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ORIGINAL

Ethical Aspects of Using Artificial Intelligence for Monitoring Academic Integrity in Higher Education Institutions of Ukraine

Aspectos éticos del uso de la inteligencia artificial para el control de la integridad académica en las instituciones de educación superior de Ucrania

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ABSTRACT

Introduction: the contemporary educational system, which is based on implementing innovative solutions, requires new methods of academic integrity control. One is artificial intelligence, which is still a new method and has not been sufficiently studied in scientific research.
Objective: to identify the main ethical issues of introducing artificial intelligence to control academic integrity in Ukrainian higher education institutions and to analyze the perception of students and teachers towards these technological solutions.
Method: the type of this study is a cross-sectional survey involving two groups of participants: teachers (n=20) and students (n=100). The main tool was a questionnaire consisting of different types of questions (open, closed, Likert scale).
Results: the students rated the possibility of using AI to monitor academic integrity at 3,52 points, while teachers rated it at 2,95. A t-test to compare the results showed that there is a statistically significant difference between the average scores of the two groups. The average confidence score in using AI to control academic integrity among students is 3,43, and among teachers - 3,15.
Conclusions: the conclusions indicate that a number of ethical risks accompany the introduction of such technologies. In particular, challenges such as the confidentiality of student data, violation of their private rights, and the possibility of misuse of the collected information are identified.

Keywords: Academic Integrity; AI; Ethics; Control; Risks; Confidentiality.

RESUMEN

Introducción: el sistema educativo contemporáneo, basado en la implementación de soluciones innovadoras, requiere nuevos métodos para el control de la integridad académica. Uno de ellos es la inteligencia artificial, un método aún novedoso y poco estudiado en la investigación científica.
Objetivo: identificar los principales problemas éticos derivados de la introducción de la inteligencia artificial para el control de la integridad académica en las instituciones de educación superior ucranianas y analizar

la percepción de estudiantes y docentes respecto a estas soluciones tecnológicas.
Método: este estudio es una encuesta transversal con dos grupos de participantes: docentes (n=20) y estudiantes (n=100). La herramienta principal fue un cuestionario con diferentes tipos de preguntas (abiertas, cerradas y escala Likert).
Resultados: los estudiantes valoraron la posibilidad de utilizar la IA para supervisar la integridad académica con 3,52 puntos, mientras que los docentes la valoraron con 2,95. Una prueba t para comparar los resultados mostró una diferencia estadísticamente significativa entre las puntuaciones medias de ambos grupos. La puntuación media de confianza en el uso de la IA para el control de la integridad académica entre los estudiantes es de 3,43 y entre los docentes, de 3,15.
Conclusiones: las conclusiones indican que la introducción de estas tecnologías conlleva diversos riesgos éticos. En particular, se identifican desafíos como la confidencialidad de los datos de los estudiantes, la vulneración de sus derechos privados y la posibilidad de uso indebido de la información recopilada.

Palabras clave: Integridad Académica; IA; Ética; Control; Riesgos; Confidencialidad.

INTRODUCTION

Academic integrity is a fundamental basis for quality education and research, as it ensures honesty, fairness and trust in the educational environment. Therefore, academic integrity is a set of ethical principles and rules defined by law that all participants should follow in the educational process to ensure trust in learning outcomes and/or scientific (creative) achievements. Given the active digitalization and the use of new technologies, there is a pressing issue of attracting new tools to support academic integrity. Among them, artificial intelligence (AI) technologies play a prominent role in monitoring and controlling compliance with academic standards. In particular, the integrated use of AI in education allows for automating the process of checking texts for plagiarism, conducting a qualitative analysis of student results, and identifying potential violations of the assessment rules. Thus, the problem of academic integrity in Ukraine is becoming increasingly important, particularly due to the increase in cases of academic fraud, especially in distance learning. At the same time, the active implementation of artificial intelligence technologies in higher education institutions will create new opportunities for adequate control. However, there are several ethical issues that should be considered in more detail. In particular, these ethical issues are related to students' rights, data privacy, and the level of trust in such systems.

Thus, despite artificial intelligence technologies being actively implemented in the educational process, their use for the purpose of controlling academic integrity is accompanied by ethical challenges. In particular, the scientific literature proves that the key problems include issues of student data privacy and possible bias of algorithms. Such challenges may lead to a decrease in the level of trust in AI on the part of all participants in the educational process. The scientific literature partially covers these aspects, but there is still a lack of systematic research that would analyze the ethical risks of using AI in educational institutions and describe the attitudes of all participants in the educational process toward AI. Accordingly, the focus of this study is to analyze the perception of students and teachers towards the use of AI. In addition, the paper will also describe the main ethical risks that are of concern to participants in the educational process. Therefore, this study will fill the existing research gaps and critically analyze the attitudes of students, teachers, and administrators toward implementing AI, which distinguishes it from previous studies.

