Artificial intelligence in higher education: Balancing innovation against ethical risk*

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Abstract

The paper is devoted to a thorough analysis of the transformation of the professional role of teachers in the context of the introduction of artificial intelligence (AI) technologies in the educational and scientific activities of higher education institutions. A review of current foreign and Ukrainian research confirms the growing relevance of the problem of forming new functions, competencies, and challenges for teachers in the digital age. Cases of effective AI implementation in leading universities around the world are presented, including Arizona State University (AI Innovation Challenge initiative) and the Wharton School of the University of Pennsylvania (Wharton AI & Analytics Initiative), which demonstrate the potential of AI in improving the quality of education, personalizing learning, supporting scientific research, and forming ethical standards for interaction with technologies. Special attention is paid to the Ukrainian experience, in particular the example of the H.S. Skovoroda Kharkiv National Pedagogical University. The results of an empirical study of students' attitudes toward the use of AI in education are presented, which confirm a high level of technology engagement but also reveal low awareness of ethical issues. The conclusions emphasize that AI is a powerful tool for supporting teachers, capable of automating routine tasks, promoting personalized learning, and developing the digital skills of students. At the same time, the need to maintain a balance between technological capabilities and traditional pedagogy is emphasized, as well as the formation of digital ethics and critical thinking as key components of effective interaction with AI in higher education.

Keywords

AI in education, academic integrity, ethical aspects of AI use, personalized learning, critical thinking, digital competencies

1. Introduction

The 21st century is characterized by the rapid development of digital technologies, in particular artificial intelligence (AI) systems, which in turn is causing a major transformation of the educational environment. The application of AI in higher education is increasingly going beyond the boundaries of individual technical tools and acquiring the features of a new information paradigm that stimulates changes in the very nature of communication, cognition, and interaction in the educational process. In this context, the activities of higher education teachers are undergoing significant conceptual changes: from the role of traditional knowledge transmitters to the role of facilitators of intellectual processes, moderators of cognitive interaction, and intermediaries between students and an information environment enriched by artificial intelligence technologies. The relevance of the topic is determined by several key factors.

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First, the role of adaptive learning, automated feedback, and intelligent assessment is growing, changing not only technological approaches to teaching but also the pedagogical model of interaction.

Second, the active presence of generative models (such as ChatGPT, Gemini, Claude, etc.) in the educational environment of higher education institutions creates new challenges for academic integrity, the development of critical thinking, and the need to adhere to ethical principles in interaction with intelligent digital systems.

Third, every teacher needs to acquire new competencies: pedagogical AI literacy, the ability to integrate AI into educational strategies, critically assess the capabilities and limitations of AI tools, and effectively model a learning environment that is student-centered and humanistic. Thanks to the introduction of AI into the educational process, the effectiveness of learning increases, an individual approach is ensured, and accessibility for broad segments of the population is provided. The integration of AI can not only optimize the teaching process, but also stimulate the development of critical thinking, independent learning, and adaptability among students. The study reveals the transformative impact of AI technologies on academic communication, pedagogical functions, and decision-making processes, and proposes a conceptual model of methodological and ethical guidelines for the implementation of AI tools in teaching practice in the Ukrainian higher education system, using the example of the Department of Pedagogy and Psychology of Professional Education of the Faculty of Psychology, Communications and Translation of the State University "Kyiv Aviation Institute."

2. Literature review and problem statement

The problem of transforming the professional role of teachers in the context of introducing artificial intelligence technologies is the subject of active scientific discourse in both domestic and foreign academic circles.

In particular, an analysis of recent publications by Ukrainian researchers G. Androshchuk, O. Ardelian, S. Baranovsky, V.Glusko, I. Gorbenko, S. Gorchynsky, Yu. Sydorchuk, O. Kabatska, A. Shevchenko, S. Sharov, and others, indicates systemic shifts in the understanding of the content, functions, and competencies of modern teachers in the field of artificial intelligence technologies [1].

