Pro Edu. International Journal of Educational Sciences
No. 11, Year 6/2024
https://www.ifiasa.com/peijes e- ISSN 2668-5825, p-ISSN 2668-5817

https://doi.org/10.26520/peijes.2024.11.6.47-60

POSITION OF PRESERVICE PRESCHOOL AND PRIMARY SCHOOL TEACHERS ON THE USE OF AI IN THE STUDY PROCESS: STRENGTHS, OPPORTUNITIES, WEAKNESSES AND THREATS

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ABSTRACT

The position and readiness of pre-service preschool and primary teachers to use artificial intelligence (AI) in the study process is becoming an increasingly widely studied area. Therefore, it is important to analyse how students perceive AI opportunities, strengths, weaknesses, and threats. Namely, the conducted qualitative study analysed the position of pre-service preschool and primary teachers on the use of artificial intelligence (AI) in the study process, emphasising strengths, opportunities, weaknesses, and threats. A hundred and twelve first cycle university students participated in the study, and the study itself was conducted during the spring semester of 2024. An instrument of four open-ended questions was applied in the study, and the collected verbal data was analysed using quantitative content analysis. The research revealed that AI is valued as an important tool for improving the efficiency of studies. Respondents highlighted AI's ability to quickly systematise and present information, save time, automate tasks, and promote creativity and the application of innovative teaching/learning methods. Also, the possibilities emerged to use AI to personalise teaching content and create interactive learning environments. At the same time, the problems of using AI were highlighted, including the lack of reliability of information, the limitation of technological capabilities, and the potential decline in creativity, independence, and critical thinking skills. Ethical issues, such as plagiarism and lack of academic integrity, as well as data privacy issues, were of the respondents' concern. The research results show that it is necessary to integrate the AI teaching/learning elements into study programmes, in order to develop students' competencies to effectively use AI tools. The need for clear ethical guidelines to ensure the responsible use of AI is also emphasised. The study showed that AI can be an effective tool for improving educational processes, however, its use must be carefully balanced with the potential threat management.

Keywords: *artificial intelligence (AI); qualitative research; university students; pre-service teac**hers**;*

INTRODUCTION

It is obvious that the use and integration of various tools of artificial intelligence (AI) can change the practice of university studies. This forces us to reconsider what teaching/learning could look like in the age of AI. AI can be a meaningful tool for improving the study experience, providing students with personalised help 24 hours a day, 7 days a week, and ensuring feedback. This aspect is essential in the entire discourse on the use of AI.

One of the tasks of teachers' professional development is to form a positive attitude towards the future use of artificial intelligence in the education process. Currently, many teachers cautiously look at neural networks; the reason for this is uncertainty and misunderstanding of how their use will affect the educational process. Therefore, it is important that pre-service teachers acquire certain competencies in this area already during their university studies. The digital world is changing and developing at a tremendous speed, so teachers must constantly update and improve their knowledge. Future teachers are no exception. Of course, studies are gradually being transformed by integrating artificial intelligence.

Researchers emphasise that there is a clear need for AI-based transformation, as well as certain challenges arise due to the successful integration of artificial intelligence into teaching and learning (Bećirović & Mattoš, 2024; Ou, 2024). Inevitably, AI fundamentally changes the usual study practice. The rapid implementation of ChatGPT in university studies, on the one hand, is welcomed by learning opportunities, but on the other hand, there are concerns about problems, such as student cheating in the completion of assignments (Fütterer et al., 2023). The use of artificial intelligence in education varies greatly depending on the level and type of institution, as well as other important parameters. AI helps automate some of the routine tasks of a teacher, providing more space and time for more important creative tasks of scientific work. For university students, new technologies are becoming a means of immediate personalised feedback and adaptive learning/studying.

More than a decade ago, researchers noted that the revolution in information technologies (IT) and artificial intelligence (AI) has triggered (and continues to trigger) a wave of innovation that promises to revitalise schools (Aberšek, 2005; Aberšek & Kordigel Aberšek, 2010). Thus, one can agree with researchers who claim that technologies based on AI play and will play an increasingly important role in teaching and providing education to students at various levels of the education system (Bregant & Aberšek, 2011). It must be said that the consequences of AI are being studied quite intensively, and more and more evidence-based studies are emerging about the advantages, disadvantages, threats, or opportunities that AI provides to users. One can agree with the position of researchers that the attitude towards artificial intelligence is still in its infancy (Pisica et al., 2023).