Therefore, the purpose of this paper is to identify the main ethical issues of introducing artificial intelligence to control academic integrity in Ukrainian higher education institutions and to analyze the perception of students and teachers towards these technological solutions.

Thus, the research questions are as follows:

1. What is the ethics assessment of using AI to monitor academic integrity?
2. What are the main ethical risks students and teachers are concerned about?
3. What is the difference in the perception of AI between students and teachers?

Literature review

Artificial intelligence in education: A brief overview of the use of AI in the educational process and control of academic integrity

In the modern scientific space, AI is an important scientific issue. Modern scientists have addressed this issue by analyzing the advantages and disadvantages of using AI.[1, 2] In particular, studies indicate that AI plays an essential part in the transformation of modern education, as it affects changes in the methods of learning, teaching, and knowledge control.[3,4,5] According to research, it helps to ensure the personalization of learning, automation of assessment. K. Zhang & A. Aslan identified key areas of use of AI in education and described

the prospects for research in this area. [1] At the same time, L. Li et al. identified the possibilities of using AI technologies to create personalized digital education tasks.[6] M. Chassignol et al. have identified the impact of AI on the process of research and forecasting promising directions in the modern educational space. (7) The authors described four categories: personalized content, innovative methods, technology evaluation, and communication between student and teacher.[7] Overall, the authors concluded that using AI in education is important. Other works indicate that AI allows for high-quality adaptation of educational materials to students' individual needs.[8] In addition, using basic machine learning algorithms facilitates the development of dynamic curricula.[9,10] At the same time, educational platforms based on AI also make it possible to develop students' professional skills and provide an interactive learning space for students.[11,12,13] In ensuring academic integrity, modern scientists have drawn attention to the fact that specialized services for checking academic violations use various AI algorithms to analyze texts and detect plagiarism and unauthorized use of sources.[14] Proctoring systems based on AI capabilities allow for high-quality remote examination control, as they can analyze eye movements, facial expressions, and other behavioral factors.[11,14] In addition, R Yilmaz found that AI affects student motivation.[15] The scientific literature also proves that modern technologies make it possible to create individual task options for each student.[16,17,18] This makes cheating more difficult and promotes objective assessment of knowledge.

Academic integrity in the digital age: an analysis of the main problems

The scientific literature indicates that the development of digital technologies has influenced the opening of not only new opportunities for education but also challenges. The latter are related to academic dishonesty, particularly plagiarism and cheating in exams.[19,20] However, the development of modern technologies also contributes to the formation of various methods for detailed verification of academic dishonesty. Modern anti-plagiarism systems allow you to analyze student work clearly to ensure compliance with other texts.[21] On the other hand, the proctoring technique stands out, involving remote examination supervision technologies.[22,23] The scientific literature indicates several types of proctoring: automatic monitoring and live proctoring. In addition, AI technologies allow for qualitative analysis of student behavior during tests, exams, etc.[24] At the same time, as shown in the works, AI allows you to detect suspicious activity and makes adjustments to the evaluation system.[25,26,27] However, modern scientists have drawn attention to the existence of several challenges when using AI in education.[28,29]

J. Shah's study pointed out the imperfections of individual plagiarism-checking platforms, and the author also emphasizes that paraphrasing is difficult for plagiarism systems to detect.[29] Moreover, one of the challenges in proofreading academic papers is the automatic evaluation of mathematical texts that contain formulas, graphs, and complex equations. Many modern platforms are mainly focused on checking text documents. However, there are separate programs for checking mathematical calculations. In particular, Wolfram Alpha, Maple, and MathType allow you to identify plagiarism in calculations. For this reason, it is also important to use several specialized code editors to check mathematical calculation programs.[30,31] They are essential for analyzing works containing software code (for example, in MATLAB, Python, or R), and they use unique code-checking systems, in particular, MOSS (Measure of Software Similarity).[32] Thus, the synthesis of anti-plagiarism systems, proctoring, and AI impacts ensuring honesty in the educational process.