The practice of leading foreign universities demonstrates the high potential of artificial intelligence technologies in improving the efficiency of the educational process in higher education institutions, optimizing management decisions, and stimulating scientific and research activity.

A striking example is the practice of AI implementation at Arizona State University, USA [2]. Arizona State University, in partnership with OpenAI, has launched a large-scale initiative called the AI Innovation Challenge, which has involved more than 200 institutional and individual educational projects. These include interactive AI assistants for students, cognitive learning support systems, and generative tools for scientific writing [3]. It should also be noted that the university offers degree programs such as Bachelor of Science in Artificial Intelligence in Business, Master of Science in Artificial Intelligence in Business (MS-AIB), and various courses and seminars on AI training for teachers. It is worth noting that the initiative to implement ChatGPT was accompanied by the development of internal ethical guidelines for the use of AI in education, particularly regarding integrity, algorithm transparency, and data confidentiality.

Thus, the case of Arizona State University demonstrates the high effectiveness of AI tools when implemented with strategic planning, technological readiness of infrastructure, and clearly defined ethical standards.

Another example of the successful implementation of AI in the educational process can be seen at the Wharton School of the University of Pennsylvania, where a comprehensive initiative called

the Wharton AI & Analytics Initiative is being implemented, focusing on research, educational activities, and ethical interaction with AI [4].

This interaction has led to increased efficiency in individual and group work, especially in analytical and research courses. New educational programs developed with a focus on AI have combined theoretical training with practical skills in analytical learning, machine learning, big data, and ethical analysis. A specialized online course has been created for the professional development of teachers, aimed at building competencies in integrating generative models into the learning process, in particular for the development of teaching materials and formative assessment tools [5]. Overall, the Wharton School's experience demonstrates the effectiveness of a comprehensive approach to AI implementation in the academic and administrative activities of higher education institutions. This model combines technical expertise, ethical regulation, and innovative teaching methods to ensure high-quality training of specialists in the new digital paradigm.

The successful experience of implementing artificial intelligence technologies in the educational, administrative, and research activities of leading foreign universities can serve as a conceptual guideline for the formation of a digital transformation strategy for Ukrainian higher education institutions. Such experience is valuable given the possibility of adapting proven models and approaches to the national context, taking into account the specifics of the educational environment, the regulatory framework, and available resources.

As for the application of AI in scientific research, it can be used to process large amounts of data, track patterns, and create complex forecasting models. This is especially important for interdisciplinary research, such as bioinformatics or social sciences.

The integration of artificial intelligence tools into the educational process of higher education institutions opens up opportunities for in-depth analysis of educational data, identification of patterns in the learning activity of students, and timely adjustment of their individual educational trajectories in accordance with identified needs and progress.

Researchers Sobchenko & Fedorenko [6], using the example of the H.S. Skovoroda Kharkiv National Pedagogical University, identified a number of strategic directions for the formation of AI competence in the system of teacher education, including: Skovoroda, identified a number of strategic directions for the formation of AI competence in the system of teacher education, including:

- updating curricula to include topics related to the application of AI in pedagogy;
- introducing elective courses, in particular: "Digital Image of a Teacher," "AI Tools in Education," "Generative AI: Practical Skills," "AI for Scientific Research," etc.; - conducting educational events (master classes, webinars, lectures) at the University's Educational Hub;
- involve AI experts within the framework of international cooperation;
- prepare teaching materials adapted to different educational fields and levels of training for publication;
- participate in scientific projects, in particular initiatives of the National Research Fund of Ukraine on the introduction of AI in teacher training;
- organize scientific conferences and other events dedicated to the use of AI in education and science [6].

In general, on the one hand, the technological potential of artificial intelligence forms the basis for the introduction of innovative educational solutions, in particular in the direction of personalized learning, the use of big data analytics for monitoring and evaluating academic progress, as well as the development of adaptive educational platforms capable of taking into account the individual educational needs of learners and the dynamics of their learning

development. On the other hand, there is a threat of reducing thought processes to superficial consumption of information, which poses new challenges for pedagogy. In this situation, teachers do not simply transform their functions, but become key figures in the formation of the ability to critically analyze, evaluate, and consciously interact with AI [7, 8].

