned out to be writing academic papers, which was noted by 22% of respondents. This may be due to the ability of modern AI systems to quickly generate structured texts that meet academic standards. This trend raises certain concerns from the point of view of academic integrity and requires further study.

2. 10% of respondents indicated the use of AI to solve problems. This indicates that it is also in demand as a tool for analyzing complex problems and finding optimal solutions. This aspect can have both a positive impact on the development of analytical skills of students,

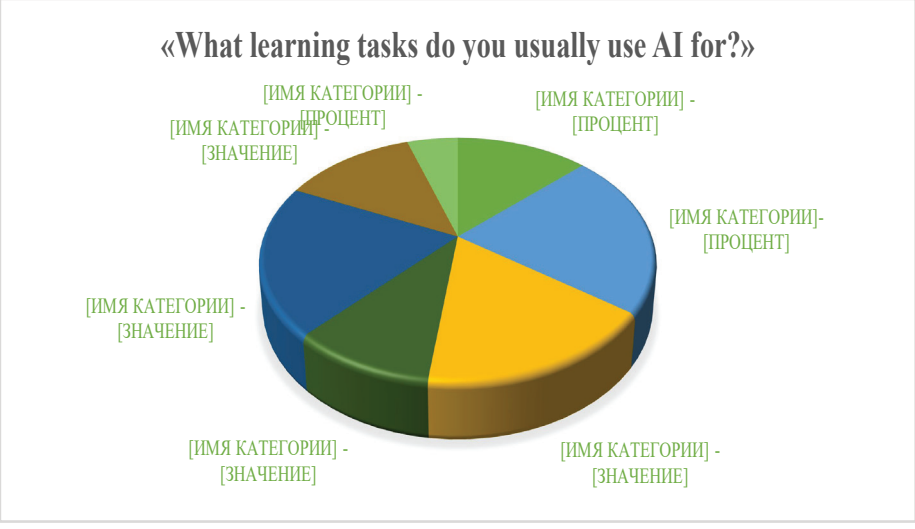

Figure 6: Respondents' answers to the questions «What learning tasks do you usually use AI for?»

as well as potential risks in the context of the independence of completing tasks.

3. The generation of ideas using AI (13% of respondents) indicates the perception of artificial intelligence as a catalyst for creative thinking. This can be considered as a positive trend contributing to the development of an innovative approach to solving academic problems.

4. It is interesting to note that only a small proportion of students (13%) use AI to prepare for exams. This may be due to the limited availability of specialized AI tools for exam preparation or to the methodological features of the exam preparation process itself.

5. 10% of respondents (2%) noted the use of AI for communication in the «question-answer» format. This may indicate the potential of AI in the field of problem-solving.

6. A small percentage of respondents (5%) noted the use of AI for personalized learning, for instance, getting additional explanations on challenging topics.

7. About 20% of respondents use the capabilities of artificial intelligence to study and improve their level of foreign language.

Regarding the compliance of the use of AI with the principles of academic integrity, the respondents' opinions were distributed as follows: "Completely contradicts" - 10%; Rather contradicts - 18%; Neutral - 15%; Rather does not contradict - 40%; Doesn't contradict at all - 17%.

Respondents also expressed their opinion on the following statements (on a scale from 1 to 5): a) Using AI to complete tasks is a form of deception: I completely disagree - 52%; I completely agree - 48% b) AI is another learning tool: Disagree - 15%; agree - 85% c) Using AI improves the quality of my work: Disagree - 35%; agree - 65%.

The analysis of respondents' answers to questions about the use of artificial intelligence (AI) in the educational process revealed several interesting trends and contradictions in the perception of this technology by students.

Most respondents (58%) are in favor of unlimited use of AI for educational purposes. This may indicate a high level of acceptance of the technology and its perceived usefulness. However, a quarter of respondents (25%) believe that the use of AI should be subject to some restrictions, which indicates awareness of potential risks. It is noteworthy that 15% advocate a complete ban on AI in the educational process, demonstrating a more conservative approach.

An interesting paradox is observed regarding the indication of the use of AI in the works. Although the majority support

the use of AI, only 15% indicate its constant use, and 20% - sometimes. The vast majority (65%) never indicate the fact of using AI. This discrepancy between support for technology and unwillingness to advertise its use deserves further study.

Opinions on the impact of AI on the quality of learning are divided. While 40% believe that AI improves the quality of learning (25% - significantly, 15% - slightly), 40% hold the opposite opinion (25% - slightly worsens, 15% - significantly worsens). This division of opinion indicates the need for further research on the real impact of AI on educational outcomes.

The almost unanimous opinion (96% of respondents) on the need for universities to develop a clear policy on the use of AI indicates the need for institutional regulation of this issue. This may be due to the uncertainty and ethical dilemmas that students face when using AI.

Regarding specific regulatory measures, the majority (55%) support the idea of allowing the use of AI with mandatory indication of this fact. This proposal can serve as a compromise between the free use of technology and the observance of academic ethics. Also, a significant part of the respondents is in favor of educational initiatives: 20% for training in the ethical use of AI, and 15% for integrating AI work into the curriculum.

