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INSTITUTIONAL POLICIES ON ARTIFICIAL INTELLIGENCE IN UNIVERSITY LEARNING, TEACHING AND RESEARCH

Abstract. Generative artificial intelligence is rapidly transforming the educational process and the scientific work of students, lecturers, researchers and administrators of higher education institutions. There are limited and contradictory recommendations for the use of artificial intelligence in the educational process and in the educational programmes of higher education institutions. To define the scope of AI application, there is a need to develop institutional policies for higher education institutions, which will allow the academic community to determine the appropriate scope of AI application in the educational process and prevent the use of AI in areas where ethical norms are violated. The purpose of the article is to summarise and systematise the experience of forming institutional policies for the application of artificial intelligence in education, training and research in higher education institutions using the experience of Kherson State University.

The article presents the developed institutional policies for students, lecturers and researchers with recommended and not recommended initiatives for the use of AI in the educational process and research at Kherson State University. The purpose of these institutional policies was to create an inclusive environment of modern digital tools for involving of lecturers of non-professional specialties and define the framework for the use of artificial intelligence in education, teaching, and research of all subjects (participants) of educational activity. The recommendations are aimed at empowering all participants to select educational components creatively and at improving the efficiency of the educational process and research activities through the use of AI tools.

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Issues requiring further research regarding generative platforms lie in three thematic areas: knowledge base; transparency and ethics; digital transformation of organizations and societies. It is also relevant to create an educational environment that encourages the interaction and dissemination of positive practice of digital transformation of all participants of the educational process.

Keywords: artificial intelligence; higher education institutes; academic policy; educational process; research activities

1. INTRODUCTION

Statement of the problem. In recent years, researchers in the field of education are faced with issues of studying ethical and educational approaches in the use of Artificial Intelligence (AI) in higher education [1]. It is directly related to the number of platforms and programs that use AI, the number and availability of which has surged over the past five years. The progress happened almost imperceptibly: from mobile phone keyboard typing assistants to generative platforms offering a ready-made product based on input data. In 2022, there was a real explosion of interest in ChatGPT - a text generation platform. It does not mean that such platforms did not exist before. It merely means that developers presented a convenient interface and open access to this platform. This platform enabled the average user to perform a series of routine tasks such as writing template texts, creating background music, generating images according to the given description. At the same time, it has allowed to experiment and explore the possibilities of generative applications independently. The availability of generative platforms has become a challenge for many industries. Economic analysts were the first to observe the changes caused by applying of artificial intelligence. According to a McKinsey company report, one of the impacts of generative AI is the increase in labour productivity and corresponding revenue growth in the economic sector. This process occurs through activity automation [2]. But to achieve such a result, it is necessary to consider the need to support employees in acquiring new skills and creating an inclusive environment. The study provides examples of using generative AI in order to increase the potential value of work results. One of them is using AI as a virtual expert (improving customer interaction: self-service, response time reduction, sales increase, effective personalization, effective content creation), and the other as a virtual co-author (accelerating the work of a developer as a coding assistant, reducing research and design time, improving modelling and testing).

Changes have occurred in educational activities as well. Educational institutions were forced to revise their policies regarding basic processes of education and assessment in a short term [3]. A study of current instructions for using AI tools showed that most institutions do not have a final solution to the issue and rely on the personal decisions of individual lecturers [4]. Some institutions try to develop instructions and recommendations for using artificial intelligence platforms and create an inclusive environment for employees. For example, Kozminski University in Poland has published recommendations on using ChatGPT in the educational process [5]. As a response to educators' needs in mastering new skills, a large number of seminars and webinars for lecturers on using the ChatGPT platform have appeared, and also discussions began on the rules and norms for using such tools in educational groups of social networks. The UNESCO International Institute for Higher Education presented a guide to using ChatGPT, which provides an overview of how ChatGPT works and explains how it can be used in higher education [6].

This guide raises some of the issues and ethical implications of using AI in higher education and offers practical steps that higher education institutions can take. The number of scientific publications on this topic has also increased. For example, a search for the keyword

"ChatGPT" showed that in 2022 there were only three articles with this word, and by 2023 their number increased to 793. Moreover, most of them belong to medical (25.1%) and social (16.5%) fields. Among the 209 documents belonging to social field, the majority (54%) is dedicated to educational issues (Fig. 1), on the one hand, these are positive aspects of using chatbots in different subjects [7, 8], including finance [9], on the other hand, these are various problems, "including fraud, honesty and truthfulness of ChatGPT, deception and manipulation" [10].

