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Artificial intelligence in higher education teaching: Usage, attitudes and trust among Croatian educators

Abstract: Artificial intelligence (AI) provides numerous benefits for higher education, such as personalised learning, task automation and enhanced teaching methods. However, it also raises concerns regarding trust and acceptance among educators. Examining the factors that influence teachers' trust and their attitudes towards adopting or rejecting AI technologies is essential for supporting the constructive and responsible integration of AI into higher education. This study explores the key determinants that shape university teachers' trust in and attitudes regarding AI in academic instruction. Specifically, it investigates how general attitudes on AI, prior experience with AI tools, perceptions of AI's role in academia and individual teacher characteristics affect teacher trust and acceptance. This study was conducted on a sample of 210 higher education teachers from the social sciences and humanities in the Republic of Croatia. Data for this work were collected using adapted versions of the Teacher Trust Scale (Nazaretsky, Cukurova and Alexandron 2022) and the Attitudes Towards AI Scale (Stein et al. 2024), along with additional relevant constructs. Factor analysis confirmed that teachers' trust in AI is a multidimensional construct comprising three key dimensions: (1) perceived pedagogical values of AI, (2) familiarity- and usefulness-based trust (experience-based reliance on AI) and (3) concerns and reasons for distrust in AI. The findings provide valuable insights into educators' perceptions of AI, which are essential for understanding and shaping contemporary higher education teaching and for developing effective AI-supported teaching strategies.

Keywords: (dis)trust, artificial intelligence, higher education teaching, social sciences and humanities

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Introduction

Discussions surrounding artificial intelligence (AI) have become increasingly present in higher education, reshaping established patterns and practices of teaching and offering opportunities for innovative approaches to learning and instruction. Issues of trust and distrust related to AI have become prominent topics in contemporary academic discourse, with wariness often arising from inadequate security in digital technology tools (Skonieczny and Vendramin 2024). To promote the constructive and safe usage of AI in higher education, examining, describing, analysing and explaining the factors that shape teachers' attitudes and the trust or distrust that develops regarding the use – or non-use – of AI technologies in teaching practice is essential.

The European Higher Education Area (EHEA) has clarified several guidelines, opportunities and professional backgrounds of higher education teachers' work (teaching) in relation to the use of AI (Aler Tubella et al. 2024; Humble 2025). Given that research should provide verified and evidence-based insights capable of guiding ethical principles and informing improvements at local and global levels, attitudes towards AI use must be grounded in an understanding of its advantages and limitations.

AI's benefits are numerous. Students emphasise that AI is particularly valuable in the natural sciences, where it facilitates research, introduces innovative teaching methods and eases certain academic tasks (writing, publishing, etc.) (Pannu 2015; Vlahović et al. 2024). When used in the technical sciences, AI supports the automation of production processes, contributing to economic growth (Owoc et al. 2021). In the social sciences and humanities (Moczuk and Płoszajczak 2020), AI encourages the reexamination and modification of theories concerning the social shaping of reality, as well as the redefinition of communicative dimensions in human–AI interaction (Bebić 2023). Skonieczny and Vendramin (2024) contend that generated text used to facilitate classroom discussions of AI-generated texts offer a practical way to tackle AI's academic challenges, while Shata and Hartley (2025) demonstrate how positive social interactions foster AI trust by reinforcing attitudes, minimising uncertainty and easing doubts, thereby enhancing the adoption of AI tools.

Students also warn that misuse of AI in higher education can undermine academic integrity, reduce the quality of education and create inequalities among students (Barrett and Pack 2023; Kos and Mažgon 2025; Li and Samah 2025; Pisica et al. 2023; Vukelić et al. 2023). Furthermore, the proliferation of AI-generated outputs may lead to a decrease in cognitive and logical skills (Yusuf et al. 2024). Problems associated with AI use vary across disciplines due to differing levels of trust, diverse disciplinary requirements and distinct academic challenges. These issues raise important questions about how the ethical, safe and effective integration of AI into educational, social, technical and humanistic practices within higher education can be ensured. Urbančič (2024) explains that contemporary society has yet to reach a consensus lacks consensus on the ideal approach to integrating AI into education or on its potential impacts on learning, teaching, work and society. Viberg et al. (2025), in a study conducted across several countries, finds that perceived benefits and concerns regarding AI use significantly influence trust in both primary and secondary education.

