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Artificial Intelligence in Higher Education: Students' Attitudes, Trust in AI vs. Human Experts, and Perceived Learning Facilitation

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Abstract

Introduction/aim: Artificial intelligence (AI) is having an increasing impact on both the learning and teaching processes. The study aimed to examine students' patterns of AI use, their level of trust in this technology, and the impact of AI on their subjectively perceived learning outcomes.

Methods: The study involved 472 students. It was conducted using a proprietary survey that measured, among other things: the frequency of use of AI-based tools, attitudes toward AI, the level of trust in information generated by AI compared to information from humans, and the subjective perception of AI facilitating learning.

Results: Significant relationship was found between the frequency of AI use and the subjective perception of its benefits in the learning process. In situations of conflicting information, as many as 85% of students declared greater trust in lecturers than in AI.

A relationship was demonstrated between a positive attitude toward AI and more frequent use of AI-based tools.

Conclusions: The results confirm that frequent use of AI is associated with a positive perception of its impact on the learning process. At the same time, students remain cautious about AI, preferring information from humans. Attitudes toward AI prove to be an important predictor of its use, suggesting that education in the competent use of these tools can increase their effectiveness in an academic environment.

Keywords: artificial intelligence, education, students' attitudes, trust in AI, higher education technology adoption.

Introduction

Artificial intelligence (AI) is developing at a rapid pace. It is already widely used in various areas of life. Education is no exception to this trend. AI is having an increasingly significant impact on the shaping of both learning and teaching processes, their personalization, and the management of education itself. Artificial intelligence is one of the most rapidly developing areas of educational technology (Zawacki-Richter et al., 2019). In the literature on the subject, it is described as a tool that can open up new opportunities, potential, and challenges in educational practice, both for teachers and students themselves (Krstić et al., 2022). Learning with the help of artificial intelligence allows for improving the quality of teaching by personalizing content and adapting programs to the individual abilities and needs of students, promoting better knowledge acquisition and improving the educational process itself. By analyzing learning styles, emotions, and motivation, AI has the potential to enhance cognitive abilities, stimulate independence, and support the development of a range of competencies, including the acquisition of knowledge and learning skills, as well as personal and professional growth (Chen et al., 2020).

Zawacki-Richter et al. (2019) emphasize that AI is a tool that supports the teaching and learning process at the academic level as well. The researchers point out that, on the one hand, the use of artificial intelligence in education opens new opportunities. However, on the other hand, it is not free from risks or reservations related to, for example, ethics, equal access, and the potential for reorganizing the role of the teacher in a digital learning environment

(Hutson et al., 2022). The use of AI technology usually requires large amounts of data, including confidential information (both about learners and teachers). This raises concerns about privacy and data protection (Chen et al., 2020). In the academic environment, in addition to data privacy risks, issues related to intellectual property, plagiarism, and over-reliance on automated tools are also highlighted (Kim et al., 2024). Concerns are also being raised about the potential reduction of human interaction, dehumanization, and the replacement of human labor by artificial intelligence (Ardelean & Veres, 2023). Taken together, these concerns inevitably shape the degree to which students are willing to trust AI-generated information.

Decisions made by artificial intelligence are questioned by humans. Even people with knowledge of machine learning mechanisms may believe that AI systems will correctly solve problems similar to those that appeared in the training data. However, they will not be sure about the correctness of solutions generated by AI in completely new situations. Biological intelligence differs from artificial intelligence. It is this difference that can affect the level of trust in AI. The implementation and use of artificial intelligence systems is largely linked to trust, which describes the relationship between people and modern technologies. In turn, trust in technology is one of the most important elements of trust in artificial intelligence (Omrani et al., 2022). Several studies clearly show that trust and acceptance of AI are key predictors of willingness to use it. It is also emphasized that the level of trust in artificial intelligence depends not only on its functionality, ease of use, technical capabilities, and effectiveness, but also on characteristics such as transparency, reliability, and ethical aspects (Shin, 2020).