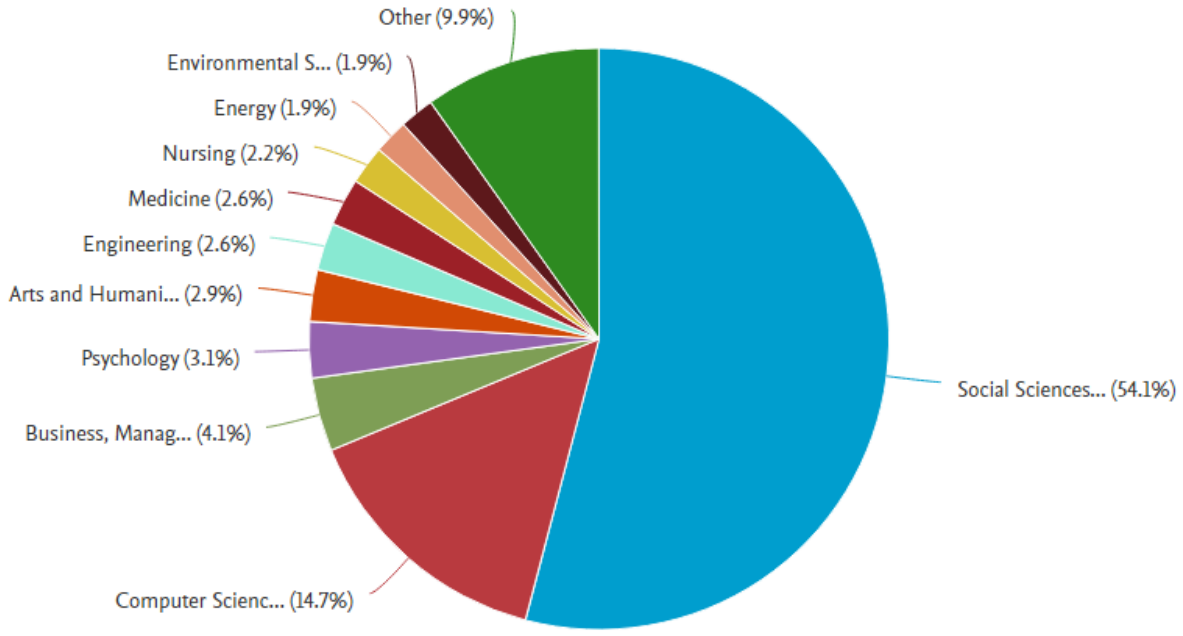

Fig. 1. The distribution of results by research areas in academic publications of the Scopus database by the keyword "ChatGPT"

Among the problems that come to the fore when using generative platforms, there is a confrontation between the traditional assessment system and flexible methods of encouraging students to critical and collaborative interaction [11].

Considering the potential benefits and risks associated with the use of generative artificial intelligence in education, it is essential to develop an appropriate educational policy on artificial intelligence, that would outline the academic contexts for the responsible use of artificial intelligence [12].

Analysis of recent research and publications. According to estimates by the McKinsey Global Institute, by 2030 about 70 percent of companies will implement at least one type of artificial intelligence technology, and 60 percent of current professions will be automated within the next ten years [13]. Companies will need employees who work well with AI tools [13]. There is a demand for AI literacy among educated citizens with various educational backgrounds without strong knowledge of mathematics or programming [14]. Citizens with various educational backgrounds should become active AI users and try to understand whether AI is well applied in their professions [14]. Conceptual understanding of artificial intelligence is generally associated with cognitive learning, requiring the ability to apply previous knowledge to new situations [14]. Using AI concepts to understand the real world is a crucial competence as the job market focuses on a generation that will use "AI as a Service" (AIaaS) or "AI as service platforms" [15]. They are becoming more common, partially due to the low

training threshold. ChatGPT as open source for experienced learning and the integration of this technology into higher education also changes the rules of the game in educational fields [16].

Students without computer training can successfully acquire AI competencies and skills using ready-made platforms without any programming knowledge [14]. Machine learning, deep learning, and neural network are examples of AI concepts required for AI literacy [14]. It is necessary to understand how machine learning algorithms detect patterns from data [17, 18]. For collaborative learning AI can support tasks, machine learning (ML) may still require human intervention, deep learning (DL) can prepare tasks without human intervention [19].

The impact of AI on education remains uncertain. A more holistic approach to the use of AI in the educational process (AIEd) is needed. A lack of code-free and convenient applications has prevented the use of such tools by experts in the subject area [15]. However, code-free AI platforms can make AI accessible to small organizations that lack the technological competencies needed for decision-making that requires advanced programming skills, as well as it can guide users in the process of developing and deploying AI models without the need for a detailed study of complex algorithms [15].

There are various emphases on the application of AI in education. Among them are: how different aspects of learning develop AI potentially or are influenced by it [20], how to understand the possibilities and challenges of AI [21], how lecturers can teach students to use AI tools effectively to solve real-life tasks [22], how to use ChatGPT to alleviate difficult labour-intensive tasks during the planning process for lecturers to make the implementation of experiential learning more efficient [16], the reorientation of AI literacy courses and the combination of conceptual learning with mathematical formulas and programming for students from different educational programs [14], and how code-free AI can use ML, bridging the gap between experts in the subject area and technology.

AI in education requires collaborative work among training designers (guarantors of educational programs), educational psychologists, programmers, data processing specialists, and other stakeholders [20]. Implementing AI means a balanced triad of efforts between educators/learning developers, students, and technologies. Stakeholders involved with AI also need to explore issues related to AI ethics to assess whether an AI decision is ethical and to decide whether it should be used [14]. Two types of factors determine the behavioural acceptance of AI: perceived benefits and ease of use [23]. Typically, AI literacy initiatives require some prior knowledge in mathematics, statistics, or computer science [14]. The level of student competency in AI concepts includes the abilities to Remember, Understand, Apply, Analyse, and Evaluate the implementation of tools.

AIEd has been implemented in various educational spheres [20]:

1. Classroom support
2. Learning analytics
3. Simulation-based learning
4. AI capabilities to meet individual needs
5. Providing active learning experiences in simulation learning

Areas of AI application in Higher Education Institutions include: learning, teaching, assessment, and administration [21], text generation, data analysis and interpretation, literature review, formatting and editing, as well as peer review, educational support and constructive feedback, adapted learning programs, individual career guidance, and mental health support [24]. The role of artificial intelligence in learning, teaching, assessment, and research is summarized in Table 1.

Table 1.

