

Artificial Intelligence in the Professional Activity of a University Lecturer in Ukraine: Realities and Prospects

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Abstract

The professional activity of a university lecturer in Ukraine can be viewed as a problem-solving process that includes both routine and non-routine tasks. It is clear that artificial intelligence tools can improve the effectiveness of lecturers' solving these tasks and save them time.

The aim of this study is to determine the state of practice in applying artificial intelligence tools in the professional activities of university lecturers in Ukraine in performing routine tasks.

Based on the types of professional activities of a university lecturer in Ukraine—teaching, methodological, and scientific—and having identified possible artificial intelligence tools for solving routine tasks, we created a questionnaire. The purpose of this questionnaire is to determine teachers' attitudes toward the use of artificial intelligence in their professional activities and the artificial intelligence tools used by Ukrainian university teachers. Using the artificial intelligence tools ChatGPT and Microsoft Copilot in Bing, an online questionnaire consisting of 8 sections and 36 questions was developed. The questionnaire was presented in Google Forms and distributed through social networks and professional associations of teachers.

The article presents the results of a survey of 205 university lecturers in Ukraine. It was found that 30.4% of respondents believe they have never used AI, 5.4% use AI daily, and 15.2% weekly. According to self-assessment of knowledge and skills in the field of AI, the distribution by levels is as follows: very high – 0%, high – 4.4%, medium – 41.4%, low – 33.5%, very low – 20.7%. Regarding attitudes toward the use of AI in education: 7.8% are very positive, 43.6% are positive, 43.6% are neutral, 3.9% are negative, and 1% are very negative. The questionnaire also included several questions about AI tools for information retrieval, creating presentations, scheduling classes, generating reports, and creating test assignments. The teachers' answers to the last question of the questionnaire show that it is useful for understanding the possibilities of using artificial intelligence in the professional activities of a university teacher, in particular, teachers have learned more about artificial intelligence tools that can be used to perform routine tasks, which encourages them to study them more deeply.

Keywords

artificial intelligence, higher education, professional activity, university lecturer, routine tasks, AI-based tools

1. Introduction

Artificial Intelligence (AI) is advancing rapidly in modern society. The issue of AI's role in education is actively researched by scholars worldwide, particularly regarding ethical concerns, academic integrity, and tools for enhancing learning. On the one hand, AI aids in idea generation, initial information gathering, and writing improvement. However, AI can also provide unreliable information, generate

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pre-written texts upon student requests, and offer ready-made solutions to problems. Therefore, the impact of AI on education is a pertinent issue [1].

Despite potential risks and ethical concerns, AI holds significant potential for improving the quality of university teaching and the preparation of future professionals.

Therefore, the study of the possibilities of AI for the organization of the educational process in university and the mastering of educational tools by university teachers based on AI are relevant to the practice of higher education in Ukraine. Therefore, the topic joint research of members of the Association of Ukrainian Researchers in Austria, the Department of Mathematics and Methods of its Teaching, Ushynsky University (Odesa, Ukraine), the Department of Preschool and Primary Education of Izmail State University of Humanities (Izmail, Ukraine) was selected the use of artificial intelligence in the teacher's professional activity university.

The purpose of the research is a theoretical study of the problem of the use of AI in the educational process of the university, identification and selection of AI tools for performing routine tasks by teachers and universities, their popularization and introduction into the professional practice activity of a university teacher.

The study is a logical continuation of the previous topic, as a result of which we selected ICT-based technologies for the organisation of face-to-face and distance learning that includes technology: 1) training organization; 2) conducting classes; 3) organization of students' independent work. It is obvious that at this stage, such technologies already contain AI tools, so research of AI tools in the professional activity of a university teacher takes into account previous results [2, 3, 4].

At the first stage of the study (January - June 2024), we solved the **task**: to carry out a theoretical analysis of the current state development of the problem of AI in education, the content of the teacher's professional activity university in the context of its routine tasks, definitions capabilities of AI to intensify their solution and survey teachers of Ukrainian universities regarding the possibilities of using AI in professional activity. We used AI to develop a questionnaire and organise an online survey of Ukrainian university teachers based on the results.

2. AI and its types

AI refers to the ability of machines or computer programs to think, act, and react like humans. Key characteristics include intelligent behaviour, environmental analysis, and taking goal-oriented actions using various degrees of freedom [5]. It can autonomously achieve complex goals by analyzing its environment and adapting to changing conditions [6]. AI is a product of human activity and learns through interaction with humans, with human oversight. However, AI also extends human capabilities by analysing large datasets, enhancing efficiency in human activities.

Researchers identify several types of AI systems [7]: 1) Artificial Neural Networks; 2) Natural Language Processing; 3) Expert Systems; and 4) Computer Vision. These AI types operate through different mechanisms but can address similar tasks.

For instance, Artificial Neural Networks mimic the workings of the human brain by simulating biological neurons; they consist of interconnected nodes acting as artificial neurons that receive, process, and transmit signals. Neurons are organised into layers, each performing different data transformations (text, images). Artificial Neural Networks are used as a basis for other types of AI, such as Computer Vision and Natural Language Processing. At the same time, Computer Vision uses machine learning algorithms to recognise and process visual content. Unlike Artificial Neural Networks, which imitate the mechanism of biological neurons, this AI system is set by humans to use algorithms. Computer Vision is applicable beyond photo and video identification, being used for reading graphs and charts, recognizing text (including handwriting), and other tasks.

For example, the Elai.io platform is utilized to create AI-generated videos with virtual presenters; Google Photos is used for face and object recognition in photos to improve sorting and searching; the DeepAI service generates images from text prompts; and Paintbytext is used for photo editing and creating presentation materials.

It is important to note that Artificial Neural Networks are trained on examples, allowing them to identify complex patterns within data. This makes them suitable for analyzing data where intricate patterns and relationships must be detected. Expert Systems perform a similar function, using predefined rules and facts to solve specific problems in a narrow domain. These systems are user-friendly, as modifications to the knowledge base — such as adding new rules or facts — can be made without programming, and they can explain their conclusions. Expert Systems are also widely used in sectors such as medicine, finance, and law.

Artificial Neural Networks, with their capacity for self-learning and adaptation, are extremely powerful across numerous applications, including pattern recognition, autonomous driving, text generation, and many other areas. It should be noted that, despite the fact that different types of AI have different mechanisms of operation, they can perform the same functions. For example, in addition to Artificial Neural Networks, such types as Natural Language Processing (NLP) are employed to understand and process human speech by computers. NLP involves tasks such as translation, speech recognition, semantic analysis, answering questions, and text generation. It is utilized for automatic translation, text analysis, voice search, and similar tasks.

Examples of NLP applications include chatbots used by university educators, such as ChatGPT by OpenAI, Claude by Anthropic, Google Gemini, Microsoft Copilot, Perplexity AI, and Phind. These tools can answer questions, generate texts, and provide information, though it's important to remember that they source information from the internet and may not always offer accurate responses.

At the same time, it should be noted that online services can be built using not one but several AI systems. Of course, this issue is not very important for the user; the main thing is that a certain service performs the declared functions.

AI in education is an umbrella term that encompasses a wide range of technologies, algorithms, and related multimodal data used in formal, non-formal, and informal educational settings. These methods include data analysis, machine learning, NLP, large language models (LLMs), generative models, and neural networks [1]. A comprehensive overview of AI applications in education is provided in the work of Zawacki-Richter et al. [8].

AI creates opportunities to support learning and teaching in real-time, offering more effective solutions [9].