Besides, scientists have also drawn attention to certain ethical issues. Data privacy and algorithmic bias are the most common problems in using AI, which modern researchers recognize.[30,7,12]

On the other hand, scientists have drawn attention to the problem of dependence on technology, which can affect the decline in students' critical thinking development. In addition, the challenge of replacing traditional learning is highlighted. In particular, as shown in the study of S. Yang, the prevalence of automation of processes can affect the reduction of the role of human-centered learning and generally reduce the role of the teacher.[31] Identified ethical issues generally affect the quality of education. However, as can be seen from the analysis, these aspects are partially covered in the scientific literature. Therefore, there is still a lack of systemic research that would analyze the ethical risks of using AI in educational institutions and describe the attitude of all participants in the educational process toward AI. Therefore, this task will be solved by this study, which will analyze the perception of students and teachers towards AI and identify the main ethical risks of using AI.

METHOD

Research design

The type of this study is a cross-sectional survey. This type was chosen because it allows for qualitative data collection from different participants and subsequent data comparison. In this way, it will be possible to understand the attitudes of teachers and students towards the use of AI in education, which is an important object of this study. The data was collected in November-December 2024.

Sample and Participants

The study used a purposive sample aimed at targeting the study participants. The information about the

experiment was disseminated by mail through corporate university emails, personal contacts, and social networks. In order to attract participants, separate inclusion and exclusion criteria were developed, which were considered when selecting students and teachers. In particular, the inclusion criteria for students were as follows: 1. Studying in higher education institutions in Ukraine. 2. Active participation in the educational process, where academic integrity control systems are used. 3. Understanding what academic integrity is and how to maintain it. 4. Understanding what AI is and what its capabilities are. 5. Voluntary consent to participate. Other criteria have been developed for teachers, in particular: 1. teaching in higher education institutions of Ukraine. 2. Use of various modern technologies in the classroom. 3. Knowledge of modern plagiarism detection programs. 4. Have experience in the use of academic integrity control technologies. 5. Voluntary consent to participate. A total of 130 questionnaires were received, however, not all teachers met criteria 3 and 4. Therefore, 10 teachers were not allowed to participate. A total of 100 students and 20 teachers were included in the study. Table 1 shows the demographic distribution of the participants.

Table 1. Basic data of the study participants

Category	Students (n=100)	Teachers (n=20)
Age		
Under 25	85 (85 %)	0 (0 %)
25-40 years	15 (15 %)	5 (25 %)
41-55 years	0 (0 %)	10 (50 %)
56 and over	0 (0 %)	5 (25 %)
Type of educational institution		
Public	60 (60 %)	12 (60 %)
Private	40 (40 %)	8 (40 %)
Specialty		
Technical sciences	30 (30 %)	6 (30 %)
Humanities	25 (25 %)	5 (25 %)
Economics and management	20 (25 %)	4 (20 %)
Medicine	10 (10 %)	3 (15 %)
Other	15 (15 %)	2 (10 %)

Instruments and Procedure

The main instrument in the study was a questionnaire that was specially designed for both teachers and students. This questionnaire consisted of a combination of closed and open-ended questions. In addition, a separate Likert scale was used when participants had to rate the statements from 1 to 5, where one completely disagrees, or low level, and five agree entirely, or high level. Thus, the main questions of the survey were as follows:

1. What is your role at the university:
- *Lecturer*
- *Student*

2. Please indicate your age:
- *up to 25 years*
- *25-40 years old*
- *41-55 years old*
- *56 and more*

3. Please indicate your type of educational institution:
- *Public*
- *Private*

4. Specify your specialty
5. How do you assess the use of AI for monitoring academic integrity (from 1 to 5)?
6. To what extent can AI impartially assess academic integrity (from 1 to 5)?
7. Choose the main ethical risks of using AI from the proposed options:
- *Data privacy*
- *Algorithmic problems*

- *Lack of human factor*
- *Possibility of technology misuse*
- *Low accuracy*

8. How do you perceive the use of AI to monitor academic integrity?

Data analysis

Microsoft Excel software was used to analyze the data. This tool was chosen because of the convenience of calculations and the availability of a wide range of tools. In addition, descriptive statistics methods were used to compare the results of both groups (students and teachers) using a t-test. Microsoft Excel's capabilities were also used to visualize the main results. The data obtained were compared with the results of other scientists. However, such methodological solutions also have some limitations, such as the inability to establish a causal relationship due to the research design. In addition, the presence of possible subjective responses from participants should also be taken into account.

RESULTS

Artificial intelligence is an extremely popular tool in the education sector, and it includes monitoring academic integrity. At the same time, the active integration of AI into the educational process has its supporters and opponents, and it is supported by society and is quite worrying for experts. First, implementing such ethical aspects as the preservation of confidential information, an appropriate level of digital competence, the use of algorithms, and the ability to make various decisions is problematic. From this point of view, it is essential to determine the attitude of students and teachers to the use of AI in the field of academic integrity protection, to identify certain ethical risks that accompany this process, and to establish some differences in the perception of technology.