The role of AI in education and research

Applications of AI	The role of AI
Application of AI in student learning	(i) assignment of tasks based on individual competence (to personalise tasks for student learning, the lack of supporting learning resources as one of the biggest challenges for adapting tasks to individual needs), (ii) Enabling human-machine communication (AI chatbots and interactive books that allow students to communicate with machines about their learning. Students interact with AI agents through a question-and-answer approach; when and how to use chatbots to facilitate, educate and engage students remains unclear) (iii) analysing students work to provide feedback (to provide students with timely guidance and feedback by analysing their work and learning process), (iv) increasing adaptability and interactivity in the digital environment (automatically adapting difficulty and covert assessment, adaptive games).
The role of AI in teaching	(i) providing adaptive teaching strategies (to recommend teaching content, optimal content presentation, teaching methods and communication strategies), (ii) enhancing the teaching capacity of scientific and pedagogical staff (to help them manage group teaching through effective uploading, assignment and distribution of learning materials and tasks), (iii) support for professional development of lecturers (the limited number of pre-designed suggestions and comments may not be suitable for experienced lecturers). With AI/machine learning technology, historical data in the Higher Education Institution (HEI) and current data on student profiles and performance can be used to analyse and predict learning gaps and suggest learning steps that students should take to improve their performance. This will result in each student having an individualised learning path чи за змістом модна замінити path, на plan?
The role of AI in assessment	(i) providing automatic assessment (automatic assessment has led to more efficient assessment, artificial intelligence-enhanced assessment systems can also provide immediate grades for feedback in online learning) (ii) predicting student performance (by assessing the extent and quality of student participation in educational activities such as discussion forums for distance education and MOOCs due to the absence of lecturers, the selection of appropriate data for student performance prediction models remains difficult as the data do not match those used in traditional educational research).
The role of AI in research	(i) Facilitating the creation of text using Natural Language Processing (NLP) techniques: this can help researchers ensure that

	the abstracts, introductions and conclusions of articles are appropriate and accurate. Models may have difficulty with understanding the subtleties and complexities of scientific topics, and their output may be less sophisticated and innovative than human-generated text. (ii) Assist in data analysis and interpretation (iii) Accelerating literature review with AI: this process can be time-consuming and labour-intensive. Advances in artificial intelligence have made it possible to automate this process, making article searches faster and more efficient. They can also identify patterns and trends, highlighting new areas of research or gaps in the literature. AI systems can lead to the inclusion of irrelevant studies or the exclusion of important ones. (iv) Improving the peer review experience with AI: By leveraging the power of artificial intelligence, the peer review process can become unbiased, more efficient, accurate and objective. AI can help with language editing and proofreading.

The expected outcomes of students and lecturers who implement AI in the educational process are set out in Table 2.

Table 2.

Expected results for students and lecturers when implementing AI in the educational process

Expected results for students	Expected outcomes for lecturers
1. Motivation and engagement	1. Work efficiency (AI technologies are used to automate and simplify trivial and routine tasks, which reduces the workload of lecturers: online group management, including student registration and assignment of tasks, tips for answering simple student questions). An AI system with automatic recommendations of classes for students has increased the efficiency of lecturers
2. Academic progress (among students, only the more motivated ones have meaningful conversations with chatbots, those with higher grades consider AI boring, but AI effectively reduces the dropout rate)	2. Teaching competence (some intelligent learning platforms are tasked with recommending adaptive learning content and teaching methods to lecturers and students. Thus, platforms can indirectly improve teaching competence by recommending different ideas and approaches)
3. 21st century skills (online collaboration, creativity, problem-solving skills, communication skills, and self-regulation skills) inspire students to think deeper, and offer step-by-step guidance and timely help that encourages students to identify and learn from their logical errors (i.e. self-reflection)	3. Attitudes towards AI (however, some lecturers describe the technology as difficult to control, as they lack an understanding of how the technology works, and they are concerned about ethical issues such as bias and privacy violations, AI systems have failed to explain the reasons and mechanism

for better self-directed learning	for assigning different tasks to students)
4. Non-cognitive aspects (to increase students confidence and reduce their anxiety during learning)	

*Source: table based on [9]

At the same time, the use of AI has many challenges and limitations, as summarised in Table 3.

Table 3.

Expected challenges and limitations in the application of AI in the educational process

Problems of AIEd	Limitations of AI/ML in education
Lack of appropriate learning resources for personalised/adaptive learning	Students do not really understand or learn the material, but they only find ways to use the system
Selection of appropriate data for AI predictive models	Over-reliance on AI tools can reduce the development of critical thinking skills, as students may become overly dependent on AI-generated advice instead of learning to make reasoned decisions on their own
Lack of connection between AI technologies and their use in teaching (lecturers may not have sufficient understanding of the technologies to use them effectively). Lecturers sometimes cannot interpret the information provided by learning analytics and do not understand the potential of AI technologies for education	Research results may be biased if ML algorithms were trained on small and incomplete data sets.
Lack of interdisciplinary AI technologies for education	Editors of peer-reviewed journals do not accept any form of AI as co-authors. The main reason is the lack of responsibility. Editors interpret this as plagiarism and, therefore, a serious misconduct similar to copying materials from others without proper references. The work generated by AI cannot be considered the original work of the authors who submit it.
Worsening inequalities in education due to the widening digital divide between students (the most competent and motivated students often benefit) (i) AI technologies are not sufficiently developed for student learning and (ii) lecturers lack pedagogical knowledge to apply the technologies. Future research should focus on (i)	The GPT chatbot often generates false and misleading text.

proposing a new pedagogical framework for AI learning and teaching and (ii) using a learning science approach to design and develop algorithms for personalised learning	
Insufficient knowledge of AI technologies among lecturers	It seems unwise to rely on ChatGPT results to review existing literature without careful consideration and some form of human verification.
Negative attitudes towards AI among students and lecturers: some students and lecturers reported feeling anxious and less confident about learning with AI.	Students run the risk of making wrong decisions or losing important control over the machine solution if they do not have a deep understanding of AI concepts and principles
Lack of research using AI on socio-emotional aspects	ML models tend to degrade over time if these changes are not addressed and accounted for with new datasets and additional training and evaluation cycles
Lack of educational perspectives in AIEd research (future research should explore new research methods for interdisciplinary AIEd research)	Machine learning outputs may still contain errors and require human intervention to adjust for desired targets.

*Source: table based on [1], [3], [7], [9], [10], [12]

It is extremely important to foster an educational environment that values academic integrity and discourages the misuse of such technologies.