AI can support paradigm shifts in education [10]. The research highlights the potential of AI to create personalized learning environments while acknowledging the complexities involved. It is essential to recognize that AI's educational support functions depend on the pedagogical decisions made by teachers [11].

The potential of AI to provide personalized learning by considering individual learning styles and abilities is also noted by Wang et al. [12]. They emphasize that AI tools simplify collaboration between students and between students and teachers, enhancing the interactivity of the learning process. AI tools must be used in combination with other educational technologies to augment their capabilities. Wang et al. [12] further highlight the need for research on how teachers interact with AI systems in the classroom, the development of tools to support data-driven decision-making by educators, and the impact of AI on the experiences of both students and teachers. The use of AI, particularly NLP, provides quick and easy access to information, reducing the time required to master specific topics [13].

Consequently, the role of the teacher shifts from being the sole source of knowledge to facilitating the learning process, guiding it towards the development of critical soft skills such as critical thinking and problem-solving. Ifenthaler et al. [1] pay attention to the discussion of ethical aspects of using AI in education, including questions about the privacy of student data and fairness of algorithms, and emphasize the need to develop ethical principles of AI work.

At the same time, scientists emphasize that despite the relevance of the implementation of AI in education, the practical application of AI lags far behind expected potential [14]. This is due to the fact that teachers do not have effective guidance on how to use AI to improve teaching and learning effectiveness [15].

3. Organising the professional activity of university teachers using AI

The professional activity of a university teacher can be considered as the process of solving problems, among which routine and non-routine ones can be distinguished tasks. The routine tasks of a university teacher are related to the organisation of his/her own educational, methodical and scientific work, while the non-routine tasks require a creative approach, creative thinking, and creativity on the part of the lecturer and are related to the generation of new or updated content (table 1).

Table 1

Routine and non-routine tasks of a university teacher in Ukraine

Type of activity	Routine task	Non-routine task
Educational and methodical work		
Development of new courses, programmes, textbooks and manuals.		+
Developing and updating curricula and teaching materials for courses.	+	
Preparation and delivery of lectures, seminars, workshops and consultations.	+	
Development of tasks for students' independent work, tests, term papers and diploma papers.	+	
Organisation of professional development, professional level and competencies, etc.	+	
Improving their professional level, qualifications and competencies in the use of modern technologies and teaching methods.		+
Research and development work		
Checking and evaluating students' homework, test papers, term papers and diploma papers.	+	
Organisation and participation in the research work of the department and methodological work of the faculty or institute.	+	
Carrying out research work in the afternoon. Research of a scientific problem and development and implementation of innovative approaches, educational technologies, etc.		+
Writing scientific articles, abstracts and monographs.		+
Publication of scientific articles, abstracts and monographs.	+	
Reviewing articles, manuals, monographs, etc.	+	
Organisation and participation in scientific conferences, seminars, symposia and other events	+	
Preparing an application for participation in a project, grant, competition, etc.		+
Organising and participating in research projects, grants, competitions, internships and exchanges of experience with foreign colleagues.	+	
Fulfilling the tasks of a project, grant, competition, etc.		+
Organisational work		
Keeping records and reports on their activities (filling in the workload log and creating a report for the semester and year for different types of work).	+	
Collaboration with colleagues, administration, students and other stakeholders.	+	
Developing scenarios for creative activities for students.		+
Organising and conducting creative events for students.	+	

As you can see, unlike routine tasks, non-routine tasks of a university teacher require a creative approach, productive and theoretical thinking, initiative and independence, as well as a high level of professional competence in the field of study.

In the context of higher education, AI is becoming a powerful tool capable of learning from data and developing new insights [16].

Given the potential of AI for education, it is clear that AI can be a useful tool for university teachers, a means of unloading when solving routine tasks. Note that today universities of Ukraine work on various

online platforms, Teams, Moodle, Google Meet, Zoom, etc., which already have built-in resolution tools for a certain part of routine tasks related to the organization of the learning process: creating a group, inviting students to it, uploading materials to course and tasks, log generation, scoring, providing comments to students' works in various forms (text, sound, video), lesson planning and automatic generation of the schedule for the teacher. During online classes, these platforms can be demonstrated by the teacher and students' presentation, sharing the screen, the teacher and students can use a whiteboard, on which both the teacher and students can perform recordings.

Meanwhile, AI tools have already been built into these platforms to help the teacher and students during the implementation and processing of the content lecture or practical/laboratory session. For example, in the Teams platform, such a type of AI as Natural Language Processing is built in, it makes it possible to use additional means, specifying the language, enabling transcription and video recording, generate a text file, which, after some editing, is a fairly high-quality summary of the lesson. In addition, artificial neural networks analyse the presence of students in class and generate a table that indicates the time of each student's presence in a pair.

So, teachers can automate routine administrative and organizational tasks with AI tools built into corporate platforms.

However, the capabilities of AI are not limited to those that are already built into corporate platforms. To organize the schedule of classes, teachers can use other AI tools such as Google Calendar, Timely, SkedPal, Clockwise, etc. To help the teacher create a bright, dynamic presentation can be made by the following services: SlidesAI, Visme, Simplified, SlideBean, etc. These tools make it possible to create a presentation based on the text of the lecture. Of course, they are not perfect yet, and some of these services are paid, and free options may have limited capabilities. But of course, teachers should study this issue, and it is obvious that AI will make it possible to visualize the educational content as much as possible, create a presentation in modern, creative design, and save time significantly for this work. To create test tasks, the teacher can use the following services: Copilot, Google Forms, Quizlet, Kahoot, Moodle, Coursera, etc., which allow the teacher to save time and resources and increase the variability of tasks. It should be noted that there are AI tools that allow you to organize peer review students of each other are Gradescope, Peergrade, PeerScholar, Peerceptiv, etc. AI also provides the means to personalize student learning educational trajectories, providing learning support at any convenient time for a student.

Thus, a university teacher can solve routine problems using AI: to find information from a training course or problem research to translation of articles, monographs, manuals, etc.; for the creation of lecture presentations; the organization the activity of the teacher – creation of class schedule; for the organization of mutual verification by students of each other; for creating tests; for the personalization of student learning (learning by individual educational trajectories, virtual assistants, etc.); for analysis of students' success.

Of course, all these tools, if mastered by the teacher at the skill level, save his time and create an opportunity for concentration on non-routine tasks.

4. Methodology of experimental research

We conducted a survey across Ukrainian universities to assess the level of awareness among university teachers regarding AI tools available for professional activities.

The content of the questionnaire was developed on the basis of the conclusions (tables 1-14) drawn from the theoretical analysis of the problem:

1. *Personalized Learning*: AI can tailor educational materials to the needs of individual students through machine learning algorithms. For example, systems such as Blackboard Predict use analytics and machine learning to forecast student success, enabling teachers to identify students who may require additional support. Services like Squirrel AI offer personalized tasks and materials based on students' knowledge levels and needs. Tools such as Edpuzzle allow teachers to create interactive video lessons with integrated questions and assignments, while

Knewton provides adaptive learning through analysis of student actions and recommendations for appropriate materials. Personalized courses can also be developed using platforms like Duolingo Max. Platforms such as CogBooks and LearnPortal enable the creation of dynamic courses that adapt to student needs. Paperclips can automatically generate study cards with information from PDFs or websites, etc. Additionally, virtual assistants and chatbots powered by AI can provide students with answers, recommendations, and problem-solving assistance, thus reducing teachers' workload and enhancing student support availability.