It is undoubtedly important to analyse the position of pre-service teachers on the issue of AI in order to better understand their needs, preparation, attitudes, etc. Accordingly, university study programmes need to be improved so that pre-service teachers acquire adequate AI literacy, i.e. an appropriate set of skills that allow them to firmly understand AI (teaching/learning about AI; teaching/learning how AI works; teaching/learning using AI).

It is very important how pre-service teachers accept artificial intelligence (Zhang et al., 2023); it is especially relevant in preparing preschool and primary school teachers (Kaya et al., 2024). It is observed that AI plays an increasingly important role in increasing the effectiveness and accessibility of studies while raising ethical issues related to academic integrity and balanced use (Karataş & Yüce, 2024). Despite quite extensive research in the field of AI application in education, there is still a lack of research examining the position of pre-service preschool and primary school teachers (attitude, perception about artificial intelligence, readiness to apply, experiences, etc.).

Thus, the aim of the study was to find out the position of pre-service preschool and primary school teachers on the strengths, opportunities, weaknesses, and threats of using artificial intelligence in the study process.

1. RESEARCH METHODOLOGY

General Characteristics

The conducted research is qualitative, informative descriptive, and interpretive in nature. The research does not seek to prove any causal relationships between variables but simply to assess the situation in terms of the features of interest. It is assumed that such research can help to understand certain problems, identify important aspects and trends, and determine further research directions and/or actions. The study uses interpretive content analysis, which is a method of coding texts into categories and calculating the frequencies of each category (Ahuvia, 2001). The researchers took into account the fact that content analysis is one of the most important research methods in social sciences. When analysing the texts in the context of their use, content analysis differs from other research methods, and is a highly productive research technique (Krippendorf, 2004). The study was conducted in March-April 2024 (during the spring semester).

Sample

The research sample consisted of university students, pre-service preschool and primary school teachers in their first to fourth year of study. All respondents were women. In this regard, possible differences between variables by gender are not analysed. A total of 112 Vilnius University students participated in the study, but the sample consisted of two structural divisions of the institution – the main division and the stem division, located in the northern Lithuanian region. This increases the representativeness of the sample.

Table no. 1. *Distribution of Respondents by Year of Study*

Study year	**1-year study**	**2- year study**	**3- year study**	**4- year study**
N (%)	17 (15.2)	46 (41.1)	18 (16.1)	31 (27.7)

This study uses a non-random convenience sample. Such a sample selection strategy was used because it is rather difficult to reach the entire population (part of the students study remotely); in addition, the population is relatively small, the study focuses only on university students of a defined profile, the population itself is quite homogeneous. The researchers evaluated the methodological attitude that, if researchers carefully conduct the research using a convenience sampling technique and controlling biases and uncertainty, it produces useful data (Golzar et al., 2022).

Before conducting the survey, the respondents' consent to participate in the study was obtained, the participation was completely voluntary, and the necessary anonymity was maintained. The security of the data and personal information of research participants was fully ensured.

Research Instrument

Open-ended questions were used in the study. In the written survey, everyone was asked the same questions. Researchers take the position that this is useful because it aims to gain a deeper understanding of respondents' opinions or to assess specific aspects that may be difficult to cover with standardised questions.

- What are the strengths/advantages of using AI in the study process?
- What are the possibilities of using AI in the study process?
- What are the weaknesses/disadvantages of using AI in the study process?
- What are the threats of using AI in the study process?

In the four questions presented in the study, students are asked to name the strengths, weaknesses, opportunities and threats of using AI in the study process. Having the aim to obtain the most honest and reliable answers, the researchers informed the survey respondents that only generalised data will be published in the research report, i.e., the personal data of the respondents will not be disclosed. The ethics of social research and the researcher are based on the principle of anonymity.

Data Analysis

An analysis of the collected verbal data was performed using basic measures of descriptive statistics. The calculated absolute and relevant frequencies are expressed as percentages. According to Taherdoost (2020), descriptive data analysis is recognized as the first type of data analysis.