Trust plays a central role in how people interact with artificial intelligence systems. Earlier studies often discussed trust mainly in relation to technology itself. More recent work suggests that trust in AI should be understood as a relational and context-dependent phenomenon shaped by perceptions of reliability, transparency, and the specific situation in which AI is used (Omrani et al., 2022).

Importantly, trusting an AI system does not necessarily mean accepting every response it generates without reflection. A person may generally consid-

er an AI tool trustworthy while still questioning the accuracy of a particular answer. This distinction becomes particularly relevant in educational settings. Students who perceive AI as a useful support for learning may nevertheless verify its outputs or turn to a lecturer's explanation when dealing with complex or important topics.

Recent research also indicates that trust in AI chatbots may not fully fit existing theoretical models of trust. Such systems combine technological functionality with human-like conversational features, students may draw simultaneously on forms of trust typically associated with technology and on mechanisms resembling interpersonal trust. Pitts and Motamedi (2025) argue that this hybrid nature of interaction makes traditional trust models insufficient for explaining how students relate to AI chatbots. They therefore propose that interactions with conversational AI produce a distinct form of trust, referred to as human – AI trust. In line with this perspective, the present study treats trust as a contextual phenomenon and examines how it relates to students' patterns of AI use in the learning process.

Materials and methods

This study aimed to analyze the specific use of artificial intelligence tools among Polish university students. Particular attention was paid to three aspects of this activity: the ways and purposes of using AI, the level of trust in information obtained from artificial intelligence compared to information obtained from humans, and the impact of using AI on the subjective perception of facilitating the learning process.

The study was designed to address three main research questions:

R1: How often and for what purposes do students use AI?

R2: How much do students trust AI compared to human sources?

R3: What is the impact of AI on students' learning process?

Based on a review of the literature, the following hypotheses were formulated:

H1: Frequent use of AI has a positive effect on the perceived ease of learning. Students who use AI very often will report a higher level of perceived

ease of learning (e.g., faster knowledge acquisition, less stress) compared to students who use AI rarely or not at all.

H2: Students trust information from people more than information from AI. It was expected that the average declared level of trust in information obtained from lecturers/experts would be significantly higher than the trust in information generated by AI.

H3: A positive attitude towards AI in education is associated with more frequent use of these tools. Students who perceive AI positively will use AI more often than students with a negative or skeptical attitude.

Participants

The study involved 472 students from Poland, the vast majority of whom were women ($n = 407$), with men constituting a minority ($n = 65$). The average age of the participants was 39, with an age range that spanned individuals born from the 1970s to the early 2000s. Most of the participants were master's students, with a smaller proportion of postgraduate, doctoral, and bachelor's/engineering students. The most significant number of people were in their third and fourth years of study, and the vast majority were part-time students. About half of the respondents declared that they had no experience in programming or working with digital technologies.

Research tools

The study was conducted using a proprietary survey that measured, among other things: the frequency of AI use, attitudes towards these tools, the level of trust in information generated by AI compared to information from humans, as well as the subjective feeling that AI facilitates learning. The survey used Likert scales (1–5) as well as closed-ended and multiple-choice questions. Variables such as frequency of AI use, attitude toward AI, trust in AI and humans, perceived ease of learning, and perception of the adverse effects of AI were designed as part of the survey. All these elements are used to analyze the relationship between AI use and students' educational experiences.

The survey was anonymous and voluntary. The study received approval from the relevant ethics committee (number 3/2024/2025).

Operationalization of variables

The key variables analyzed in this study were operationalized using items included in the proprietary survey questionnaire. Most variables were measured using Likert-type response scales ranging from 1 to 5.

Frequency of AI use was measured with a single item asking respondents how often they use artificial intelligence tools for study-related purposes. Responses were recorded on a five-point scale ranging from 1 (Never) to 5 (Several times a day), with higher scores indicating more frequent use of AI tools.