2. *Automatic Creation of Tests and Tasks:* Tools such as Quizbot facilitate the creation of tests and questions, saving teachers time and allowing them to focus on more critical aspects of education.
3. *Data Analysis for Course Improvement:* AI can analyze data such as grades and attendance to identify trends and enhance course preparation. AI-driven analytics and machine learning offer teachers new opportunities to review data from various sources (e.g., lecture notes, assignments, forums) to understand student engagement and refine teaching methods.
4. *Automatic Assessment of Student Work:* AI tools can evaluate tasks, tests, and other student work, reducing the burden on teachers and ensuring objective results. For instance, Cognii employs natural language processing and machine learning for automatic assessment and feedback on written work. GradeScope automates the evaluation of assignments and tests, while AI tools like Loop, Google Forms, and Quizizz provide feedback on visual student work. Additionally, platforms such as Gradescope facilitate peer assessment.
5. *Handling Routine Tasks:* AI can assist with routine administrative tasks, such as class attendance tracking and facial recognition, simplifying processes like attendance journaling (e.g., Google Classroom or Netpeak Checker).
6. *Plagiarism Prevention:* AI tools can detect plagiarism and inappropriate behaviours such as cheating attempts. Services like Turnitin compare student papers with extensive databases of academic content to identify similarities, distinguishing between human and AI-generated text. Quetext and Scribbr also offer plagiarism detection services, contributing to academic integrity by supporting teachers in identifying plagiarism.
7. *Support for Distance Learning:* AI aids in the creation of effective online courses, automated assignment grading, and feedback provision.

Table 2

AI tools for solving routine tasks: Searching for information

Tool	URL
ChatGPT	https://openai.com/index/chatgpt/
Tableau Prep	https://www.tableau.com/
Google AI Studio	https://aistudio.google.com
Gemini	https://gemini.google.com/
Claude	https://claude.ai/
Microsoft Copilot in Bing	https://www.bing.com/chat
Perplexity	https://www.perplexity.ai/
Phind	https://www.phind.com/

Based on these findings and utilizing ChatGPT and Microsoft Copilot in Bing, we developed a 36-question questionnaire offered to Ukrainian university teachers. All questions were closed, with predefined answer options, but respondents had the option to provide additional input. The questionnaire is presented in Google Form (https://docs.google.com/forms/d/1nlixlaPT5wD0q41x_mRu1bD-jXw9fnaq_H4Hgv8JpHnY/edit) and contained four sections. The first chapter (questions #1 - #11) related to general information about the subject taught by the specialist; its work experience at the university; the frequency of use of AI in professional activities; the purpose of using AI tools that the teacher already uses or wishes to use; self-assessment of the level of knowledge and skills in the field of AI; advantages and problems of using AI for one's own professional activity; attitude towards the use of AI

Table 3

AI tools for solving routine tasks: Creating lecture presentations

Tool	URL
SlidesAI	https://www.slidesai.io/
Plus AI	https://plus.ai/
Beautiful.ai	https://www.beautiful.ai/
Kroma	https://kroma.ai
Slidebean	https://slidebean.com/
Gamma	https://gamma.app/
Invideo	https://invideo.io/
Tome	https://tome.app/
Synthesia	https://www.synthesia.io/
Simplified	https://simplified.com/
Sendsteps	https://www.sendsteps.com/en/
Prezi	https://prezi.com/
Visme	https://www.visme.co/

Table 4

AI tools for solving routine tasks: Create personalised tasks and materials for students based on their level of knowledge and individual needs

Tool	URL
Squirrel AI	https://squirrelai.com/
Blackboard Predict	https://blackboard.com/
Knewton	https://www.knewton.com/

Table 5

AI tools for solving routine tasks: Create interactive video lessons, add questions and tasks; track student progress

Tool	URL
Edpuzzle	https://edpuzzle.com/

Table 6

AI tools for solving routine tasks: Creating courses that adapt to the needs of students

Tool	URL
Duolingo Max	https://blog.duolingo.com/duolingo-max/
CogBooks	https://www.cogbooks.com/
LearnPortal	https://learnportal.net/

in education; sources of information about AI and needs in mastering AI; using AI tools to perform routine tasks.

The second section of the questionnaire provided the definition of AI tools used by teachers to search for information on the subject of teaching (question #12): ChatGPT, Tableau Prep, Google AI Tools, Google Gemini (Bard), Claude, Microsoft Copilot in Bing, Perplexity, Phind. If teachers use other AI tools for searching for information, then in #13 asked, offered to specify their names. The next question (#14) was aimed at determining preferences using AI to search for information and offered answer options: saving time, improving the quality of information, increasing interest in the subject, knowledge expansion and own option. Question #15 concerned the shortcomings and difficulties of using AI to search for information: low relevance or relevance, complexity or inconvenience of the interface, limitation or no customization, high cost or limited access, and proprietary version.

The third section (questions #16 - #19) - AI tools for creating presentations, contained 4 questions that were built around the same logic: AI tools for creating presentations (closed questions with a list of tools), own a list of AI tools for creating presentations; advantages of using AI to create presentations, disadvantages and difficulties of using AI for creating presentations.

Table 7

AI tools for solving routine tasks: Automatically create cards with information from PDFs or websites, etc.

Tool	URL
Paperclips	https://www.paperclips.app/

Table 8

AI tools for solving routine tasks: Automatic creation of tests and tasks; assessment of test tasks

Tool	URL
Quizbot	https://quizbot.com/
Microsoft Copilot in Bing	https://www.bing.com/chat
Quizlet	https://quizlet.com/
Kahoot	https://kahoot.com/

Table 9

AI tools for solving routine tasks: Automatic grading of written work and feedback to students

Tool	URL
Cognii	https://www.cognii.com/
GradeScope	https://www.gradescop.com/

Table 10

AI tools for solving routine tasks: Analyse students' visual work, such as drawings or diagrams, and provide feedbacks

Tool	URL
Loop	https://www.microsoft.com/uk-ua/microsoft-loop
Google Form	https://www.google.com/forms/
Quizizz	https://quizizz.com/

The fourth section (questions #20 - #22) contained three questions about AI tools for creating a schedule of classes and the benefits of using them. The fifth (questions #23 - #25) concerned AI tools for creating reports, the sixth (questions #26 - #29) – AI tools for the organization of peer review by students, the seventh (questions #30 - #34) - AI tools for the creation of test tasks, the eighth (questions #35 - #36) contained questions about the benefit of working on the questionnaire for the teacher.

5. Analysis and discussion of the results of the teachers' questionnaire universities of Ukraine

The survey was conducted in January-June 2024. Through social Facebook, Viber, Telegram networks and the website of the Association of Ukrainians researchers in Austria, a questionnaire was distributed and offered to teachers and universities to take part in the online survey, it was noted that the survey is completely anonymous and we do not collect e-mails respondents. 205 university teachers responded to our request of Ukraine, most of the lectures of pedagogical and classical universities, which teach pedagogy (22.5%), methods of teaching a certain subject (22.5%), psychology (13.7%), humanities (12.3%), mathematical sciences (10.8%), social sciences (6.4%), natural sciences (4.9%), technical sciences (2.5%). 71.1% of teachers have been working at the university for more than 10 years, and 18.6% - from 5 to 10 years, 5.4% have up to 3 years of teaching experience.