The analysis of ethicality in the use of AI has raised some concerns among specialists involved in plagiarism detection and research of digital system algorithms. At the same time, it is crucial to determine how ethical it is to use AI systems to protect academic integrity. The survey of students and professors demonstrates the main results obtained using the Likert scale (see figure 1).

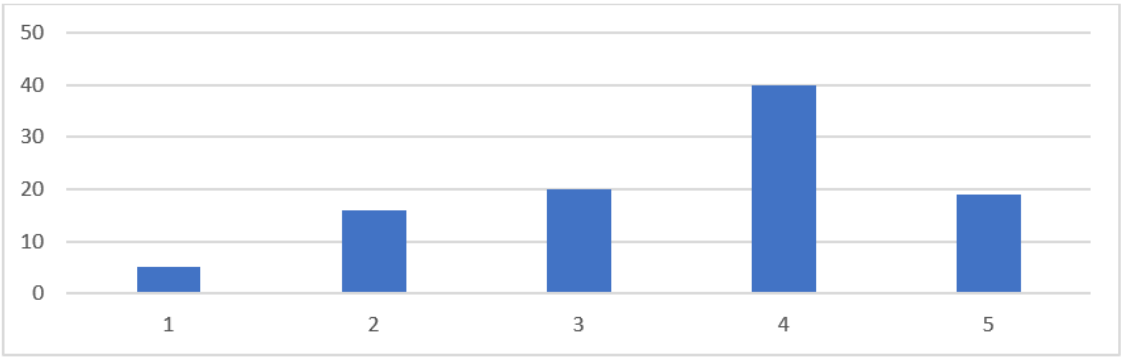

Figure 1. Evaluation of the use of AI for monitoring academic integrity (students)

Therefore, students rated the possibility of using AI to monitor academic integrity with an average of 3,52 points. Five people gave a negative rating, 16 gave a rather negative rating, 20 gave a neutral rating, 40 gave a somewhat positive rating, and 19 gave a positive rating. Teachers were also asked to complete the same survey (see figure 2).

Thus, among teachers, AI potential is rated lower - 2,95 for monitoring academic integrity. In general, three respondents gave a negative assessment, five rather negative, five neutral, four relatively positive, and three positives.

A t-test to compare the survey results of students and teachers showed that the t-statistic is 2,01, while the p-value is 0,047. Given that the p-value is less than 0,05, it was found that there is a statistically significant difference between the average scores of the two groups. Therefore, representatives of both groups have different views on the ethical use of AI systems as an effective mechanism for monitoring compliance with academic integrity.

The respondents were also asked to determine the extent to which AI systems can assess the level of academic integrity impartially. The Likert scale was used to determine this level of trust on the part of both students and teachers. The results of the student survey are shown in figure 3.

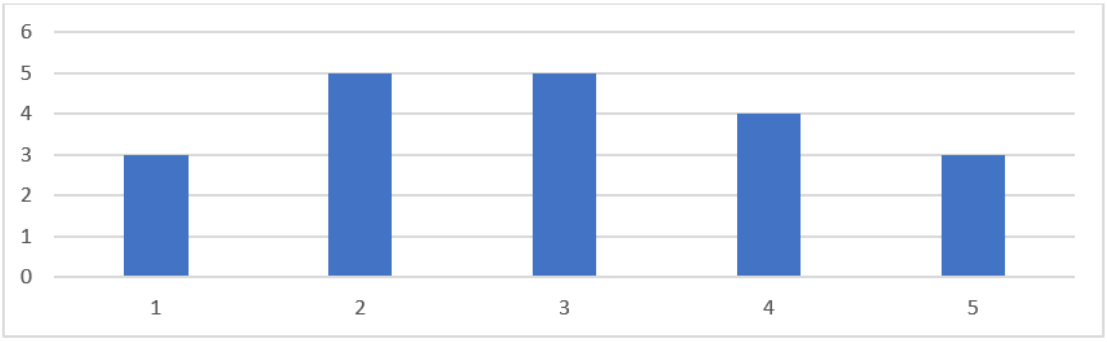

Figure 2. Evaluation of the use of AI for monitoring academic integrity (faculty)