The growing use of AI in education raises the issue of verifying the reliability of educational content, adhering to the principles of academic integrity, and adapting to transformational changes in the forms and approaches to learning.

It is reasonable to believe that AI algorithms, in particular learning analytics systems, contribute to more accurate assessment of students' knowledge levels, allowing for the implementation of individualized approaches to teaching, which, in turn, ensures the improvement of the quality of knowledge and skills acquired [9].

One of the challenges of integrating AI into the educational process of higher education institutions is the changing role of the teacher: from a source of knowledge, the teacher is transforming into a facilitator and mentor who helps the learner (student) interact with AI [8].

In other words, the use of artificial intelligence technologies in teaching contributes to improving the effectiveness of the educational process by automating routine tasks, expanding the possibilities of personalized learning, providing prompt feedback, and enabling analytical monitoring of the academic achievements of students.

As for the views of Ukrainian scientists on the advantages of integrating AI into the educational environment of higher education institutions, we agree with the opinion of researcher G. Zhyla [10], who highlights the following advantages of using AI in teaching practice:

- personalization of the educational process;
- automation of administrative tasks;
- increased inclusiveness, since AI tools;
- strengthening the role of the teacher, rather than replacing it.

A critical aspect of integrating AI into the professional activities of teachers is inequality in access to technology, as the rapid development of the IT industry poses the threat of a digital divide between those who have access to AI tools and those who do not [8].

Researcher G. Zhyla also notes certain limitations and risks, including:

- financial barriers and digital inequality;
- insufficient teacher training may cause resistance to the integration of AI into the educational process;
- risks of non-transparent algorithms and the need for clear ethical standards provoke problems with trust in AI decisions;
- overreliance on AI can impair critical thinking and independent problem-solving skills in both students and teachers; AI processes large amounts of students' personal data, which requires high standards of security, confidentiality, and personal data protection [10, 11].

In conclusion, the integration of AI into teaching practice has enormous potential to transform education, but at the same time, it is accompanied by global ethical, technical, and social challenges [12, 13, 14]. In our opinion, a balanced approach, adequate funding, and the training of relevant specialists are critical for the successful implementation of AI integration policies in the educational process.

Therefore, we view AI as an innovative tool that supports the organization of the educational process: from creating educational content to stimulating cognitive activity among learners. It can serve as a means of creative support for teachers and optimization of routine work, especially in

the context of distance learning. However, the successful integration of AI into education is not possible without the targeted development of teachers' digital competencies. Further research should focus on mechanisms for the effective and ethical implementation of AI in the university environment.

3. Academic integrity in the age of artificial intelligence: student attitudes and ethical dilemmas

To investigate students' attitudes toward the ethical aspects of AI use, an empirical study was conducted in which 100 full-time undergraduate students of the Bachelor's program in Pedagogy and Psychology of Professional Education at the Faculty of Psychology, Communications, and Translation of the Kyiv Aviation Institute, who are studying under the educational and professional program "Practical Psychology," participated.

When asked "How often do you use AI in your studies?", 46% of respondents chose "Sometimes"; 12% said "Rarely"; 2% chose "Never"; while 40% of respondents said "Always." (Figure 1).

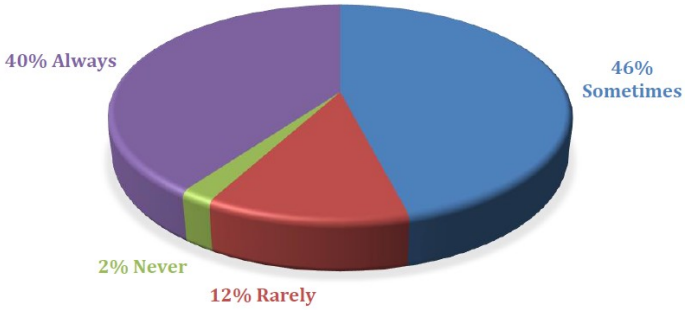

Figure 1: "How often do you use AI in your studies?".