Regarding questions about the frequency of use of AI in professional activities, only 5.4% answered that they use AI daily, 15.2% - weekly, 18.6% - monthly, 30.4% - once in a couple of months and 30.4 - never. Based on this, almost a third teachers do not use AI in their professional activities, reasons such a state may be ignorance of the capabilities of AI and tools AI that can be used by a teacher to solve routine tasks. Meanwhile, the data regarding the desire to use AI in professional activity. Yes, 71.1% of respondents either already use or want to use AI to generate content (text,

Table 11

AI tools for solving routine tasks: Students evaluate each other and provide feedback. Mutual checking

Tool	URL
Gradescope	https://www.gradescope.com/
Peergrade	https://www.peergrade.io/
PeerScholar	https://www.peerscholar.com/
Peerceptiv	https://peerceptiv.com/
Rosetta Stone	https://www.rosettastone.com/
Replika	https://replika.com/
Math Expert	https://mymathexperts.com/
CogBooks	https://www.cogbooks.com/
ALEKS	https://www.aleks.com/
Grammarly	https://www.grammarly.com/

Table 12

AI tools for solving routine tasks: Keeping a presence log

Tool	URL
Google Classroom	https://classroom.google.com
Netpeak Checker	https://netpeak.group/

Table 13

AI tools for solving routine tasks: Creating a class schedule

Tool	URL
Google Calendar	https://calendar.google.com
Timely	https://timelyapp.com/
SkedPal	https://skedpal.com/
Clockwise	https://www.getclockwise.com/
ClickUp AI	https://clickup.com/ai

Table 14

AI tools for solving routine tasks: Generating reports.

Tool	URL
Quill	https://www.quill.org
Wordsmith	https://wordsmith.org/
Microsoft Power BI	https://www.microsoft.com/en-us/power-platform/products/power-bi
Zoho Analytics	https://www.zoho.com/analytics/

images, audio, video, etc.), 42.3% - for process automation (evaluation, verification, feedback, etc.), 32.3% - for data analytics (statistics, visualization, forecasting, etc.), 24.4% - for adaptive learning (individualization, personalization, recommendations, etc.), 18.4% - use or want use voice and visual technologies (recognition of speech, faces, gestures, etc.).

Regarding the self-assessment of knowledge and skills in the field of using AI, the following results were obtained data: a very high level was not indicated by any respondent, 4.4% believe that they have reached a high level, 41.4% - an average level, 33.5% of teachers have low level and 20.7% - very low. This state of practice is convincing, indicating the need to inform university teachers about tools AI that can be used to intensify professional activities and so on, the need for special training of teachers in AI tools for solving routine tasks.

Teachers see the greatest advantage of using AI in expansion opportunities and availability (73.9%), in increasing efficiency and productivity of professional activity (50.7%), and in stimulating creativity and innovations only 38.4%, improving the quality of education - 25.6%. Among the largest, teachers see the risks of using AI in their own professional activities decrease in critical thinking (75.1%), violation of ethics and human rights; gathering personal data (41.8%); 29.9% of respondents see risks in loss of

Table 15

AI tools for solving routine tasks: Plagiarism detection. Compares students' text with a large database of scientific articles, books, and other sources to identify similarities. Distinguishing between texts written by humans and AI

Tool	URL
Turnitin	https://www.turnitin.com/
Quetext	https://www.quetext.com/
Scribbr	https://www.scribbr.com/
Bytescare	https://bytescare.com/
Duplichecker	https://www.duplichecker.com/
Plagiarism Checker Free	https://plagiarismdetector.net/
Small SEO Tools	https://smallseotools.com/

control and autonomy, 8.5% - in increasing inequality and discrimination; 1% do not see problems in general.

In general, 7.8% are very positive about the use of AI in education teachers of Ukrainian universities, positive – 43.6%, neutral – 43.6%, negative – 3.9%, very negative – 1%. The obtained statistical data testify about the attitude and positive attitude towards the use of AI in education, at the same time, teachers are aware of the advantages and disadvantages of using AI, but teachers are not yet sufficiently informed and do not have a sufficient level of knowledge and skills in the field of AI.

Ukrainian university teachers receive information about AI from online courses, webinars (69.2%), professional sites and blogs (48.8%), and scientific journals and articles (44.3%).

Teachers of Ukrainian universities feel the greatest need for AI-based tools that allow the teacher to automate the performance of routine tasks (76.4%) in pedagogical strategies and approaches to training using AI (54.7%); 40.9% need to master the basics AI and its application (general information about AI and its possibilities for facilitating the performance of the professional functions of a university teacher), 33.5% - ethical and social aspects of using AI in the training process students.

Regarding the AI tools used by teachers to perform professional functions, 69.3% use AI to search for information, for creating tests - 33.3%, for creating presentations - 27.5%, for personalization of student learning (learning according to individual educational trajectories, virtual assistants, etc.) – 13.8%, for success analysis of students – 11.6%, for the organization of mutual verification by students of each other – 6.9%, for the organization of teacher activities - creating a class schedule - 5.3%, for creating online courses – 1%; and not at all used by 11.1% of respondents. At the same time, 30.4% of respondents answered to question 3 "How often do you use AI in your work?" they answered that they have never used AI in their work.

At the same time, there is no doubt that most teachers use AI to search for information on your subject, so the answers to questions about the tools they use for this purpose (figure 1).

Respondents had the opportunity to write their own versions of the AI tools they use to search for information, and we received the following list: AL SEARCH (1 respondent), CLIPS, neuropackages (1 respondent), Forefront.AI (1 respondent), Google (1 respondent), Tome AI (1 respondent). And 32.2% of respondents noted that they do not use AI to search for information. Note that this answer correlates with the answer to question 3, which showed that 30.4% of respondents do not use AI. It should be noted that not all of the teachers' additions were correct:

- AL Search is a tool that uses AI technologies to improve search capabilities.
- CLIPS is a tool for building AI systems, but it is not AI itself. It helps developers create intelligent systems that can make decisions based on given rules.
- Forefront.AI is a platform that uses AI. It allows developers to build, customize and deploy AI models using open-source models.
- Google is a search engine that actively uses AI in many of its products and services, such as Google Search, Google Assistant, Google Photos, Google Translate, and Waymo.

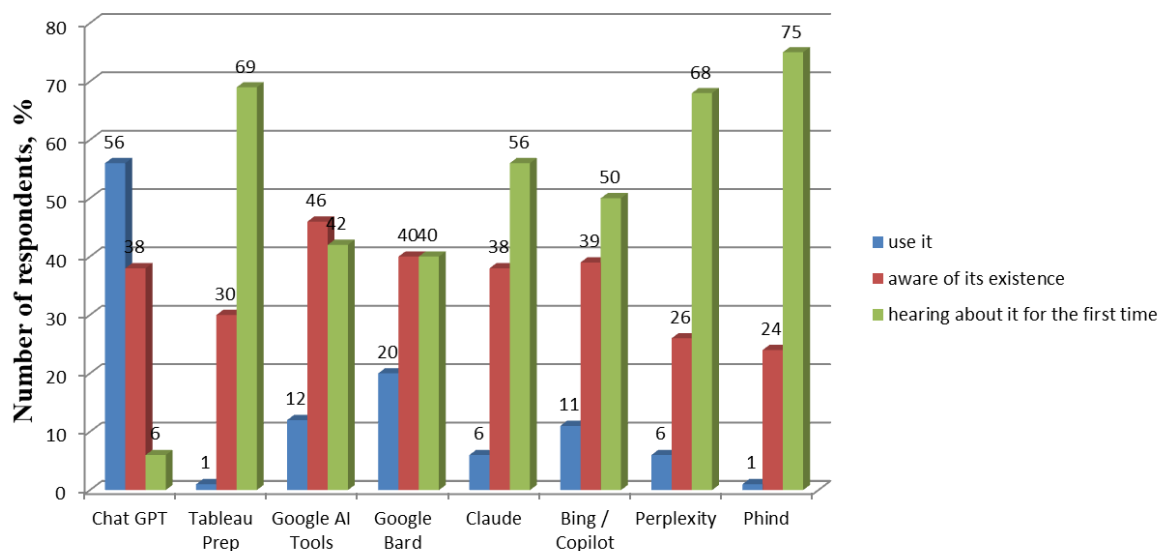


Figure 1: Which of the following AI tools do you use or are you aware of for searching for information related to your subject?