Attitude toward AI in education was measured using a three-item scale developed for the purposes of this study. The items assessed the general attitude toward AI in education, the perceived usefulness of AI tools, and concerns about the potential negative effects of AI on students' skills (reverse coded). Responses were provided on a five-point Likert scale. A composite score was calculated as the sum of the three items, with higher values indicating a more positive attitude towards AI. The internal consistency of the scale was acceptable (Cronbach's $\alpha = 0.69$).

Trust in AI was assessed using two items referring to the level of trust in information generated by artificial intelligence systems. One of the items was reverse coded. Responses were recorded on a five-point scale ranging from very low to very high trust. The final index was calculated as the average of both items and should be interpreted as an indicative measure of trust in AI rather than a fully developed psychometric scale.

Trust in human sources was measured with a single item assessing trust in information provided by lecturers, tutors, and domain experts. Responses were given on a five-point scale ranging from very low to very high trust.

Perceived facilitation of learning through AI was measured using a nine-item scale assessing students' perceptions that AI supports the learning process. The items referred to aspects such as faster acquisition of knowledge, easier understanding of the material, improved quality of academic work, and re-

duced stress during studying. Responses were provided on a five-point Likert scale. The total score ranged from 9 to 45 points, with higher values indicating a stronger perception that AI facilitates learning. The scale demonstrated high internal reliability (Cronbach's $\alpha = 0.89$).

Statistical analyses

Due to the failure to meet the assumption of normality of distributions (Shapiro-Wilk tests showed significant deviations from normality for all the above-mentioned scales), non-parametric statistical tests were used. Spearman's rank correlation coefficient was used for correlation analysis, and Wilcoxon's test for dependent pairs was used to compare means.

Results

H1: Frequency of AI use and perceived ease of learning

The analysis showed a significant positive correlation between the frequency of AI use and the subjective sense of learning facilitation ($\rho = 0.608$, $p < 0.001$). The scale of AI's impact on learning was highly reliable ($\alpha = 0.8862$), and its distribution deviated significantly from normal (Shapiro-Wilk test: $W = 0.9785$, $p < 0.0001$). The scale of perceived learning facilitation had the following parameters: $M = 27.65$, $Me = 29.00$, $SD = 7.67$, with a range from 9 to 45 points. The result confirms hypothesis H1, indicating a significant relationship between the frequency of AI use and the subjective perception of benefits in the learning process.

H2: Trust in AI vs. trust in people

A comparison of trust levels showed a statistically significant difference between trust in human sources ($M = 4.32$, $SD = 0.63$) and trust in AI ($M = 3.58$, $SD = 0.73$). The Wilcoxon test confirmed the significance of this difference ($W = 7875.5$, $p < 0.00000001$). In situations of conflicting information, as many as 85% of students declared greater trust in lecturers than in AI. The results fully confirm hypothesis H2.

H3: Attitude towards AI and frequency of use

A significant positive correlation was found between a positive attitude towards AI and the frequency of its use ($\rho = 0.598$, $p < 0.001$). The AI attitude scale had moderate reliability ($\alpha = 0.6882$), and its distribution also deviated from normality ($W = 0.9770$, $p < 0.0001$). The AI attitude scale had the following parameters: $M = 9.63$, $Me = 10.00$, $SD = 2.77$, with a theoretical range of 3-15 points. The result confirms hypothesis H3, indicating a relationship between a positive attitude towards AI and more frequent use of these tools.

Patterns of AI use

An analysis of AI usage patterns revealed that approximately 50% of students regularly use AI tools (at least several times a week). The most common uses included searching for information, creating summaries, and assisting with text translation. The main goals of using AI were to save time, better understand the material, and improve the quality of work. Students who used AI regularly most often combined the motives of saving time with helping to understand the material. In contrast, respondents who used it sporadically more often pointed to curiosity or a desire to try out the technology. Those who did not use AI most often declared that they did not need or trust these tools.