When asked "For what purposes do you use AI?" (multiple answers were possible), respondents indicated that they use AI for: searching for information (87%); generating ideas/planning (58%); writing texts/essays (40%); referencing or analyzing sources (40%); editing language errors (36%); assistance with programming/technical tasks (33%). Results are shown in Figure 2.

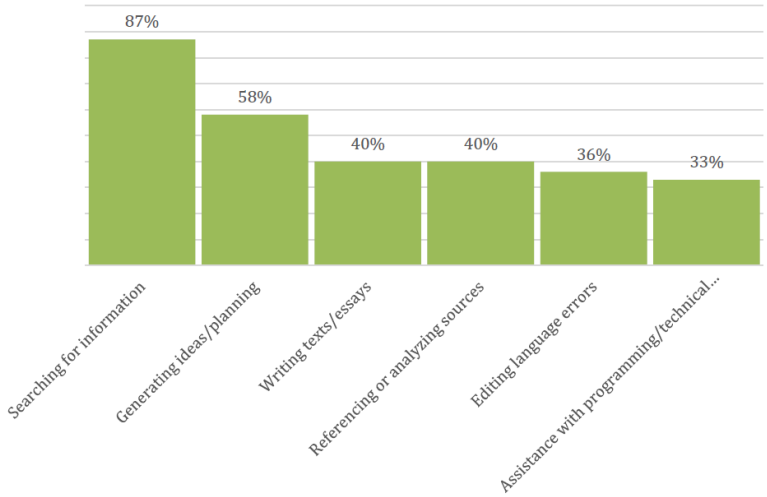

Figure 2: "For what purposes do you use AI?".

When asked, "How do you rate the effectiveness of AI as a learning support tool?" 36% of respondents chose "Rather effective"; 32% of respondents said that AI is "Very effective"; 23% said that AI is "Moderately effective"; 6% chose "Not very effective"; only 3% of respondents said that they do not use AI as a learning support tool.

When asked, "Do you consider the use of AI ethical when preparing for an exam (e.g., explaining material)?" 80% of respondents answered "Yes"; 14% chose "No"; other respondents noted: "50/50," "I can say that it really helps me understand some of the material," "It's not about ethics, it's about the fact that AI provides inaccurate information (confuses information, doesn't know how to work with databases at all) and the student puts themselves in a bad light," "AI is a modern encyclopedia," "Yes, but as a second line (the main source is teaching materials)."

When asked, "Do you consider the use of AI ethical when writing a scientific paper?" 51% of respondents chose "No"; 37% answered "Yes"; 2% indicated "50/50." Other respondents noted: "50/50 AI can help me analyze the information I need in a condensed form"; "Only for searching information"; "Ethical if used to check for errors or repetitions, also to check stylistic consistency"; "Depends on how: editing spelling mistakes (if you are not fluent in English) is ethical, but it is unethical for AI to do all the work (and it is not capable of doing it correctly)"; "Yes, but you have to be careful because AI can write text incorrectly and that is what needs to be filtered out"; "Only for searching for information and resources; if the work is written entirely or partially by AI, then it is unethical"; "It's not about ethics, but about the fact that AI provides inaccurate information (confuses information, doesn't know how to work with databases at all) and the student puts themselves in a bad position"; "Partially, depending on which part of the research paper"; "Only for searching for information and planning, sources should be analyzed independently."

When asked, "Do you consider the use of AI ethical in the case of complete text generation for submission to a teacher?", 69% of respondents answered "No"; 26% chose "Yes"; 3% indicated "Partially." Other respondents noted: "If the text has been processed and understood"; "It's not a matter of ethics, but the fact that AI provides inaccurate information (confuses information, is completely unable to work with databases) and the student puts themselves in a bad light."