- Tome AI is an online platform that uses artificial intelligence to create presentations. Tome is a combination of two mechanisms: ChatGPT and DALL-E 2. Using the first, the program generates texts, and using the second, it draws images.

32.2% of respondents indicated that they do not use AI to search for information. This answer correlates with the answer to question 3, which showed that 30.4% of respondents do not use AI.

Saving time as an advantage of AI for information search was noted by 80.3% of respondents, expanding knowledge – 42.5%, improving the quality of information – 21.2%, increasing interest in the subject – 20.7%. Among the shortcomings and difficulties experienced by Ukrainian teachers when using AI tools, the largest number of respondents (36.6%) indicated high cost or limited access; limited or no customization (33.3%); low relevance or actuality (31.7%), complexity or inconvenience of the interface (14.5%). False, unreliable information (2.0%), and English-language interface (0.5%) were marked among their own answers.

In the questionnaire, only three tools for creating presentations were identified, which, in our opinion, are the most common, and we received the following distribution of answers (figure 2).

Unfortunately, most of the respondents learned about the existence of such tools for the first time. At the same time, among the teachers' own answers, we received the following - to create presentations, they use ChatGPT, which helps with presentations in LaTeX, Visme, Picsart, Clideo, Canva, Invideo (1 respondent), Microsoft PowerPoint (3 respondents). Microsoft Office PowerPoint is an application for creating and playing presentations. Currently, AI tools for PowerPoint are software applications that use artificial intelligence to help users create presentations. They analyze the content of the presentation, identify patterns and trends, and make suggestions for improving the visual design and layout of the slides. Some of the most popular AI tools for PowerPoint include Beautiful.ai, Microsoft 365 Copilot and Plus AI (<https://www.morningdough.com/uk/ai-tools/best-ai-tools-for-powerpoint/>).

As you can see, teachers are not aware of which services for creating presentations contain AI tools or what AI's capabilities are when creating presentations. This question needs further research.

When asked about the benefits of using AI tools when creating presentations, 73.2% of respondents noted time savings, 40.8% improved presentation design, 30.2% increased productivity, and 11.7% increased audience engagement. 1.3% did not notice any advantages, and 3.6% did not use AI tools to create presentations.

It should be noted that most services for creating presentations that use AI have a limited free plan; therefore, it is quite logical that 36.3% of teachers identified high cost or limited access as disadvantages,

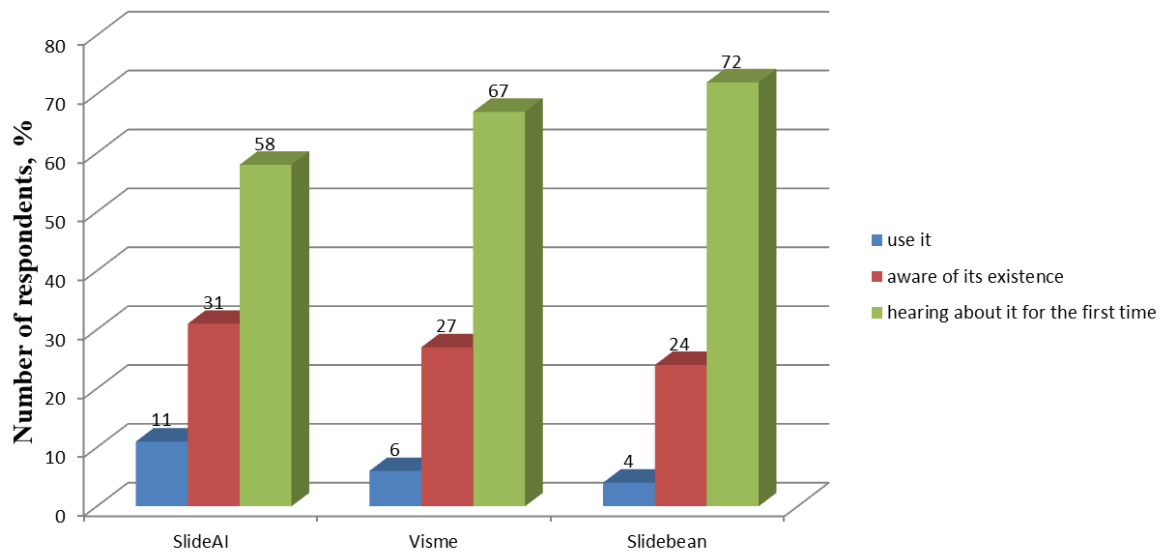


Figure 2: Which of the following AI tools do you use or are you aware of for creating lecture presentations?

and 29.8% - limited or lack of customization. 28.1% of teachers noted low accuracy or relevance, 16.4% - complexity or inconvenience of the interface. 4.7% of respondents do not see advantages in these tools for creating presentations, and 11.6% do not use these services.

In figure 3 shows the distribution of teachers' answers to questions about their use of AI tools to create a class schedule.

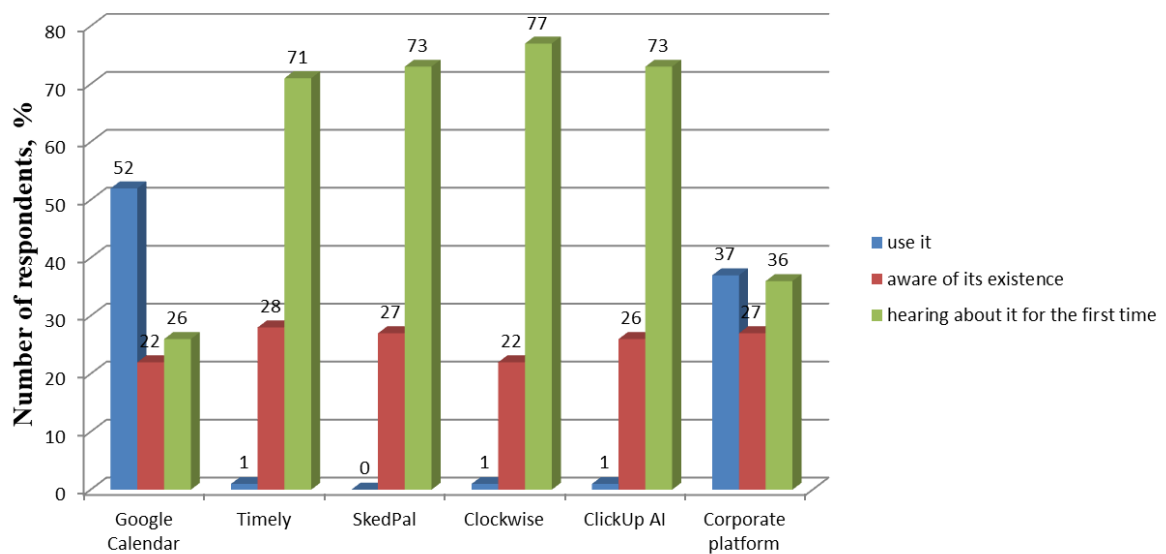


Figure 3: Which of the following AI tools do you use or are you aware of for creating class schedules?