Advantages of AI include:

1. Applying AI in interdisciplinary, multidisciplinary, or transdisciplinary research using subject knowledge.
2. Solving local educational problems with tuning and contextualization.
3. Preventing the absence of a part of students in classes who are partially motivated.
4. Personalized video recommendations supported by AI can significantly improve learning effectiveness and engage students with moderate level of motivation [25].
5. Designing and developing integrated systems that promote adaptive and personalized learning with different educational components.
6. Accelerating lecturers' understanding of the students' learning process.
7. Providing machine-supported inquiries which are available anytime and anywhere, as well as immediate feedback for students.
8. Reducing education inequality by helping students from less affluent categories.
9. Automating and simplifying trivial and routine tasks, which eases the load on lecturers.
10. Enhancing the efficiency, accuracy, and consistency of assessment processes through automated essay grading (AEG) and machine learning algorithms for grading open-ended written responses [24].
11. Analysing student performance data to provide insights into areas where students may be struggling or excelling.
12. Improving the development of educational programs for the employment of students in the job market.

13. AI can be a powerful tool in education, but it is crucial to ensure it is used responsibly, ethically, and in ways that genuinely enhance learning and teaching experiences.

GenAI can help a researcher to disseminate their work to a wider audience by translating academic terminology into a conversational style [22]. Other tools like ChatGPT can be utilized for creating speakers` bios, developing social media advertisements, creating event descriptions, writing invitations to various stakeholders, developing press releases, and creating marketing content [16].

Employing "code-free" solutions, Higher Education Institutions (HEIs) can not only save time and resources but also achieve a growth in the pace of development and quality of education [15].

Furthermore, research findings [26] indicate that higher education institution administrations need to recognize the necessity of developing ethical academic policies at the institutional and societal levels. It is crucial to cultivate an understanding among students and researchers about the benefits and risks associated with the new reality – artificial intelligence.

This involves promoting AI literacy, ethical understanding, and responsible usage among all parties involved. All stakeholders need to be on board and aware of the implications, risks, and benefits of AI. Only then a full potential of AI in education can be realized in a balanced and sustainable manner.

The research goal. Given the outlined challenges, the objective of the article is to generalize and systematize the experience and to shape institutional policy for the application of artificial intelligence in education, teaching, and research in higher education institutions (based on the experience of Kherson State University).

Research tasks:

- Identify and describe changes in the interaction of participants in the educational process, in particular, lecturers and students, taking into account the possibilities of using AI;
- Characterize the main components of the developed institutional policy for the application of AI in education, teaching, and research at Kherson State University;
- Outline directions for further research regarding the use of generative platforms by members of academic communities.

2. MATERIALS AND METHODS

Due to active military actions, occupation, and relocation of the university, the methods of personal data collection were significantly complicated by security requirements and communication possibilities, so the research was carried out using virtual tools. This paper proposes a thematic study of the process and results of forming institutional policies for the application of artificial intelligence in education, training, and research in higher education institutions, taking as an example the generalization of the experience of Kherson State University.

The research was based on semi-structured interviews and organized discussion platforms with representatives of the academic community of Kherson State University. In particular, the results of discussing the use of AI in learning, teaching, and scientific activity were taken into account:

- 5 meetings of discussion clubs (May - June 2023);
- 2 meetings of the Scientific and Methodological Council (in May and June 2023);
- 9 meetings of the working group on the development of general policies for the use of AI in Kherson State University (May - June 2023);

- a meeting of the Academic Council of the university in June 2023;
- during a series of public lectures with elements of AI application by professors of Kherson State University (Oleksandr Spivakovsky, Natalia Valko) and guest professors from Taras Shevchenko National University of Kyiv (Kostiantyn Mezentsev) and Kyiv National Linguistic University (Yan Kapranov).

This diverse set of meetings and discussion platforms provided a holistic perspective on the application and perspectives of AI in the university environment and served as the basis for our findings and recommendations.

The materials of this research were also presented at scientific events during the poster presentation by Oleksandr Spivakovsky and Serhiy Omelchuk on the topic "Roles of the subject interaction of a lecturer, a student, and artificial intelligence" at the All-Ukrainian round table "Use of Artificial Intelligence in Education: ChatGPT and More" (June 14, 2023).

Additionally, a presentation was given by Serhiy Omelchuk on the topic "Institutional policies of using artificial intelligence in the educational, teaching, and scientific activities of the university" at the First Scientific and Theoretical Conference "Priorities and Challenges of Implementing the Strategy for the Development of Artificial Intelligence in Ukraine" at the Institute of Artificial Intelligence Problems of the Ministry of Education and Science of Ukraine and the National Academy of Sciences of Ukraine (July 13, 2023).

These presentations allowed the research team to share findings and engage with wider academic community, fostering discussions on the use of AI in education. It also enabled achieving feedback and perspectives from other experts in the field, and enhancing the quality and applicability of the research findings.

The results of the research presented in the article are a joint contribution of the authors: an idea and approval of the final version of the article for submission (O. Spivakovsky); conceptualization of the research and preparing the draft article (S. Omelchuk); general editing of the article, identification of the goal and tasks of the research (D. Malchykova); substantiation of the actuality of the research (N. Valko); analysis of researches and publications (V. Kobets); characteristics of research methods (D. Malchykova, S. Omelchuk); creation of a model of subjective interaction of a lecturer, a student, and artificial intelligence (O. Spivakovsky, S. Omelchuk); development of recommendations for working with artificial intelligence models (V. Kobets, N. Valko); selection of approaches and methods of using artificial intelligence in learning, teaching (D. Malchykova, V. Kobets) and research (S. Omelchuk); formulation of conclusions and prospects for further research (N. Valko).

3. FINDINGS

3.1. Model of the subject interaction of the lecturer, the student, and artificial intelligence. In our study, we operate with the definition of the concept of artificial intelligence (AI) as an "organized set of information technologies, with the use of which it is possible to perform complex tasks through the use of a system of scientific research methods and algorithms for processing information obtained or independently created during work, as well as create and use their own knowledge, decision-making models, information processing algorithms, and determine ways to achieve the set tasks"[27].

The creation, implementation, and use of AI technologies in higher education at the conceptual level has influenced changes in the subject interaction of participants in the educational process, in particular lecturers and students. Artificial intelligence plays an important role in such interaction (Fig. 2).