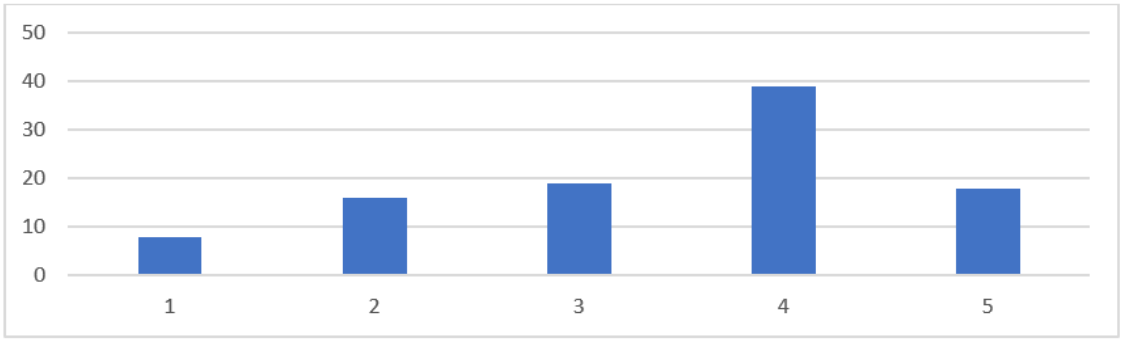

Figure 3. AI's ability to impartially assess academic integrity (students)

Therefore, the average score of trust in the impartiality of AI in assessing academic integrity is 3,43. In particular, 8 respondents responded negatively to this question, 16 were rather negative, 19 were neutral, 39 were rather positive, and 18 were positive. This level of trust is higher than the average (3 points), indicating an understanding of these technologies used by education seekers. Figure 4 presents the assessments provided by teachers.

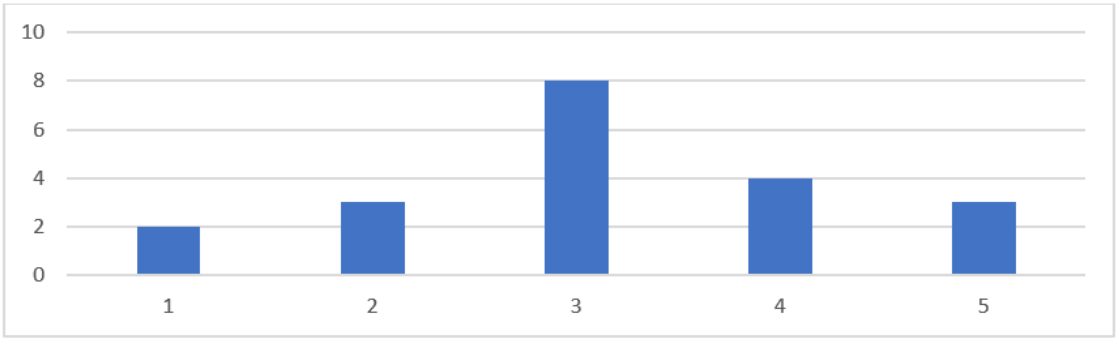

Figure 4. AI's ability to impartially assess academic integrity (teachers)

Thus, the average score of trust in the impartiality of AI in assessing academic integrity on the part of teachers was 3,15. In particular, only 2 respondents gave an entirely negative assessment, 3 rather negative, 8 neutral, 4 rather positive, and 3 positive. Teachers also rated AI's impartiality above average, which is in line with the students' assessments.

A t-test to compare the survey results of students and teachers showed that the t-statistic is 2,01, while the p-value is 0,047. Given that the p-value is more significant than 0,05, it can be assumed that there is no statistically significant difference in the assessments of the use of AI for the impartial assessment of academic integrity.

The next step in the study was to identify AI's most significant ethical risks for academic integrity control. The survey of students allowed us to identify the main risk factors when operating digital systems (see figure 5).

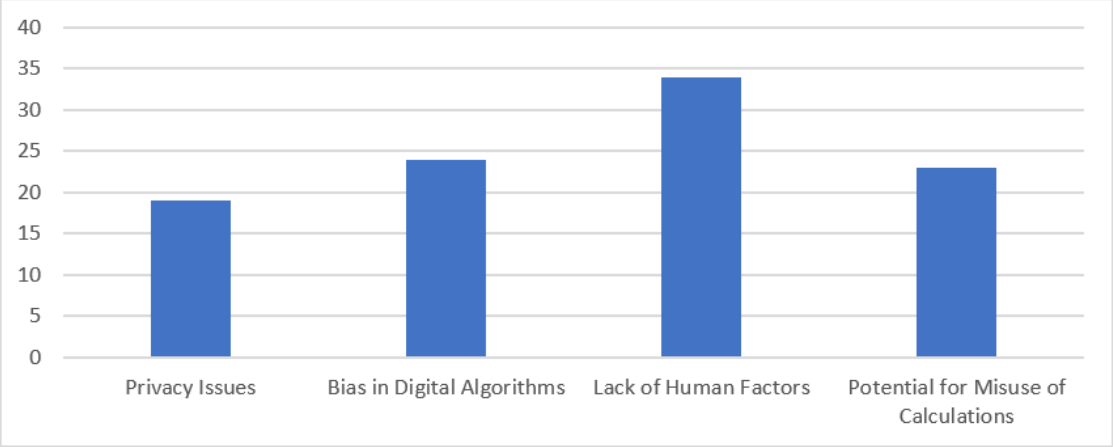

Figure 5. Ethical risks during the use of AI (students)