When asked, "How would you assess the risks of using AI in education?", 53% of respondents chose "Moderate"; 24% chose "High"; 15% chose "Low"; and 8% chose "I don't see any risks". Results are shown in Figure 3.

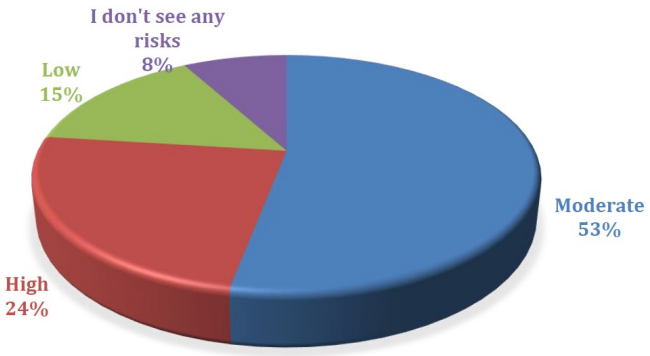

Figure 3: "How would you assess the risks of using AI in education?".

When asked, "What do you think is the main advantage of using AI in education?" the majority of respondents (67%) indicated that it was the speed of obtaining information.

Other respondents' answers included: "Concise answers to questions"; "Can explain tasks if a student does not understand how to do them and provide a template if necessary; sometimes generates excellent research plans"; "Can adapt to the level of knowledge of each student"; "Helps generate your own ideas"; "The use of AI in education carries risks, such as dependence on

technology, possible data bias, and a decline in the development of live communication"; "AI is like a smart assistant who is always there. It helps you learn at a comfortable pace and explains everything simply and clearly. It doesn't argue or get tired; on the contrary, it supports you. It's a cool thing that makes learning easier and more interesting"; "It can divide questions into different sub-points so that it is easier to find information later"; "The ability to take a structure for work, a plan, when you don't know where to start, and then work independently"; "AI allows you to simplify the amount of information that students need to memorize. This allows you to focus on more practical tasks, since the theory is always at hand"; "The ability to explain the material using simple examples from real life. The ability to give exercises to practice the material or generate tests on the material for better assimilation. The ability to learn about modern approaches in any field by asking just one question, instead of searching for such information in open sources"; "AI is able to adapt learning materials, pace, and presentation methods to the individual needs, knowledge level, thinking style, and learning pace of each student or pupil."

The results of the empirical study showed a high level of AI integration into the learning activities of students who actively use AI to search for learning materials, plan, edit, and analyze sources.

Most respondents consider AI a useful tool for individualizing learning, developing self-organization, and generating new ideas. At the same time, there is a lack of awareness of the ethical aspects of AI use: although students mostly approve of its use for exam preparation or editing, they are critical of the complete generation of academic texts, demonstrating a basic understanding of academic integrity.

However, the study also identified several significant challenges in the ethical use of AI in education by students:

- a vague understanding of the limits of acceptable AI use, as the students surveyed often do not distinguish between the auxiliary use of technology and the complete generation of content, which leads to ethical ambiguity;
- "shifting" responsibility to technology, as some of the students surveyed perceive AI as a neutral tool and do not take responsibility for its use. This points to the need to strengthen digital ethics and develop critical thinking;
- low level of legal awareness among students who, despite the active use of AI in the creation of educational products, are largely unaware of legal requirements regarding authorship, academic responsibility, and adherence to principles of integrity.

4. Integration of AI into the educational process on the example of the Department of Pedagogy and Psychology of Professional Education of the Faculty of Psychology, Communications and Translation of the Kyiv Aviation Institute

Taking into account the results of empirical research, the staff of the Department of Pedagogy and Psychology of Professional Education of the Faculty of Psychology, Communications and Translation of the Kyiv Aviation Institute developed a series of practical tasks aimed at developing students' critical thinking and forming their skills in the ethical use of AI opportunities in the educational process.

Examples of educational practices for developing critical thinking and ethical literacy in the application of AI are shown in Table 1.