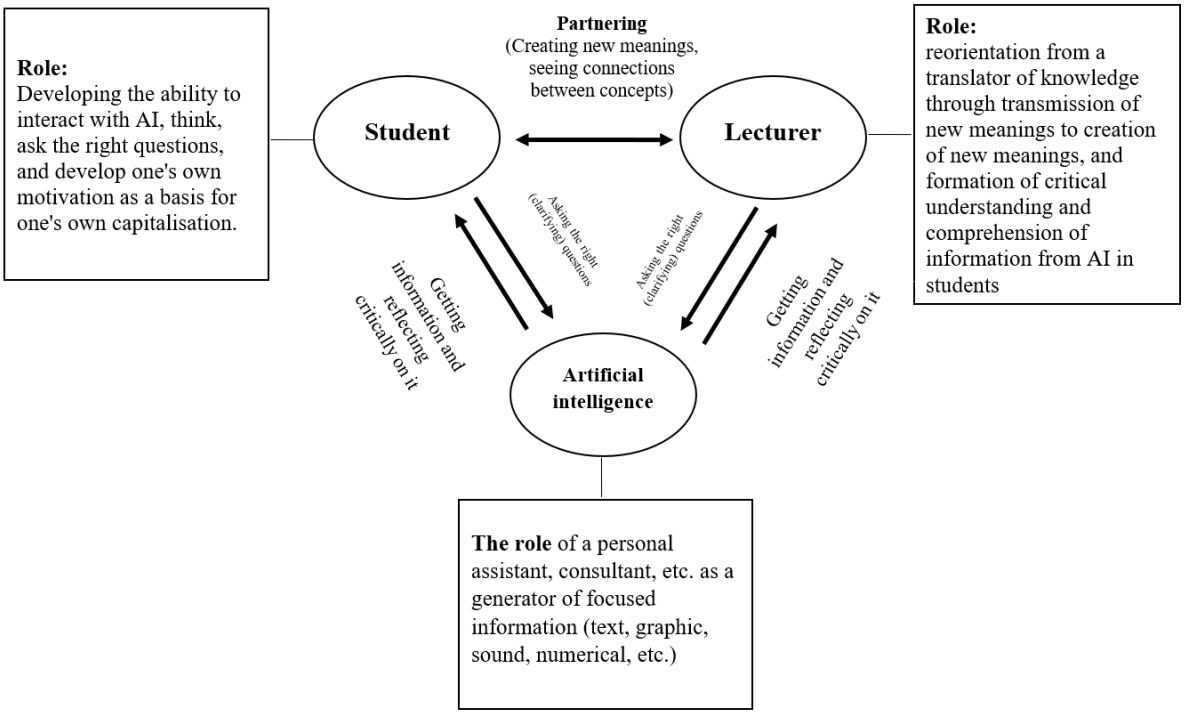

Fig. 2. Roles of the subjects of interaction: lecturer and student, artificial intelligence

The implementation of information technologies, and AI technologies as their constituent, is an integral part of the scientific and educational activities of a university lecturer. The accelerated digital transformation of Kherson State University, caused by war, occupation, and relocation of the institution [28], has elevated the role and importance of digital technologies for ensuring all business processes, educational activities, and has defined changes in strategic guidelines. Digitization and the use of electronic educational resources, distance technologies have caused the need to regulate institutional aspects and policies for the use of AI in the activities of the academic community.

That is why at Kherson State University, within the framework of the implementation of the Strategy for the Development of Kherson State University for 2023-2027, a professional discussion was organized and general policies for the use of artificial intelligence in education, teaching, and research were developed [29]. They regulate the main directions, ways, and methods of effective use of information technologies related to artificial intelligence by participants of the educational process.

Artificial intelligence will not replace the lecturer, but it will provide new opportunities for both the teacher and the student if:

- they know and understand all the possibilities of AI;
- they are able to use AI effectively;
- they evaluate critically the results generated by AI.

Artificial intelligence is not an encyclopaedia and the only source of knowledge. It should be perceived as a partner that can build a dialogue with the interlocutor, reject inappropriate questions, answer complex questions. Also, AI is:

- a virtual intellectual assistant,
- a source of information and data,
- a personal neuro-curator (neuro-teacher) for a student,
- a speech trainer,

– a digital consultant in various fields of knowledge,
– a lecturer's assistant in organizing personalized learning.

The role of the lecturer is to help the student use AI correctly and effectively in educational and scientific activities. Therefore, it is necessary to learn how to work with long language models safely and controlled as with a virtual assistant.

3.2. Working with artificial intelligence models. Artificial intelligence tools are built on machine learning. Proper machine learning requires large volumes of data. When working with artificial intelligence models (see Table 4), it should be considered that their training is based on large databases (data corpora) of previously created work. It should also be remembered that generative adversarial networks, which form the basis of artificial intelligence platforms, operate on the principle of "averaging" available information. Depending on the nature of the data on which the generative network is built, an appropriate result should be expected. The technology offers the user information and recommendations only from this data bank.

Table 4.

Recommended artificial intelligence tools for use in in learning, teaching and research

Title	Link	Application area
ChatGPT	chat.openai.com	Chatbot, text generator
Midjourney	midjourney.com	Photorealistic image generator
Nightcafe	nightcafe.studio	AI for digital photo or image processing and editing.
Synthesia	synthesia.io	Create videos based on the description of selected parameters.
Soundraw	soundraw.io	Create your own music. All you need to do is set the mood, genre, and duration, and AI will generate everything on its own.
Looka	looka.com	AI to create logos
Writesonic	writesonic.com	A copywriting tool that can create unique marketing content (business plan, advertisements, product descriptions, blog posts)
Gamma	gamma.app	AI for creating presentations and web pages
Bing	bing.com	AI chatbot in Bing with GPT-4 support for a wide audience.
Futurepedia	futurepedia.io	Catalogue of AI-based tools.