Analysis of student responses (100 people = 100 %) regarding the identification of ethical problems in using AI showed that the largest of them was identified by respondents as the absence of a human factor during use (34 %). Bias in digital algorithms and possible calculation abuse have almost identical indicators – 24 % and 23 % of respondents, respectively. The problem of access to confidential information that needs to be transmitted for consideration by AI systems (19 %) received fewer points. A similar survey was also conducted with teachers (see figure 6).

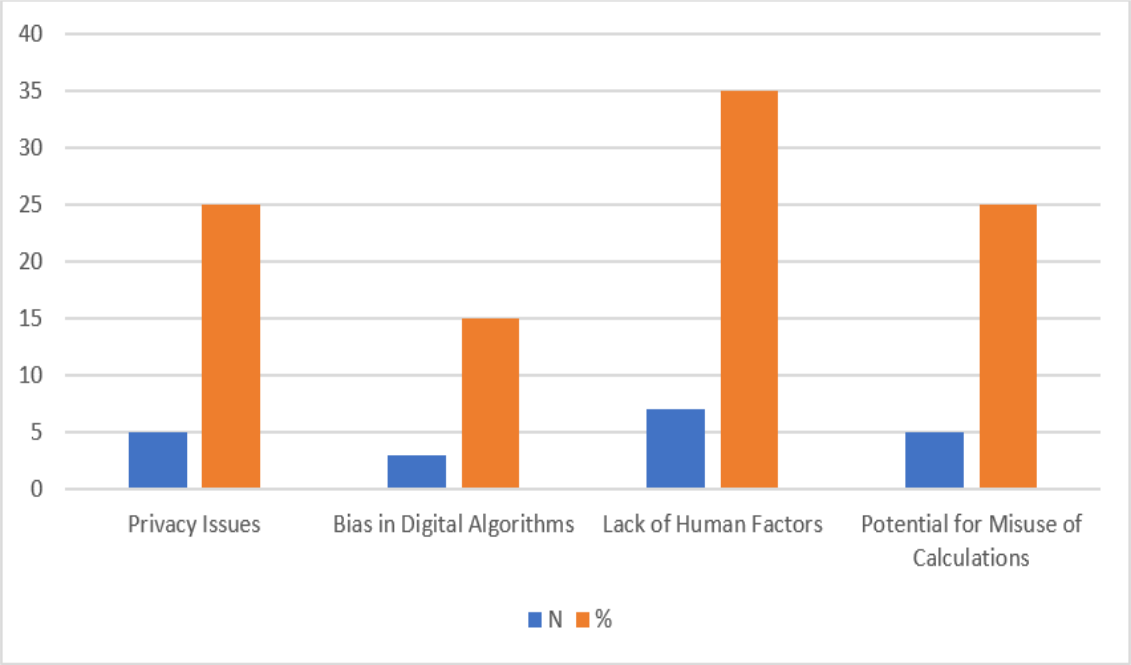

Figure 6. Ethical risks when using AI (teachers)

Thus, the survey of professors found that the lack of human control over AI is also a significant challenge to academic integrity (35 %). Privacy challenges were noted by 25 % of respondents, while the biases of digital algorithms were mentioned by 15 %. While students were worried about the possible misuse of calculations, professors noted the problem of erroneous calculations by AI systems in general (25 %). This view indicates that there are differences between students and teachers when assessing the ethical risks of using AI.

It was also essential to assess the perceptions of students and teachers regarding the use of AI to monitor academic integrity. Separate surveys were conducted among these two categories of participants in the educational process. Students defined this problem as follows (see figure 7).