As you can see, the most common are Google Calendar and corporate platforms. Note that Google Calendar is not an AI tool itself, but it uses certain AI-based features to improve the user experience. For example, Google Calendar can auto-populate events, suggest meeting times based on your schedule, or remind you of events by analyzing your activities and data. Among their own responses, they mentioned Trello, which is also not an AI tool. It remains primarily a project and task management platform that can be extended with additional AI-based tools. At the same time, more than 20% of teachers do not use services to create a class schedule.

Among the advantages of using services to create a class schedule, teachers noted time saving (62.2%), automatic notification of events (33.5%), synchronization with other programs (25.6%), download optimization (25.0%); among their own answers, infomedia (0.6%) was indicated. 8.5% of teachers do not see advantages in using services to create a class schedule and 7.2% do not use services to create a class schedule.

The distribution of respondents according to answers regarding the use of AI tools for generating reports yielded the following results (figure 4).

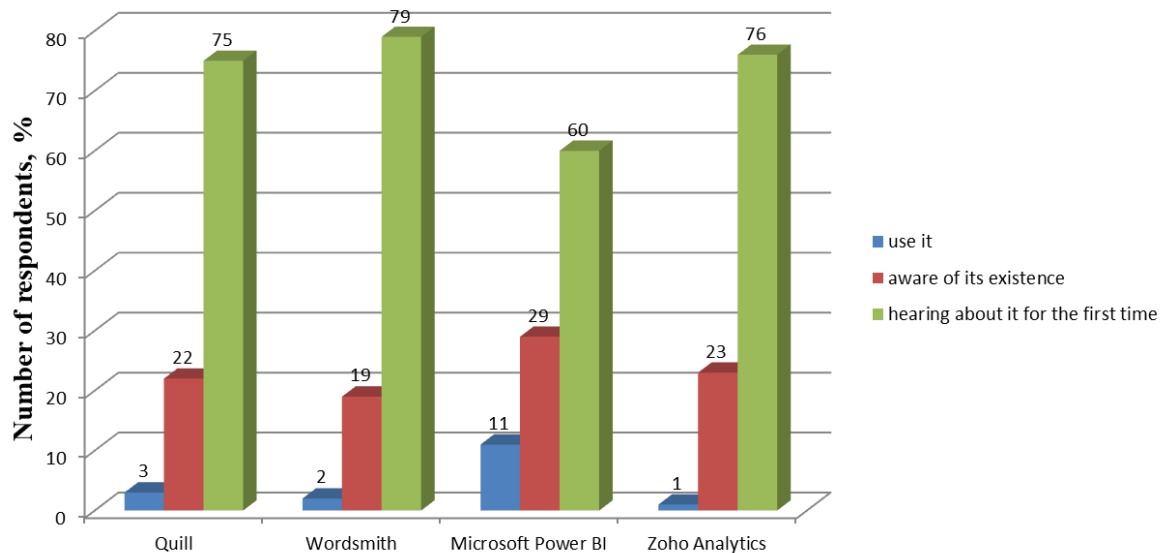


Figure 4: Which of the following AI tools do you use for generating reports?

Note that 26.8% of teachers do not use these tools at all because they may not know about them.

Among the advantages of using report generation services, 64.5% of respondents noted time savings, 14.5% increased visibility and attractiveness, 13.2% improved style and clarity, and 11.2% increased informativeness and credibility; 14% do not see any benefits at all, and 11.5% indicated that they do not use these tools.

As evidenced by the answers to question 4 regarding the automation of assessment processes, teachers are interested in using AI tools. However, most of the teachers of Ukrainian universities are hearing about AI tools for the organization of student self-assessment for the first time (figure 5).

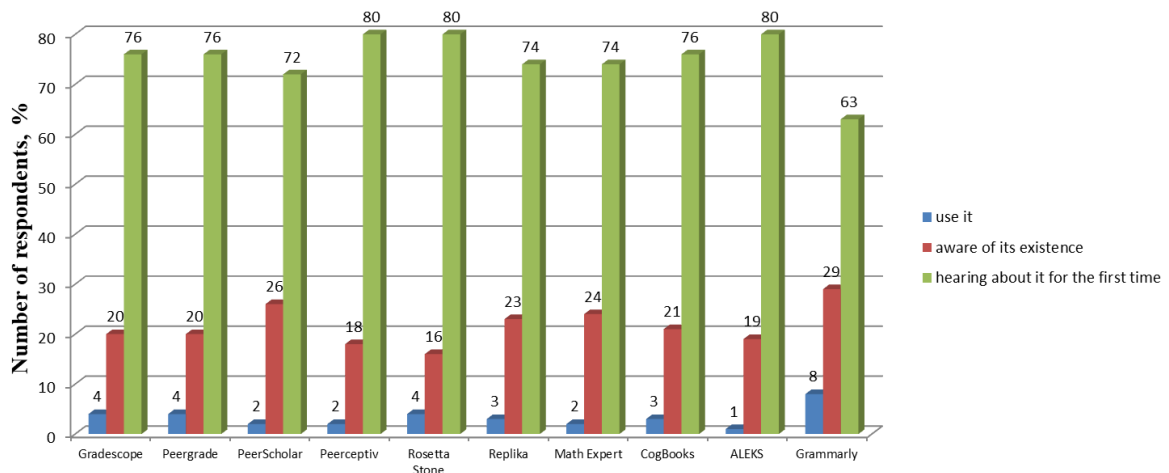


Figure 5: Which of the following AI tools do you use for organising peer review among students?

Among the advantages of using tools for organizing student peer review, 53.0% of teachers consider time-saving; 26.8% - improvement of feedback quality; 23.5% - stimulation of cooperation; 14.1% - development of critical thinking; 15.0% - do not see advantages; 8.6% of respondents indicated that they do not use AI tools to organize peer review by students.

32.9% of respondents emphasized technical problems or failures, 30.1% - low student motivation, 17.8% - the complexity or inconvenience of the interface, 15.1% - the inconsistency or unfairness of evaluations among the disadvantages of using these tools; 0.7% of respondents mentioned paid content. 17.2% of respondents see no disadvantages in using these AI tools, possibly because they do not use them. And 7.6% of teachers directly stated that they do not use these services.

As the next block of questions shows, a certain part of Ukrainian teachers use tools for creating tests, but a fairly high percentage of those who are not aware of the existence of these services is also quite high (figure 6).

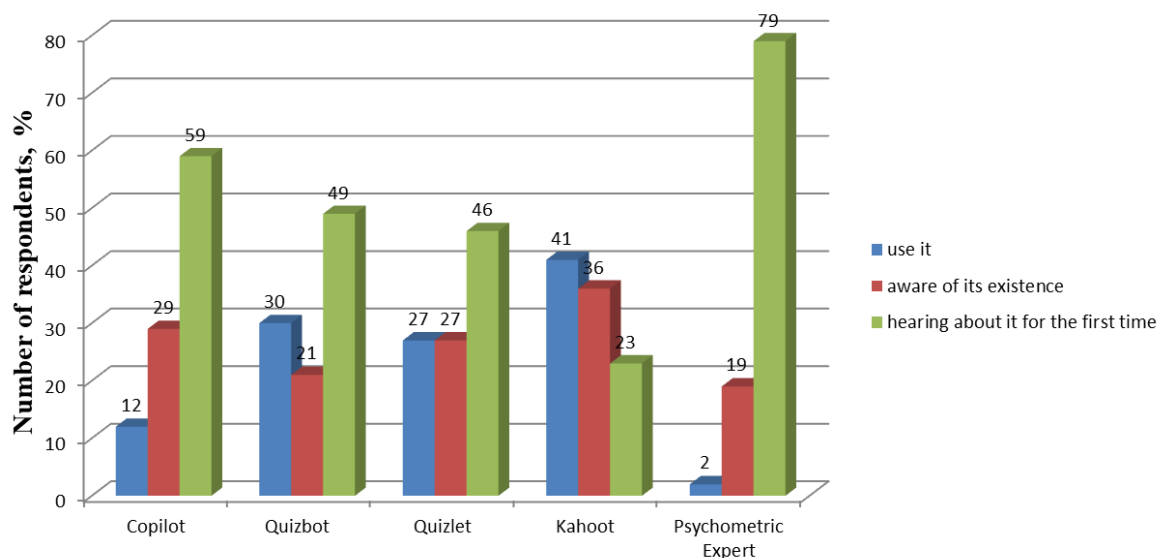


Figure 6: Which AI tools are you aware of or have heard about that can assist in creating or evaluating test questions?