The obtained verbal data array was analysed in four stages, based on conventional content analysis methods:

- Multiple reading of answers
- Search for semantically close answers and "key" words;
- Construction of subcategories and then categories
- Interpretation of extracted categories and subcategories

The formation of categories is very significant in extracting and generalising scientific information. When conducting content analysis, extracting categories and subcategories, it was sought to "go deep" and understand the thoughts, attitudes, and positions of the respondents. Despite the fact that the research is qualitative (interpretive), it is logical to later calculate the frequencies of the extracted categories. If the repetition frequency of the category is relatively high, then it can be concluded that the question reflecting the category is relevant and was emphasised by a relatively large number of respondents.

On the contrary, if the repetition frequency of the category is relatively low, then the specific question (aspect) of the respondents is not emphasised and occurs only in isolated cases. Content analysis is a positivist, strict method for extracting "content" from texts, images, or any type of message that has meaning (Gheyle & Jacobs, 2017). In Berger's view (2016), content analysis is "one of the most commonly used research methodologies among scholars dealing with media and communication" (p. 390).

2. RESEARCH RESULTS

After analysing the data, the corresponding results were obtained. After analysing the strengths of using AI in the study process, two categories were distinguished: Information management and efficiency, and Creativity and improvements in the educational process (Table 2).

Table no. 2. *Strengths/Advantages of Using AI in the Study Process*

Category	***N* (%)**	**Subcategory**	***N* (%)**	**Subcategory components**	***N* (%)**
Information management and efficiency	52 (52.0)	Information search and systematisation	28 (28.0)	Helps to find the necessary information	8 (8.0)
				Information verification, systematisation	6 (6.0)
				Information is quickly provided in one place	5 (5.0)
				Directs to specific articles or websites	5 (5.0)
				Quickly systemises large sources of information	4 (4.0)
		Time saving and efficiency	24 (24.0)	Work is done quickly	7 (7.0)
				Working time is reduced	6 (6.0)
				Processing a large amount of information in a short time	6 (6.0)
				Time planning	5 (5.0)
Creativity and improvements in the education process	48 (48.0)	Improvements in the educational process	20 (20.0)	Remote lesson and study opportunities	6 (6.0)
				Creation interactive tasks	5 (5.0)
				Innovative learning methods	5 (5.0)
				Developing critical thinking and adaptability	4 (4.0)
		Creativity and idea generation	15 (15.0)	New ideas and visions	5 (5.0)
				Idea search	4 (4.0)
				Helps “to get things started” for work	3 (3.0)
				Supplements work by images	3 (3.0)
		Technological benefit	13 (13.0)	Accessibility and convenience	5 (5.0)
				Modernity, contemporariness	4 (4.0)
				Wide application possibilities	4 (4.0)

Note: Totally 100 semantic units were extracted

As we can see in Table 2, Information management and efficiency (52%) is the dominant category. The emphasis is on the ability of AI to quickly find, check, systemise information and present it in one place. The ability to process large amounts of information in a short time is also emphasised. This shows that it is important for students to optimise the study process, reduce time costs, and perform tasks more efficiently. An important aspect is

time saving. AI helps to shorten working time, quickly complete tasks, and effectively plan time. This shows that students see AI as the main assistant for productivity.

Students appreciate the benefits of AI in distance learning, creating interactive tasks, using innovative learning methods, and developing critical thinking. AI helps to generate new ideas, find inspiration for work, and visually supplement tasks. This shows that AI can be important not only as a source of information but also as a tool for promoting creativity. The least expressed are modernity, convenience, and the possibility of AI to apply in the study process.

The possibilities of using AI in the study process were also analysed, and four meaningful categories were identified: Facilitating task performance and information accessibility; Planning, organisation, and assessment; Individualisation of learning alternatives and content; Promoting creativity and critical thinking (Table 3).

Table no. 3. *Possibilities/Ways of Using AI in the Study Process*

Category	***N* (%)**	**Subcategory**	***N* (%)**	**Subcategory components**	***N* (%)**
Facilitating task performance and information accessibility	21 (37.3)	Facilitating task performance	12 (21.4)	Note-taking, analysis and preparation for exams	3 (5.3)
				Fast and high-quality performance of scientific and written works	3 (5.3)
				Systematisation and processing of information	2 (3.6)
				Assistance with creative practical tasks	2 (3.6)
				Other options for performing tasks	2 (3.6)
		Information accessibility	9 (15.9)	Obtain information from various sources	3 (5.3)
				Quick finding of answers	3 (5.3)
				Deeper and more accurate information by topic	3 (5.3)
Planning, organisation, and assessment	12 (21.5)	Planning and organisation	8 (14.3)	Lesson planning	3 (5.3)
				Automated scheduling	2 (3.6)
				Formulating goals and objectives	2 (3.6)
				Organising distance learning	1 (1.8)
		Assessment and progress monitoring	4 (7.2)	Automated assessment system	2 (3.6)
				Assistance in assessing the quality of learning	2 (3.6)
Individualisation of learning	12	Individualisation	7	Personalised learning according to student	3 (5.3)