The analysis of the answers to the open-ended questions of our study provided valuable insights into the perception and use of artificial intelligence (AI) by students in the academic environment.

When asked about specific situations where AI is used for educational purposes, many respondents noted its impact on grades rather than on the quality of learning. A typical response was: «I do not know how it affected the quality, but it had an impact on the score received for the work. There was a case when I used AI when writing an essay, I did not indicate that it was the work of AI, and at the same time I got a high score». Such answers point to a potential problem: students may perceive AI as a tool for getting high grades, rather than as a means of improving the quality of learning.

Regarding the possibilities of using AI while maintaining academic integrity, the respondents offered several interesting ideas:

1. Personalized learning: AI can create customized educational programs that take into account the level of knowledge and learning pace of each student.

2. Objective evaluation and feedback: Using AI to evaluate work can reduce bias and minimize errors. At the same time, the importance of transparency in the assessment process is emphasized.

3. Individual recommendations: AI can offer additional materials and tasks based on the individual needs of the students.

4. Plagiarism detection: AI systems can effectively detect cases of plagiarism, contributing to the maintenance of academic integrity.

5. Creating virtual educational environments: And can be used to develop interactive simulations and simulators.

6. Teacher support: And can help with curriculum development, assignment creation, and analysis of academic performance data.

These proposals demonstrate that students see the potential not only as a tool for completing tasks but also to improve the educational process. However, the discrepancy between these idealistic ideas and the actual practice of using AI, which is reported by students, indicates the need for further work on integrating AI into the educational process ethically and effectively.

Discussion. Analyzing the data obtained, the authors concluded that there is a need for a balanced approach to the use of artificial intelligence in the educational field. Despite the obvious advantages that AI provides, its application must be carried out in strict accordance with ethical standards and legislative frameworks. At the same time, the introduction of AI technologies mustn't lead to a violation of academic integrity, which remains a fundamental value of the educational process.

In this context, the experience of the leading world powers is indicative. The USA, China, and the countries of the European Union have

already taken steps to establish legal regulation of AI technologies. In the USA, this was reflected in the National Artificial Intelligence Initiative, in China the New Generation of Artificial Intelligence Development Plan was adopted, and in the European Union, the Artificial Intelligence Act is being developed. These initiatives demonstrate the awareness at the state level of the need to create a legal framework for the development and application of AI technologies.

Considering global trends and the results of the conducted research, the authors conclude that it is necessary to develop a similar legal regulation in Kazakhstan. The creation of a regulatory framework for the use of AI in education is particularly relevant. Such regulation should be aimed at ensuring the ethical and effective use of AI technologies in the educational process while maintaining high standards of academic integrity and quality of education.

The development of an appropriate regulatory framework will not only establish clear rules for the use of AI in the educational environment but also create a basis for the development of innovative approaches to learning. This may include recommendations for integrating AI into curricula, standards for the development and application of AI tools in education, as well as mechanisms for monitoring compliance with ethical standards when using AI.

Thus, the legal regulation of the use of AI in the educational sphere of Kazakhstan seems not only timely but also a necessary step to ensure the competitiveness of the national education system in the context of global digitalization.

Conclusion. This comprehensive investigation into artificial intelligence implementation in Kazakhstan's higher education system yields several significant findings and implications for academic policy development. The study reveals widespread adoption of AI technologies among undergraduate students, with 65% utilizing AI tools weekly or more frequently. The primary applications center on academic writing (35%), problem-solving (25%), and ideation (18%), indicating AI's substantial integration into academic workflows. Notably, there exists a significant dichotomy in perceptions of AI's relationship to academic integrity, with 57% seeing no significant conflict while 28% express ethical concerns. An overwhelming majority (96%) advocate for clear institutional policies governing AI usage, highlighting the urgent need for structured institutional responses. As Kazakhstan continues to develop its AI infrastructure through initiatives like the AI Development Concept 2024-2029, educational institutions must balance technological innovation with academic integrity preservation. The study suggests three primary areas for development: comprehensive policy frameworks including institutional guidelines and protocols for AI usage; educational practices involving training programs and assessment methods; and regulatory alignment with international best practices while maintaining context-specific approaches for Kazakhstan's educational environment.

Further research is recommended to examine long-term impacts of AI integration on learning outcomes, investigate faculty perspectives and preparedness, develop and evaluate effectiveness of AI-specific academic integrity policies, and study cross-cultural variations in AI implementation approaches. This research contributes to the emerging discourse on AI in higher education while providing practical insights for policy development in Kazakhstan's educational institutions. The findings underscore the importance of developing nuanced, context-appropriate responses to technological integration while maintaining academic standards and ethical principles. The conclusions drawn from this study may serve as a foundation for future policy development and research initiatives in Kazakhstan and similar educational contexts, particularly within the Central Asian region. As AI technology continues to evolve, maintaining this balance between innovation and integrity will remain crucial for the future of higher education.

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