The list of services is supplemented by teachers' own answers: MagicForm App (Google Chrome extension) (1 respondent), Quizizz (1 respondent), Moodle, Coursera (1 respondent), and Google Forms (1 respondent). In general, 68.1% of teachers have a positive attitude toward the use of AI tools for creating tests, 27.7% are neutral, and only 1.6% are negative. The advantages of their use are saving time and resources (81.3%), increasing quality and variability (30.2%), increasing interest and motivation (22.0%), and self-examination and diagnosis of knowledge (0.5%) are mentioned among their own answers. 5.5% of respondents do not see advantages,

30.6% of teachers do not see any disadvantages in the use of tools for creating tests, 23.3% noted a decrease in reliability and fairness, 22.8% - a loss of control and trust, 21.1% - a decrease in quality and variability, 17.2% - decrease in interest and motivation. 30.6% do not see any disadvantages of services for creating test tasks. Among their own answers, such a disadvantage as the need to pay money for an improved version (0.6%) and mental degradation of students (0.6%) was indicated.

The final part of the test contained questions about the usefulness of the teacher's work in filling out the questionnaire (figure 7).

Teachers were asked to answer the question, "If filling out the questionnaire was useful for you, then write why exactly?". We note that we received 113 answers to this question, which means that more than half of the respondents felt the benefit of filling out the questionnaire. Here are a few answers: "Learned more about educational products that basically contain AI", "There was a lot of interesting material that I got acquainted with while completing the questionnaire", "Encourages self-development",

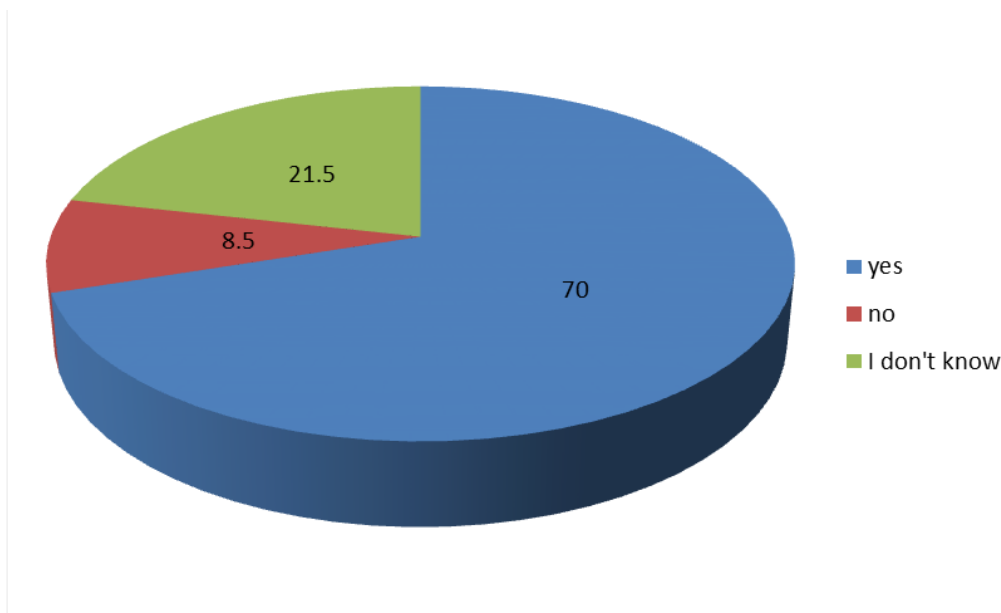


Figure 7: Was working with the questionnaire useful to you?

“While filling out the questionnaire, I saw a large number of AI tools”, “Learned about new AI tools that I might use in the future”, “I learned about new forms of using AI besides ChatGPT”, “Learned about tools that I did not use”, “Learned about new AI platforms that I had not heard of before”, “I looked at what artificial intelligence tools are and what they are intended for”, “A peculiar assessment of the level of knowledge in the field of AI”, “I learned that I have many gaps regarding modern tools for building an educational process with students”, “I identified my questions for improving work”, “I want to know more about the possibilities of AI”, “It is interesting to understand the possibilities of AI in education”, “I learned about the possibilities of AI and formed a request for advanced training on this topic”, “An innovative topic that is important and interesting for me”, “It made me think that AI should be used to improve the learning process”, “The desire to get more information on this issue”, “Maybe AI is our future. And its correct use will help organize work with students, etc. It should be noted that there were also critical posts: “Imagination about another direction of primitivization of educational activity”.

6. Conclusions

The survey results indicate that while Ukrainian university teachers are aware of AI tools’ potential to enhance their professional efficiency, a significant number do not yet leverage AI for routine tasks.

At the same time, Ukrainian teachers are positive about the use of artificial intelligence (7.8% –very positive, 43.6% –positive). Some of them already have a certain level of knowledge and skills in working with artificial intelligence tools and have experience (high level – 4.4%, average – 41.4%).

In general, the results of our survey correlate with the results of similar studies conducted in other countries. In particular, 52.1% of university professors in the Republic of Ghana have a positive attitude towards AI, and 84% of professors stated that they accept the use of AI, particularly ChatGPT, in the education of students. 40% of German university teachers have tried AI tools such as ChatGPT, but only 22% of them use them regularly [17]. German university teachers are aware of other chatbots (e.g. Bing Chat, ChatPDF), but usage is still low. AI tools for translation and language correction (e.g. DeepL, Grammarly) are the most popular among German teachers (73%) [18].

A large proportion of teachers (69.3%) use AI for subject-related information searches, while a third use it to create tests (33.3%), and slightly fewer employ AI to generate presentations (27.5%). However, fewer respondents use AI to personalize learning (13.8%) or to analyze student performance (11.6%). The situation is similar in German universities. According to Henke, J., tools for the automated creation

of presentation slides are the least known by German teachers, and no regular use has been found. Other tools for applications such as image creation (e.g. Dall-E2, Midjourney), automatic transcription (e.g. Tucan, Otter.ai), video creation (e.g. Synthesia, Veed.io), design creation (e.g. Microsoft Designer) show low use and moderate awareness [18].