alternatives and content	(21.4)	of learning content	(12.5)	needs	
				Presenting learning content in more interesting ways	2 (3.6)
				More interesting methods and apps are included	2 (3.6)
		Variety of learning alternatives	5 (8.9)	Different learning methods and reflections	3 (5.3)
				Support for independent learning	2 (3.6)
Promoting creativity and critical thinking	11 (19.8)	Creativity and idea generation	8 (14.4)	New ideas for projects and activities	4
				Creating interactive activities	2 (3.6)
				Unleashing creative powers	2 (3.6)
		Developing critical thinking	3 (5.4)	Developing understanding of concepts and terms	2 (3.6)
				Promoting critical thinking	1 (1.8)

Note: Totally 56 semantic units were extracted

When analysing the possibilities of using AI in the study process, one can see that the category emphasising AI benefits in performing various tasks dominates (21.4%). This includes note-taking, analysis, exam preparation, writing scientific papers, and quick finding of answers. The main focus is on the practical application of AI, which helps optimise the study process. AI also allows you to adapt learning content to individual needs and present it in more interesting ways. The least important (weakly expressed aspect) is the promotion of creativity and critical thinking, however, this opportunity remains significant in creating an innovative and interesting learning environment. In respondents' opinion, AI has a high potential to adapt the study process to student needs and improve the organisational quality of studies.

After analysing the weaknesses (shortcomings) of using AI in the study process, three meaningful categories were distinguished: Limitations in the reliability and use of information, Decrease in creativity, independence, and effort, and Ethical and social problems (Table 4).

Table no. 4. *Weaknesses/Shortcomings of Using AI in the Study Process*

Category	***N* (%)**	**Subcategory**	***N* (%)**	**Subcategory components**	***N* (%)**
		Weaknesses in the reliability and	29 (24.2)	Unreliable information	6 (5.0)
				AI is not a scientific source	5 (4.2)
				Inaccurate information	4 (3.4)
				Lack of criticism in selecting	4 (3.4)

Limitations in the reliability and use of information	59 (49.2)	quality of information		information	
				Grammatical and factual errors	3 (2.5)
				Not always stylistically and grammatically correct answers	3 (2.5)
				Information provided by AI is not always new	2 (1.6)
				Inaccurate information, better versions are paid for	2 (1.6)
		Technological and economic limitations	18 (15.0)	Additional access or paid versions required	4 (3.4)
				Financial barriers and unequal opportunities	4 (3.4)
				Programme crash	3 (2.5)
				Insufficient technological resources	3 (2.5)
				Remote lessons are not effective	2 (1.6)
				Rapidly changing tools cause confusion	2 (1.6)
		Limited AI functionality	12 (10.0)	Inability of AI to perform complex tasks	4 (3.4)
				Insufficient knowledge of AI usage	3 (2.5)
				AI is not suitable for creative tasks	3 (2.5)
				Difficult to distinguish, what is created by AI and what is human	2 (1.6)
Decrease in creativity, independence and effort	40 (33.7)	Decrease in creativity and independence	25 (21.1)	Decrease of creativity	6 (5.0)
				Lack of critical thinking	4 (3.4)
				Poor learning due to misuse of AI platforms	4 (3.4)
				Decrease of independent thinking functions	4 (3.4)
				Loss of uniqueness	4 (3.4)
				Lack of reflection	3 (2.5)
		Effects of technology addiction	15 (12.6)	Excessive use of AI	5 (4.2)
				Dependency on devices	4 (3.4)
				Easy task performance reduces the meaning of effort	3 (2.5)
				Lost cooperation and collaboration	3 (2.5)
Ethical and				Plagiarism	8 (7.0)

social issues	20 (17.1)	Ethical issues	20 (17.1)	Lack of integrity	5 (4.2)
				Unethical use of AI	4 (3.4)
				Lack of confidentiality	3 (2.5)