Perceived benefits and risks

Approximately 40–50% of students declared that AI contributed to improving their academic performance. The most important benefits included: accelerating learning and saving time, assistance with written work, editorial and linguistic support, and stress reduction through a sense of additional support. Students also pointed to potential risks, including concerns about weakening their own critical thinking skills, declining engagement in independent study, and the need to verify the answers they receive. Approximately 85% of respondents emphasized that AI answers require additional verification.

Attitudes toward AI integration in education

Over 80% of students expressed the opinion that universities should integrate AI tools into the teaching process. At the same time, they preferred to receive key information from lecturers, not from AI, even if AI was more readily available. Almost all emphasized the need to verify AI responses, and learning based solely on AI-generated summaries was widely rejected.

Discussion

The study's results provide valuable insights into how students utilize AI and its impact on the learning process. The confirmation of all three hypotheses points to a consistent picture of the relationship between students' attitudes toward AI, the frequency of use of these tools, and the perceived benefits. Vieriu and Petrea (2025) note that AI tools can genuinely support students' educational development. Similarly, Saja et al. (2025) highlight AI potential in being a valuable addition to the teaching process.

In our own research, the strong relationship between the frequency of AI use and the perceived facilitation of learning ($\rho = 0.608$) is particularly significant. AI can indeed support the learning process, at least from the perspective of students' subjective feelings. However, caution should be exercised in interpreting this relationship (frequency of use and perceived ease of learning) due to the possibility of confounding variables and the directionality of the relationship.

Students' apparent preference for human sources over AI indicates a continuing trust in traditional educational authorities. This is particularly relevant in the context of the debate on the role of AI in education and suggests a need to develop hybrid models that combine the advantages of technology with the value of human expertise. Pitts and Motamedi (2025) point to the different nature of trust in AI compared to interpersonal trust and trust in technology. In their view, the conversational and human-like nature of AI chatbots creates a form of trust that neither interpersonal nor technology-based models fully capture.

A moderately strong correlation exists between attitudes toward AI and frequency of use ($\rho = 0.598$), confirming the importance of psychological factors in the adoption of educational technologies. Otermans et al. (2025) emphasize the role of emotional attitudes as an important predictor of technology use.

The results obtained by the researchers fit well with broader global observations. Among university students around the world, both the benefits and risks of AI use are noted (Gillespie et al., 2025). Students express both a positive attitude toward the use of chatbots in learning and concerns about the future use of AI (Stöhr et al., 2024). As already mentioned, concerns are raised in particular by privacy and ethical issues (Chan & Hu, 2023).

This points to the need to take into account aspects related to students' attitudes and beliefs when implementing AI tools in the academic environment. It also seems necessary to study phenomena such as algorithm aversion, i.e., the psychological tendency to prefer human decisions and opinions over those based on algorithms (Sunstein & Gaffe, 2024).

Limitations of the study

The study has several limitations that should be considered when interpreting the results. First, the cross-sectional nature of the study does not allow for conclusions about cause-and-effect relationships. Second, the sample was predominantly composed of women (86.2%) and part-time students, which may limit the generalizability of the results. Third, the low reliability of the AI trust scale ($\alpha = 0.247$) suggests a need to refine this measurement tool in future research. Fourth, the measurement of trust in AI was based on only two items, which limits its value as a psychometric tool. Results related to this variable should be interpreted with caution. In future studies, it would be worthwhile to use a more comprehensive measurement tool – the authors are currently working on its development.

Conclusions

The results confirm that frequent use of AI is associated with a positive perception of its impact on the learning process. At the same time, students remain cautious about AI, preferring information from humans. Attitudes toward AI prove to be an important predictor of its use, suggesting that education in the competent use of these tools may increase their effectiveness in an academic environment.

Practical implications include the need to develop guidelines for the ethical and practical use of AI in education, as well as the need to train students in the verification and evaluation of AI-generated information. Future research should focus on the long-term effects of AI use on the development of academic competencies and on the development of more precise measurement tools for assessing trust in AI technology.

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