Working with artificial intelligence models, one should pay attention to:

– Data labelling – keywords that describe the data and assign it to a certain class, for example, information about what is depicted in the image. Data annotation will determine how artificial intelligence will "see" your queries. A result will be generated, depending on the set of keywords;
– Data balance – the representation of certain concepts. The platform may "not know" concepts, names, which are specific to a certain race, gender, culture, or nationality. For example, for the query "Kotigoroshko" or "Ivasik Telesik" (characters from Ukrainian folk tales), the results will most likely not resemble the known images (textual or graphic);

- Corpus orientation for a specific task – a platform that generates text will not generate images, or a general-purpose platform cannot professionally answer legal queries. A platform built on modern texts cannot correctly generate text in a style that is specific to another epoch;
- Control and censorship of data – the topic of the ethics of artificial intelligence is relevant. The negative experience of previous developments has given a reason for restrictions in generating texts and images. AI platforms will avoid topics of war, violence, disputes, hate speech, etc.

At present, there is no so-called "strong" artificial intelligence capable of performing all intellectual operations like a human. There are different generative AI platforms designed to perform only a clearly defined narrow range of actions, known as "weak" artificial intelligence.

When working with textual generative AI platforms, it is advisable to:

- use AI as a more complex resource for obtaining information than search engines (like Google);
- ask AI about the definition of concepts to compare them with other sources;
- evaluate the responses of the chatbot and discuss them with it;
- use AI to summarize a text;
- clarify and specify questions to the chatbot using prompts to get an answer of a higher quality.

ChatGPT can primarily be associated with an assistant that accelerates your work, but it cannot invent a final product. That is the responsibility of the author of the work. It is worth remembering that the chatbot is a polite assistant, so the quality of the answers depends on the questions. If the questions are strong, the answers will be interesting. If the questions are weak, general phrases will be given in response. The chatbot is good at understanding structure, but not at content. Most people start using it as a search engine (like Google), but it does not work well in this way. However, it is skilful at structuring text, suggesting frameworks, or using the frameworks that you provide. For example, you can ask it to write the structure of a resume.

The approaches to chat tasks:

1. You write a fairly detailed and large query that is context-oriented, where you describe what is generally being discussed. Then describe the role of the chatbot. For example, you write that you want the chatbot to be a consultant in a certain subject area. Then you give it a specific task and then explain in what format you would like to get the answer;
2. You explain the task to the chatbot as in the previous approach, but ask it to put you questions so that it can perform the task qualitatively, only after you answer the questions, the chatbot will perform the task.

Graphical platforms that are used by artificial intelligence can create images of sufficient quality. To create an image, you need to give a detailed description (or "prompt") of what should be depicted.

Graphical AI platforms can perform various tasks:

- stylizing images - the inputted user image is stylized by AI according to a given template (for example, in the style of Malevich or Picasso), or enhanced by it;
- generating images - creating a picture from a textual description (prompt) provided by the user.

Writing textual descriptions (or prompts) is a special creative work. The textual description should present the style and technical requirements for the image. The more detailed the description, the more accurately the image will be created according to your expectations.

When writing a description, you need to present:

- a succinct list of what should be depicted;
- adjectives that characterize the picture, details that should be in the picture;
- modifiers - specified requirements such as a style, size, image quality, priority of characteristics, etc.

Here is an example of a prompt:

Prompt (an example from the teacher Margarita Kalyuzhnaya): Listen to the universe, think about whales [your word] in the ocean [your word] at night, high quality, stunning, colourful, digital art, creative, unique – ar 3:2.

These are possible applications of AI graphical platforms:

- For learning English. Actually all image generation platforms "understand" only English. So writing prompts in English expands the user vocabulary. Using synonyms in the description will clarify and improve the image.
- Logo, clothing, interior design. Bold prints and clothing stylization will help in creative searches, when creating sketches. It is possible to combine several objects in the query that the AI will generate into one image. For example, the prompt with keywords "chair, avocado" can create an image of a chair in the form of an avocado.
- Designing illustrations for stories, generating movie posters. It may also be used for reproduction of historical personalities in a modern environment. As an example, we may think of the works of M. Yakub, who generated non-existing photos of prominent figures of the past, such as Valerian Pidmohylny, Mykola Kulish, Olena Teliha, and others.
- Problems with image generation:
- Since the training of artificial intelligence occurs on the basis of previously created works, the generation is the result of compilation and averaging of those images. Therefore, copyright issues may arise.
- Bias and fairness, censorship. Hate speech and violence will not be reflected in the generated results. Preference will be given to certain groups of people, for example, in terms of professions only female or male images may be generated.
- Confidentiality and data protection. Image stylization may be based on ready-made photos. Remember that the photo you upload remains in the databases of the company that provides the artificial intelligence platform services.

3.3. Ways and methods of using artificial intelligence in learning:

- writing programming language code with subsequent checking and clarification;
- determining the best alternatives among many options according to clarifying criteria (taking into account existing constraints) for decision-making;
- generating tasks for testing knowledge on certain topics for self-preparation for forms of control;
- generating text for its analysis;
- generating (searching) information according to the user request;
- creating (if necessary) visual means to present the results of a course / qualification paper (collections, programs, videos, computer presentations, etc.) (especially for artistic specialties);
- development of critical thinking, by analysing and comparing AI responses with verified sources of information;
- generating ideas that will be further developed by the student of higher education independently;
- translating from one language to another;

- learning foreign languages (you may get instant feedback on your pronunciation, grammar, and vocabulary);
- restoring photos;
- enabling students to learn at their own pace, collaborate with each other, and have full access to educational resources in the digital environment.