Note: Totally 119 semantic units were extracted

As seen in Table 4, the main problems are related to the reliability of information and limitations of use. This category practically accounts for almost 50%. This shows that the reliability of information provided by AI is a critical challenge for students. Weakening of creativity and independence (21.1%) is distinguished as the most important aspect of the subcategory, highlighting the lack of critical thinking, loss of uniqueness, and lack of reflection. Dependence on technologies (12.6%) also causes a concern because an excessive use of AI reduces efforts and can affect communication and collaboration. Ethical issues such as plagiarism, (7.0%) and lack of integrity are a noticeable concern but not very significant. It can be noted that the lack of confidentiality also poses some risks. This shows that the use of AI can lead to challenges in terms of behaviour and academic integrity. In general, students recognise the benefits of AI but emphasise the need to solve the problems of information and the decline in the quality of studies, so that AI becomes a reliable assistant in the study process.

The fourth aspect was analysed, namely, the possible (likely) threats of using AI in the study process. Three semantic categories were distinguished: Weakening of personal academic abilities, Social and ethical challenges, and Technological and privacy security (Table 5).

Table no. 5. *Threats of Using AI in the Study Process*

Category	***N* (%)**	**Subcategory**	***N* (%)**	**Subcategory components**	***N* (%)**
Weakening of personal and academic abilities	23 (40.4)	Loss of creativity and independence	10 (17.5)	Decreased creativity	5 (8.7)
				No longer independent thinking	3 (5.3)
				Weakening of creative thinking skills	2 (3.5)
		Decrease in motivation and competencies	8 (14.1)	Loss of motivation	3 (5.3)
				Lack of improvement in abilities and competencies	3 (5.3)
				Neglected approach to learning	2 (3.5)
		Inaccurate and misleading information	5 (8.8)	Information inaccuracy	3 (5.3)
				Failure to check facts	2 (3.5)
Social and ethical	18 (31.5)	Academic dishonesty and lack of quality	9 (15.7)	Plagiarism	5 (8.7)
				Cheating	2 (3.5)
				Ethical violations	2 (3.5)
		Loss of social	6 (10.6)	Disappearing social	4 (7.1)

challenges		skills		connection	
				Declining communication	2 (3.5)
		Ethical and professional challenges	3 (5.2)	Violations of academic ethics	2 (3.5)
				Lack of professionalism in the future	1 (1.7)
Technological and privacy security	16 (28.1)	Data protection and privacy issues	12 (21.1)	Lack of data protection	5 (8.7)
				Personal data breach	4 (7.1)
				Data sharing with third countries	3 (5.3)
		Technological limitations	4 (7.0)	Malfunction	2 (3.5)
				Dependence on Internet access	2 (3.5)

Note: Totally 57 semantic units were extracted

Table 5 shows that one of the biggest threats is associated with the weakening of personal and academic abilities (40.4%). Respondents think that creativity and independence are lost or significantly reduced (17.5%). Also, motivation is decreased, and competencies are weakening (14.1%). Decreased creativity (8.7%) and the threat of no longer independent thinking indicate that AI can directly affect students' ability to learn and create independently. Such pre-service teachers' position is completely understandable. Academic dishonesty and lack of quality (15.7%) are the main aspects, in which plagiarism (8.7%) and cheating dominate. The threat of losing social skills (10.6%) is also noticeable, including decreasing communication and disappearing social connections. There remains a possibility that AI can cause long-term problems for students' social and ethical abilities, as well as affect academic quality standards. On the other hand, although students perceive risks related to the security of their data and their dependence on technology, this threat is not strongly expressed. Information inaccuracy and lack of fact-checking, malfunctioning and dependence on the internet are considered minor threats. Of particular importance is the weakening of personal and academic skills, as this directly affects the quality of students' learning, creativity, and motivation. It can be reasonably argued that students perceive AI as a potential threat, especially if it reduces their ability to learn independently, create and adapt in social and academic context.

3. DISCUSSION

The research aim was to find out the position of pre-service preschool and primary education teachers on the strengths, opportunities, weaknesses, and threats of using artificial intelligence in the study process. The conducted study showed that most respondents emphasise fast, accurate, and reliable information search and systematisation. Also, the opportunity is emphasised to work faster and more efficiently. Of course, the importance of both innovative study methods and individualised access in the study process is also expressed. Similar results are presented by other researchers. For example, Capinding and Dumayas (2024) aimed to study the impact of artificial intelligence (AI) on students in higher education. According to the researchers, artificial intelligence affects students' academic

performance (AI), motivation, independence, and social interaction. Using AI, there is an opportunity to monitor the students' progress, and to adapt the content to their needs and level of knowledge, thus helping to ensure continuous improvement (Rajdeep Singh Solanki et al., 2024). The research conducted by Kuleto et al. (2021) showed that AI provides students with new skills and a collaborative learning environment.