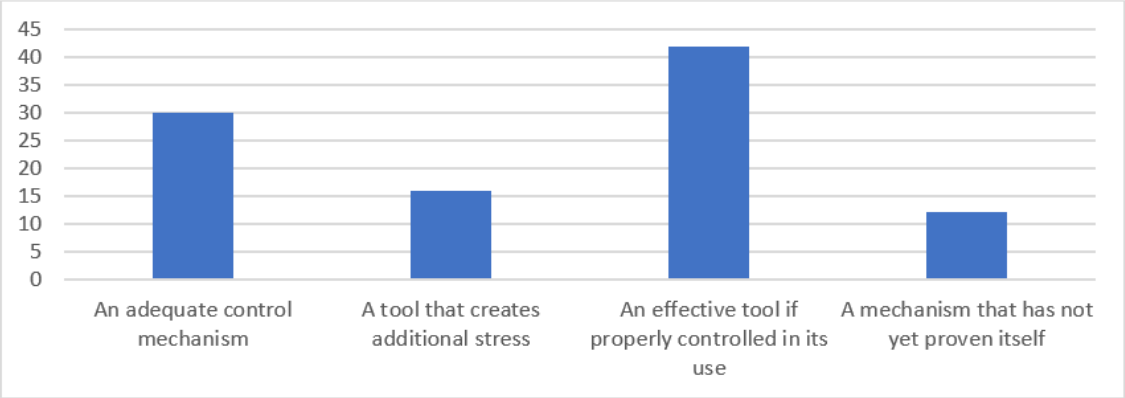

Figure 7. Perceptions of using AI to monitor academic integrity (students)

Analysis of student responses (100 people = 100 %) showed that students primarily perceive AI as an effective tool under conditions of proper control over its use (42 %). In contrast, 30 % of respondents perceive it as an absolutely effective tool. The creation of additional stress was noted by 16 % of respondents, while 12 % identified the prospects of AI systems, which have yet to demonstrate themselves. A similar survey was also offered to teachers (see figure 8).

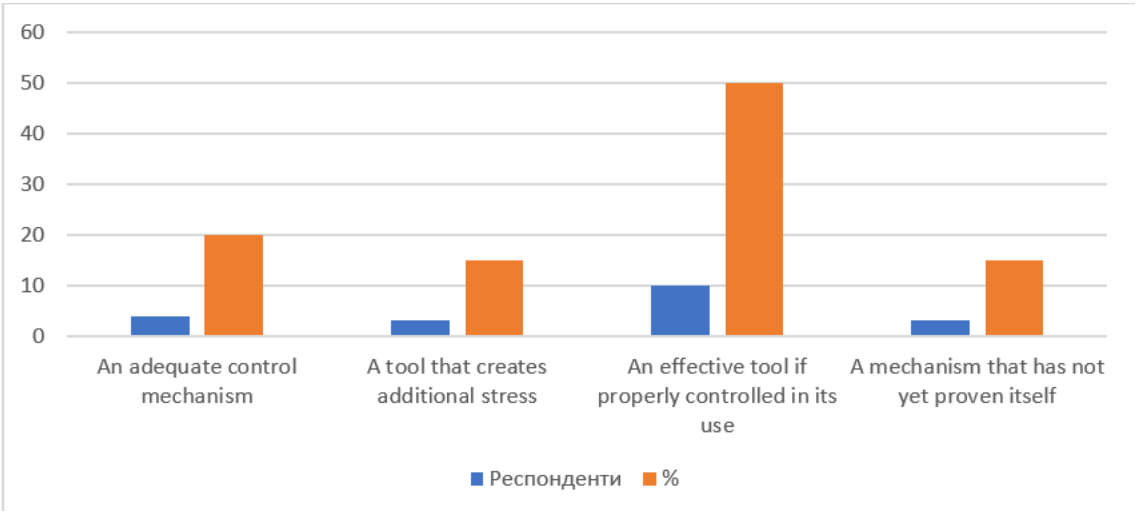

Figure 8. Perceptions of using AI to monitor academic integrity (teachers)

Teachers, like students, also noted that an important aspect of using AI systems in the educational process is the availability of effective control over its use (50 %). This digital tool received unconditional support from 20 % of the respondents. AI systems were characterized as a cause of stress and a promising project that will prove itself in the future by 15 % of the surveyed teachers. The findings show that, in general, the perception of AI for monitoring academic integrity among students and teachers is at about the same level.

DISCUSSION

AI systems have become available relatively recently, which makes this tool an extremely important object for research. Since the possibilities of cooperation with new digital systems allows not only development but also fraud, there is a need for further consideration of such innovative mechanisms, including through the prism of compliance with academic integrity. The purpose of this paper is to analyze the main ethical issues of introducing artificial intelligence to control academic integrity in Ukrainian higher education institutions and to analyze the perception of students and teachers toward these technological solutions. The realization of this main problem involved answering questions related to assessing the ethics of using AI to monitor academic integrity, finding the main ethical risks that cause concern among students and teachers, and analyzing differences in the perception of AI between students and teachers.