We do not recommend using artificial intelligence in learning activities as following:

- during control tests (current, thematic, final control, especially during the examination session);
- when writing an essay on a given topic (the essay should contain personal impressions, justifications, and reflections on a specific problem or issue. It is an independent student creative work of an analytical, narrative, descriptive, reflexive and critical nature, so the AI-generated text, which does not contain personal thoughts, analysis, and criticism, cannot be presented as an author's essay);
- when performing calculation tasks (general-purpose generative platforms (for example, ChatGPT at the current stage of development) can perform simple calculations at the level of arithmetic operations and not complex transformations, so solving problems and performing calculation will contain logical errors, contradictions. Thus, it is better to use special-purpose AI tools for calculations, (for example, Wolfram Alpha);
- publishing messages with generated images (in particular, in social networks, the generated image is an illustration and devalues the reality and importance of the message / news, and is also perceived as a made-up story).

3.4. Ways and methods of using artificial intelligence in teaching:

- including issues of artificial intelligence in educational programs of various specialties (not only within the field of "12 Information Technologies");
- integration of leading online courses on artificial intelligence into educational programs;
- diversification of educational tasks based on introduced and verified information;
- feedback on the work of students based on completed tasks;
- designing a lesson plan and a list of tasks with answers to them;
- developing the structure of the lecture, summarizing the material on the topic, formulating options for thematic headings for the material delivered, etc.;
- development of new courses based on GPT and other text and image generators;
- compiling test tasks of various levels of complexity based on the material provided;
- development of presentations based on the material provided;
- adding information about AI to syllabuses of academic disciplines / educational components in the sections "Hardware and software", "Course policy", "Requirements for evaluating program learning outcomes";
- development of syllabuses of academic disciplines / educational components (in particular, in the sections "Course annotation", "Purpose and tasks of the course", "Course scheme", in the part of the topic and lesson plan (however, the information obtained must be adapted in accordance with the specific features / uniqueness / competencies and program learning outcomes of a particular academic discipline / educational component);
- creation of short promo videos / audios;
- creation, review, and discussion of educational videos; − development of plans for lectures, practical classes, seminars;

- forming tasks, tests, control questions for checking the student knowledge, a list of topics of abstracts / essays;
- development of the structure of educational and teaching and methodological publications;
- forming a list of topics for course papers / qualification papers.

Working with educational technologies (EdTech) offers the following opportunities:

- during various types of learning activities, we recommend the lecturers: personalization of learning;
- differentiation of tasks for students;
- providing learners with feedback on what knowledge they need to complete a task (if it is performed incorrectly);
- processing survey results of students based on the study of academic disciplines;
- literature review from primary sources (Bing and others);
- assisting students in answering the most common questions while mastering the educational component.

In the context of the potential use of artificial intelligence by students

- to offer creative tasks to students, when it is difficult or impossible to generate an answer;
- to develop tasks for students that require the use of artificial intelligence platforms with subsequent critical assessment of the provided answers;
- to prepare tasks that require group discussion of the answers provided by artificial intelligence;
- to choose oral forms of academic achievement control;
- to suggest search questions when formulating questions, considering that artificial intelligence only generates, but it does not search for an answer;
- pay more attention to interpersonal communication and discussions;
- to ensure the possibility of disabling access to the network during written or automated control on online learning platforms; − to detect plagiarism / text identified by artificial intelligence detectors; − to give assignments in a graphic (not textual) form;
- to use works or articles for analysis that are not widespread in discussions or descriptions;
- to offer tasks for comparison, detection of trends, hidden connections, anomalies, recurring elements, etc;
- to ask students to provide specific facts, examples or give details to the situations;
- to offer tasks for filling / creating national databases (e.g., academic databases);
- to develop evaluation criteria that specify the individual contribution of the student.

We do not recommend using artificial intelligence in teaching in such types of activity:

- to use the generated structure / title / content without critically rethinking;
- when forming a list of educational, educational and methodological sources;
- when using AI as a reference tool like Wikipedia (AI-generated "facts" may be made up or not precisely formulated, as artificial intelligence generates rather than seeks an answer);
- when developing methodical recommendations for conducting laboratory work;
- when developing syllabuses of educational disciplines / educational components in sections: "Form (method) of control and requirements for evaluating learning outcomes", "List of recommended sources" (without additional verification).

3.5. Ways and methods of using artificial intelligence in research:

- building a plan / structure of an essay, course / qualification paper;
- collecting and processing information on the topic of the course / qualification paper;
- analysis and processing of large data sets, identifying patterns, templates, and correlations in them;
- verification and revision of scientific data;
- automated hypothesis generation based on data analysis;
- testing hypotheses and iterating research processes;
- searching and extracting specific data from large databases, significantly accelerates the information search process;
- organizing and comparing accumulated results;
- automatic creation of graphs, diagrams, and other visual representations of data that help illustrate key findings and trends;
- preparation of scientific reports;
- formatting articles according to the requirements of scientific journals;
- transforming voice information into printed text (natural language processing).
- We do not recommend using artificial intelligence in the following research activities:
- translating scientific text in foreign languages without additional verification;
- processing available data in certain fields of science that undergo rapid changes and the information contained in the AI databases quickly becomes "outdated";
- in researches related to the protection of confidentiality;
- during critical reconsideration of the provided information, which can lead to misinterpretation or distortion of results;
- while conducting scientific research (course papers, qualification, dissertation works, scientific articles, etc.) in parts related to: presentation of the content of your own research, formulating conclusions, justification of theoretical or experimental results, presenting new quantitative and qualitative indicators (AI-generated text lacks specifics, it is a generalization and cannot reflect the result of the author work);
- using quotes in course/qualification works provided by AI without checking their credibility;
- forming a reference list (general-purpose generative platforms are trained on outdated materials, do not contain current scientific works and work on the principle of "averaging" existing information). The list generated by AI will mostly contain fictional authors, publication titles, publishers, etc.

The ethics of using generative AI platforms imply an understanding of the following guidelines:

1) When using content generated by artificial intelligence, it is always necessary to indicate this.
2) It is not recommended to use generated content for material gain, as copyright may be violated.
3) It is not recommended to generate texts and images that devalue historical events, social assets, human dignity.
4) When using your own photos and images on generative platforms, remember that they are added to the machine learning database and the user loses the ability to control their distribution or transformation.