The study results showed that the main potential of using AI in the study process lies in facilitating task completion and information accessibility, however, the possibilities of creativity and adaptation of learning content also remain important. AI directly facilitates the learning process and task completion, including quick information retrieval. It also includes opportunities related to lesson planning, organisation, and assessment of learning progress, as well as opportunities related to idea generation, creativity, and critical thinking development. Researchers also claim that AI can manage large amounts of data /information (Wang et al., 2018), and automate various repetitive operations (Hassanzadeh et al., 2018).

When analysing possible weaknesses (shortcomings), it can be seen that this includes problems related to information reliability, AI functions, and technological limitations. Also, the impact of AI use on creativity, critical thinking, and independence is expressed. Concerns about dependence on technology are also emphasised. Although less expressed, issues of honesty, plagiarism, and confidentiality, as well as social issues related to the use of AI, are noticeable. Researchers analyse quite a variety of AI shortcomings. In addition to such shortcomings as the high costs associated with the creation of human-imitating machines, the inability to think nonstandard (lack of creativity), such a drawback as human laziness is mentioned (Burke & Akhtar, 2023). Researchers emphasise that the problem of accuracy remains since AI models are based on correlation, which does not reflect causality. The goal of artificial intelligence tools and models is to show less intuitive, more weakened connections and patterns (Akinwalere & Ivanov, 2022). A study conducted in Brazil also showed that little attention is paid to critical topics related to the increasing implementation of artificial intelligence in distance studies, for example, technological teaching or the ethical implications of using artificial intelligence in the study process (Durso & Arruda, 2022).

When analysing the threats identified, it is seen that the most frequently mentioned threats are technological and data protection threats related to the use of AI. Equally important threats are considered to be the decline/weakening of creativity, motivation, critical thinking, and other abilities. Threats related to academic ethics, the decline of social skills and dishonesty, are also expressed. Similar results have been obtained in other studies as well (Gao et al., 2023; Tunjera & Chigona, 2023).

Bulgarian researchers claim that artificial intelligence may reduce the opportunities for direct communication, cooperation, and relationship building, which are important aspects of the educational process (Borisov & Stoyanova, 2024). Artificial intelligence may cause particular concern in the area of privacy violations, as well as possible cyberattacks, or other forms of unauthorised access to sensitive personal data (Khan et al., 2023; Sperlich et al., 2023).

The study has several limitations. First, it is a qualitative study with a small sample size. The study included only pre-service preschool and primary education teachers; therefore, conclusions cannot be applied to other study programme students. On the other hand, due to the limited sample size, the generalisable conclusions cannot be interpreted uncritically.

CONCLUSIONS AND IMPLICATIONS

The study revealed that AI is seen as an important tool in the study process, especially due to its ability to quickly systemise the information, save time and help personalise the learning process. It also contributes to the application of creativity and innovative methods. AI can improve the quality of studies, help create interactive learning scenarios, automate tasks, and provide students with more opportunities for individualised learning and content adaptation according to needs.

The biggest challenges are related to the reliability of information, the limited functionality of AI, and the potential decrease in creativity and independence. Ethical issues are also highlighted, including plagiarism and lack of academic integrity. Concerns about the weakening of personal and academic abilities, decreased motivation, and loss of social connections have been revealed. Threats of data security and technological limitations are also considered significant. The study results show that the integration and impact of AI tools may vary depending on the teaching/learning environment. Therefore, it is important to take into account the needs of specific educational institutions and students.

It can be argued that universities should more actively integrate AI teaching/learning components into their curricula in order to provide students with the skills, necessary for the effective use of AI. In addition, clear guidelines and policies are needed on how to use AI ethically in the study process in order to reduce cases of plagiarism and academic dishonesty. To avoid the decline of independent and critical thinking, methods that promote reflection and creative problem solving should be integrated into the study process, even if AI tools are used. When preparing pre-service teachers, it is necessary to ensure their readiness to use AI as a tool for improving the quality of teaching/learning, while developing the ability to critically assess the impact of these technologies.

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