The results demonstrate that students evaluated the possibility of using AI to monitor academic integrity by an average of 3,52 points. Among teachers using AI, the potential for monitoring academic integrity was rated

lower at 2,95. A t-test to compare the survey results of students and teachers showed a statistically significant difference between the average scores of the two groups. For this reason, it is emphasized that representatives of both groups have different views on the ethical use of AI systems as an effective mechanism for monitoring compliance with academic integrity. The findings generally confirm the conclusions of other researchers who emphasized the existing difference between the understanding of AI capabilities in the environments of students and teachers.[33,34] In particular, the researchers explained the existing discrepancies by the conservative perception of innovations among university professors.[13,18,35] Although the rapid development of digitalization is gradually reducing this gap, it still exists, and thus, young students are much more optimistic about various technical and digital innovations.[21] Accordingly, trust in AI systems is commonplace for students, while some teachers are rather hostile to such technologies. Respondents were also allowed to determine whether using AI to assess the level of academic integrity impartially is advisable. The average trust score was 3,43 among students and 3,15 among teachers. Additional t-testing has shown no statistically significant difference in the assessments of the use of AI for impartial assessment of academic integrity. These results correlate with the findings of other scientists who have determined that using AI in the educational process in general is highly advisable.[19,10] According to scientists, there is a certain consensus that the benefits of using AI in education outweigh the possible drawbacks.[36] For this reason, it is essential to understand the high level of optimism about using digitalization tools to control academic integrity.[14,37]

The proposed research results also determine the perceptions of students and teachers regarding using AI to monitor academic integrity. It was determined that students perceive AI as an effective tool under conditions of proper control in its use, while fewer respondents perceive it as an absolutely effective tool. Students also noted the creation of additional stress and the prospects of AI systems. Teachers provided identical answers in the same sequence. The proposed results indicate that, in general, the perception of AI for monitoring academic integrity among both students and teachers is at approximately the same level. This confirms the conclusions of other scientists regarding the importance of human control over the settings and use of AI for educational purposes, including compliance with academic integrity standards.[5,12,38]

In addition, human control is important for interpreting the results obtained since automated systems may not consider complex ethical aspects or individual circumstances.[7,39] At the same time, other scientists indicate that it is essential to ensure transparency in the work of AI.[21,40]

This implies an understanding by students and teachers of the principles of its functioning, possible limitations, and risks. Without proper supervision, artificial intelligence can become a means of control and a tool for excessive interference in academic activities. In this way, distrust of the education system may arise.

Thus, it has been established that the effective use of AI in ensuring academic integrity must combine technological progress with basic ethical principles.

At the same time, the methodology proposed in the study has certain limitations. First of all, the imperfection of the Likert scale used is worth noting. Respondents, when answering the questions, were guided primarily by their own experience, making applying such a methodology entirely subjective. Although surveys are always subjective, there is a need to consider the existing limitations when interpreting the research results. In addition, it is also worth acknowledging the small sample size in the study. However, the identified limitations do not generally affect the quality of this study but only open up new directions for future studies. In particular, future studies should focus on a broader involvement of respondents from different groups: students, teachers, and administration representatives. This will allow us to describe the attitudes of different categories of the educational process toward the use of technologies, including AI. At the same time, future studies should focus on analyzing the optimization of AI algorithms to ensure academic integrity. In particular, the main attention should be paid to analyzing ways to reduce algorithmic bias and developing hybrid systems that combine automated analysis and human assessment.

CONCLUSIONS

Therefore, AI systems, as innovative mechanisms, make it possible to comply with academic integrity norms. It was noted that students highly appreciated the possibility of using AI to monitor academic integrity, although the use of AI potential was rated lower among teachers. Therefore, representatives of both groups have different views on the ethics of using AI systems as an effective mechanism for monitoring compliance with academic integrity standards. Accordingly, trust in AI systems is commonplace for students, while some teachers are quite hostile to such technologies.

The study of ethical issues in using AI showed that both groups (students and teachers) consider the lack of a human factor in using AI to be the biggest challenge. Both groups also consider privacy challenges and the bias of digital algorithms to be risky. At the same time, while students were worried about possible abuse in calculations, teachers noted the problem of erroneous calculations by AI systems in general.

The perceptions of students and teachers regarding the use of AI to monitor academic integrity have also been determined. It has been determined that students perceive AI as an effective tool, provided that its use

is properly controlled, while fewer respondents perceive it as an unconditionally effective tool. Students also noted the creation of additional stress and the prospects of AI systems. Teachers provided identical answers in the same sequence. The proposed results indicate that, in general, the perception of AI for monitoring academic integrity among students and teachers is at approximately the same level.

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