In the near future, the implementation of general policies for the use of artificial intelligence in education, teaching, and research at Kherson State University [29] has identified the following directions:

1. It is recommended for scientific and pedagogical staff to: 1) update syllabuses of educational components, taking into account the specifics of using artificial intelligence in educational activities; 2) replace traditional forms of control (or assessment) of educational activities of higher education students with more effective ones, aimed not at reproducing specific knowledge, but at checking the ability to think critically and analyse (answers to which are difficult or impossible to generate).
2. In the field of professional development, it is recommended for the university scientific and pedagogical staff to undergo internship programs through non-formal / informal education on the use of artificial intelligence technologies (at least 1 credit per year) or to receive additional education in the field of artificial intelligence.
3. It is recommended to start conducting: 1) an information campaign on AI literacy, in particular, general aspects, risks, and threats of the use and further dissemination of artificial intelligence technologies in Ukraine; 2) thematic round tables on the use of artificial intelligence in various fields of knowledge.
4. It is recommended for the chief editors of the university scientific journals to: 1) add information to the publication ethics (culture) of authors' publications about the possible use of artificial intelligence in the process of manuscript preparation; 2) prepare special thematic issues dedicated to the research of artificial intelligence.
5. Conclusions and perspectives for further research.
6. Given the relevance of education response to changes in technology, there is a need to create institutional policies of a higher education institution regarding the use of artificial intelligence platforms. Accordingly, in the process of the research, general policies for the use of artificial intelligence in education, teaching, and research at Kherson State University were developed. The purpose of these institutional policies was to create an inclusive environment of modern digital tools for involving of lecturers of non-professional specialties and define the framework for the use of artificial intelligence in education, teaching, and research of all subjects (participants) of educational activity. The risks and advantages of using AI tools were determined. Based on the analysis of the generally defined properties and functional capabilities of artificial intelligence platforms, recommendations were made, and examples of the use of AI in the educational process were given. The presented examples enable scientists, lecturers, and students, who are not specializing in IT, familiarize themselves with the existing AI resources and create their own materials using AI platforms. It also gives a chance to form a professional personal attitude to AI tools for all participants of the educational process and to consider the results of their work.
7. Issues requiring further research regarding generative platforms lie in three thematic areas: knowledge base; transparency and ethics; digital transformation of organizations and societies. Accordingly, further research requires methodological aspects of the use of such platforms, expansion of industry applications (not only technical one). All institutional documents on academic integrity and definitions related to plagiarism, quotations, and text matches need to be reviewed and updated. It is also relevant to create an educational environment that encourages the interaction and dissemination of positive practice of digital transformation of all participants of the educational process, through professional development programs through non-formal/informal education.
8.

4. CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

Given the relevance of education response to changes in technology, there is a need to create institutional policies of a higher education institution regarding the use of artificial intelligence platforms. Accordingly, in the process of the research, general policies for the use of artificial intelligence in education, teaching, and research at Kherson State University were developed. The purpose of these institutional policies was to create an inclusive environment of modern digital tools for involving of lecturers of non-professional specialties and define the framework for the use of artificial intelligence in education, teaching, and research of all subjects (participants) of educational activity. The risks and advantages of using AI tools were determined. Based on the analysis of the generally defined properties and functional capabilities of artificial intelligence platforms, recommendations were made, and examples of the use of AI in the educational process were given. The presented examples enable scientists, lecturers, and students, who are not specializing in IT, familiarize themselves with the existing AI resources and create their own materials using AI platforms. It also gives a chance to form a professional personal attitude to AI tools for all participants of the educational process and to consider the results of their work.

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ІНСТИТУЦІЙНІ ПОЛІТИКИ ВИКОРИСТАННЯ ШТУЧНОГО ІНТЕЛЕКТУ В УНІВЕРСИТЕТСЬКОМУ НАВЧАННІ, ВИКЛАДАННІ Й НАУКОВИХ ДОСЛІДЖЕННЯХ

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Анотація. Генеративний штучний інтелект швидко трансформує освітній процес і наукову роботу здобувачів, викладачів, дослідників і адміністрації закладів вищої освіти. Існують обмежені і суперечливі за змістом рекомендації для використання штучного інтелекту в освітньому процесі і в освітніх програмах закладів вищої освіти. Для визначення рамок застосування ШІ виникає потреба в розробленні інституційних політик для закладу вищої освіти, що дозволить академічній спільноті визначити доцільну сферу застосування ШІ в освітньому процесі і запобігти використанню ШІ у сферах, де порушуються етичні норми. Метою статті стало узагальнення й систематизація досвіду формування інституційних політик застосування штучного інтелекту в освіті, навчанні та дослідженнях у закладах вищої освіти на прикладі досвіду Херсонського державного університету.

У статті представлено розроблені інституційні політики для студентів, викладачів та дослідників з рекомендованими та нерекомендованими ініціативами щодо використання штучного інтелекту в освітньому процесі та наукових дослідженнях у Херсонському державному університеті. Метою цих інституційних політик було створення інклюзивного середовища сучасних цифрових інструментів для залучення викладачів нефахових спеціальностей та визначення рамок використання штучного інтелекту в навчанні, викладанні та дослідженнях усіх суб'єктів (учасників) освітньої діяльності. Рекомендації спрямовані на розширення можливостей усіх учасників творчо підходити до вибору освітніх компонентів, а також на підвищення ефективності освітнього процесу та дослідницької діяльності за рахунок використання інструментів штучного інтелекту.

Питання, які потребують подальших досліджень щодо генеративних платформ, лежать у трьох тематичних напрямах: база знань; прозорість та етика; цифрова трансформація організацій та суспільств. Також актуальним є створення освітнього середовища, яке заохочує до взаємодії та поширення позитивних практик цифрової трансформації всіх учасників освітнього процесу.

Ключові слова: штучний інтелект; заклад вищої освіти; академічна політика; освітній процес; наукова діяльність.

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