Table 1
Examples of Educational Practices for Developing Critical Thinking and Ethical Literacy in the Application of AI

Course title	Task example	Students' Conclusions
Mathematical Methods in Psychology	Conduct a survey among two groups (men/women) on emotional intelligence indicators. Apply: a) Mann–Whitney U test and draw conclusions; b) Use ChatGPT to analyze the results and formulate conclusions. Compare your calculations with ChatGPT's	- Development of critical thinking skills; - ChatGPT makes significant errors or provides incorrect algorithms for such tasks
Fundamentals of Scientific Research in Psychology	1. Search for academic literature on a given topic: a) manually (Google Scholar, ResearchGate); b) via ChatGPT. 2. Develop a questionnaire: a) manually; b) using ChatGPT	- Manual search yields reliable sources; - ChatGPT may "fabricate" references; - ChatGPT performs well in questionnaire creation, but its outputs need refinement
Psychology of National Unity and Sustainable Development	Identify societal stereotypes about different identities (e.g., western/eastern Ukrainians, Crimean Tatars, IT specialists): a) manually; b) using ChatGPT	- ChatGPT provides real stereotypes for common identities, but fabricates ones for more specific cases
Special Psychology	Provide examples of doctor–patient dialogue involving a person with a disability: a) manually; b) via ChatGPT. Analyze the dialogues for supportiveness	- ChatGPT referenced fake episodes from real series; - Chatbots can be used to practice, but cannot simulate empathy or sensitivity; - Students corrected inadequate phrases into therapeutic ones
Art Therapy	Use ChatGPT to generate words for an associative collage of resource states	- Students struggled to generate diverse words manually; - ChatGPT produced varied words but leaned toward positive/neutral ones unless prompted otherwise
Extreme Psychology	Analyze the tools and materials needed by a psychologist in extreme situations: a) manually; b) using ChatGPT	- ChatGPT suggested an overly extensive toolkit; - Students focused on portability and relevance to field conditions
Political Psychology	In small groups, design a fictional political party: name, ideology, audience, and campaign program. ChatGPT may be used to generate ideas, slogans, structure.	- ChatGPT helped with structure and ideas, but outputs were repetitive across groups; - It failed to grasp local cultural context; - Students learned to use AI as a supportive tool, not a replacement

5. Conclusions

The integration of AI into teaching practice in the training of higher education students majoring in Practical Psychology has both advantages and disadvantages. AI helps adapt learning materials to the individual learning path of students, their style, pace, and level of knowledge acquisition; helps quickly find the necessary scientific articles, meta-analyses, practical examples, and create clinical cases for practical classes; Through simulated dialogue with chatbots, students can practice diagnostic skills and counseling conversations without violating ethical standards. AI also helps analyze large data sets and develop students' media literacy and technology skills in line with the modern labor market.

Along with the clear benefits of bringing AI into teaching and learning, there are some risks, like: overreliance on AI can reduce motivation to engage in research, reduce the level of independent research, analysis, and reflection on existing scientific material, thereby reducing the level of critical thinking among students and teachers. Artificial intelligence does not allow for the full development of the practical empathy skills necessary for the work of a practical psychologist, and also limits the development of emotional intelligence. The use of student data or patient simulations requires additional regulation to ensure confidentiality and compliance with ethical standards. AI also has certain limitations in processing and understanding cultural, individual, and emotional contexts, which can affect interpersonal communication.

In conclusion, AI is a powerful tool in the training of psychologists as an aid for teaching, database analysis, and situation generation and simulation, but it cannot completely replace live communication, practical training, and the development of a psychologist's emotional competence. The effectiveness of AI depends on the balance between technology and traditional teaching methods.

Declaration on Generative AI

While preparing this work, the authors used the AI programs Grammarly Pro to correct text grammar and Strike Plagiarism to search for possible plagiarism. After using this tool, the authors reviewed and edited the content as needed and took full responsibility for the publication’s content.

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