The key advantage Ukrainian teachers see in AI tools is time savings. AI-supported information searches not only save time (80.3%) but also help expand knowledge (42.5%). For creating presentations, AI tools save time (73.2%), improve design (40.8%), and boost productivity (30.2%). When it comes to class scheduling, 62.2% of respondents noted time savings, with 33.5% appreciating automatic event notifications and 25.6% benefiting from program synchronization. AI-generated reports allow 64.5% of educators to save time, while 14.5% noted improved visual appeal and 13.2% saw enhanced clarity and style. Furthermore, 53% of respondents reported that AI tools for peer review saved time, with additional benefits such as improved feedback quality (26.8%) and enhanced student cooperation (23.5%). When it comes to test creation, 81.3% of respondents reported time savings, 30.2% noted better quality and variety, and 22.0% observed increased student motivation. Teachers of German point to a slightly different set of AI applications that are important and attractive for their professional activities: 40.6% - automated translations, 25.7% - text proofreading and editing, 18.8% - social media content optimisation, 13.9% - automated text generation, 9.9% - personalised content creation, 9.9% - graphics and design creation [18].

On the downside, many teachers cited the high cost and limited access to AI tools, particularly for information searches (36.6%) and presentation creation (36.3%). Other disadvantages include the low accuracy and relevance of AI search tools (31.7%) and presentation tools (28.1%). Tools for peer review face issues such as technical failures (32.9%), low student motivation (30.1%), and a complicated user interface (17.8%). When it comes to test creation, 30.6% of respondents said AI tools generally have no significant shortcomings, but 23.3% pointed to a decrease in reliability and fairness, and 22.8% highlighted a loss of control and trust. These results correlate with the findings of Henke, J.: technical problems and difficulties with the optimal use of tools were reported by 24% and 36% respectively [18].

At the same time, 20% of respondents mentioned insufficient adaptability of the tools and insufficient training opportunities, although these problems were reported less frequently. It is particularly interesting to note that the majority of respondents did not mention any of these problems, which highlights the different perceptions of difficulties in using AI tools [18].

At the same time, Ukrainian teachers identify violations of ethics and human rights (40.8%) as a risk of using AI. This data correlates with the results of the Justus Henke survey: 52% of respondents named data protection as the main problem in using AI tools, while 42% mentioned ethical issues.

The online questionnaire helped Ukrainian teachers understand which AI tools can be used in their professional activities and encouraged them to expand and deepen their knowledge of AI. In addition to understanding the benefits and caveats of using AI, teachers need skills in using tools that help them automate routine tasks.

Further research is needed to establish criteria for selecting AI tools and developing a comprehensive suite of AI solutions to support teachers in their routine work.

References

- [1] D. Ifenthaler, R. Majumdar, P. Gorissen, M. Judge, S. Mishra, J. Raffaghelli, A. Shimada, Artificial intelligence in education: Implications for policymakers, researchers, and practitioners, *Technology, Knowledge and Learning* (2024) 1–18. doi:10.1007/s10758-024-09747-0.
- [2] S. Skvortsova, T. Britskan, The model of training future primary school teachers for the use of ICT in teaching subjects (integrated courses) to primary schoolchildren, in: *Artificial intelligence in science and education: collection of materials of the international scientific conference* (Kyiv, 1-2 March 2024), UkrINTEI, 2024, p. 257–261.
- [3] S. Skvortsova, T. Britskan, T. Symonenko, K. Niedialkova, Degree of readiness of teachers in Ukraine to use ICT in their professional activities: 2019–2022, in: E. Smyrnova-Trybulska (Ed.),

- E-learning & Artificial Intelligence, volume 15 of *E-learning*, STUDIO NOA, Katowice–Cieszyn, 2023, pp. 223–237. doi:10.34916/e1.2023.15.18.
- [4] S. Skvortsova, T. Symonenko, T. Britskan, Methodology for the use of digital services in the organisation of online and offline education of primary school children, in: E. Smyrnova-Trybulska (Ed.), *E-learning in the Transformation of Education in Digital Society*, volume 14 of *E-learning*, STUDIO NOA, Katowice–Cieszyn, 2022, pp. 229–241. doi:10.34916/e1.2022.14.17.
- [5] H. Sheikh, C. Prins, E. Schrijvers, Artificial Intelligence: Definition and Background, in: *Mission AI: The New System Technology*, Springer International Publishing, Cham, 2023, pp. 15–41. doi:10.1007/978-3-031-21448-6_2.
- [6] M. de Laat, S. Joksimovic, D. Ifenthaler, Artificial intelligence, real-time feedback and workplace learning analytics to support in situ complex problem-solving: A commentary, *The International Journal of Information and Learning Technology* 37 (2020) 267–277. doi:10.1108/IJILT-03-2020-0026.
- [7] S. Terepyschchi, Media literacy in the era of artificial intelligence: Integration of artificial intelligence tools and methods into modern pedagogical approaches, *Current issues in the humanities* 4 (2023) 195–202.
- [8] O. Zawacki-Richter, V. I. Marín, M. Bond, F. Gouverneur, Systematic review of research on artificial intelligence applications in higher education—where are the educators?, *International Journal of Educational Technology in Higher Education* 16 (2019) 1–27. doi:10.1186/s41239-019-0171-0.
- [9] D. Ifenthaler, C. Schumacher, Reciprocal issues of artificial and human intelligence in education, *Journal of Research on Technology in Education* 55 (2023) 1–6. doi:10.1080/15391523.2022.2154511.
- [10] Y. Muhie, A. Wolde, Integration of Artificial Intelligence Technologies in Teaching and Learning in Higher Education, *Science and Technology* 10 (2023) 1–7. doi:10.5923/j.scit.202001001.01.
- [11] N. Arthars, M. Dollinger, L. Vigentini, D. Y.-T. Liu, E. Kondo, D. M. King, Empowering Teachers to Personalize Learning Support, in: D. Ifenthaler, D.-K. Mah, J. Y.-K. Yau (Eds.), *Utilizing Learning Analytics to Support Study Success*, Springer International Publishing, Cham, 2019, pp. 223–248. doi:10.1007/978-3-319-64792-0_13.
- [12] S. Wang, F. Wang, Z. Zhu, J. Wang, T. Tran, Z. Du, Artificial intelligence in education: A systematic literature review, *Expert Systems with Applications* 252 (2024) 124167. doi:10.1016/j.eswa.2024.124167.
- [13] L. Zheng, J. Niu, L. Zhong, J. F. Gyasi, The effectiveness of artificial intelligence on learning achievement and learning perception: A meta-analysis, *Interactive Learning Environments* 31 (2023) 5650–5664. doi:10.1080/10494820.2021.2015693.
- [14] S. Buckingham Shum, Embedding Learning Analytics in a University: Boardroom, Staff Room, Server Room, Classroom, in: O. Viberg, Å. Grönlund (Eds.), *Practicable Learning Analytics*, Springer International Publishing, Cham, 2023, pp. 17–33. doi:10.1007/978-3-031-27646-0_2.
- [15] K. Zhang, A. B. Aslan, AI technologies for education: Recent research & future directions, *Computers and Education: Artificial Intelligence* 2 (2021) 100025. doi:10.1016/j.caeai.2021.100025.
- [16] C. S. Chai, D. Yu, R. B. King, Y. Zhou, Development and Validation of the Artificial Intelligence Learning Intention Scale (AILIS) for University Students, *Sage Open* 14 (2024) 21582440241242188. doi:10.1177/21582440241242188.
- [17] K. Ofosu-Ampong, Beyond the hype: exploring faculty perceptions and acceptability of AI in teaching practices, *Discover Education* 3 (2024) 38. doi:10.1007/s44217-024-00128-4.
- [18] J. Henke, Navigating the AI era: university communication strategies and perspectives on generative AI tools, *Journal of Science Communication* 23 (2024) A05. doi:10.22323/2.23030205.