The role of AI is particularly evident in the preparation and delivery of higher education teaching. Some authors (Kamalov et al. 2023; Mohammed et al. 2021; O'Dea and O'Dea 2023; Popenici and Kerr 2017; Sanusi et al. 2024) argue that teachers in higher education must serve as role models and prepare students to use AI responsibly and to form attitudes, emphasising the need to ensure adequate protection and safety in the use of AI-based tools (Fernández-Miranda et al. 2024; Okulich-Kazarin et al. 2024; Schaeffer et al. 2024).

Trust strengthens the influence of perceived usefulness on teachers' readiness to adopt new technologies, whereas self-efficacy has only a minimal impact (Shata and Hartley 2025) on the same. Shata and Hartley's (2025) study applies the Technology Acceptance Model (TAM) and Social Cognitive Theory (SCT) as theoretical frameworks for examining higher education faculty's perceptions, attitudes and motivations – the key factors influencing their adoption or rejection of generative AI tools. Their findings indicate that the perceived usefulness of AI predicts attitudes and intentions to adopt AI technologies. Knowledge about AI, trust and social cohesion shape teachers' decisions to adopt AI tools and serve as key mediators linking components of the TAM and SCT theoretical models. Ultimately, their results highlight the importance of social dynamics in shaping teachers' confidence, attitudes and use of AI.

Generative AI tools, when used in higher education and particularly in the teaching of the social sciences and humanities, must be ethically deployed, and comprehensive AI literacy must be promoted across disciplines to establish robust, evidence-based frameworks that enable researchers, university teachers and students, to responsibly leverage the full capabilities of these technologies (Farrelly and Baker 2023). Large language models should be seen as powerful supplements to educators in higher education, not as their replacements. Educators remain vital in education by thoughtfully implementing AI to foster critical thinking, creativity and ethics (Guizani et al. 2025; Yigci et al. 2025). ChatGPT can be effectively utilised for educational purposes in higher education, such as streamlining the creation of assignments (Al-Mughairi and Bhaskar 2025; Dhamija and Dhamija 2025). Microsoft Copilot has been the subject of positive

and negative discussions: The software's functions related to accessing source sites, activity ideas, overall plans and images have been deemed positive, whereas negative sentiment surrounds its use for text creation, acquiring subject area knowledge and question/rubric preparation (Özdemir 2024).

This paper is based on the nature of this field, building on research among university teachers in the field of social sciences and humanities covering and referring to the following topics: the benefits of AI in terms of its ability to help students write seminars and text assignments (Abbasi et al. 2025; Anani et al. 2025; Bos et al. 2025; Chan and Nurrosyidah 2025; Doğan et al. 2025; Martínez-Carrera et al. 2025); AI-related challenges in the social and human scientific fields, such as developing socially responsible innovations (Feng 2024; Moczuk and Płoszajczak 2020; Shata and Hartley 2025); understanding AI's social impacts (Otair 2024); AI's ability to help solve ethical dilemmas (Fioravante and Vaccaro 2025) and enhance critical analytical skills in the digital period (Kos and Mažgon 2025); and AI's usefulness at enhancing new research models (Xin-ning and Xian-jing 2025).

Research problem and questions

Given the widespread and increasingly established use of AI across nearly all spheres of scientific and academic work (Pannu 2015; Shata and Hartley 2025; Skonieczny and Vendramin 2024; Vlahović et al. 2024;), it is important to understand the factors associated with higher education teachers' trust in and attitudes towards AI in teaching. Accordingly, this study focuses on two related constructs – teachers' trust in AI for teaching and their general attitudes towards AI – and examines two questions: RQ1, whether teachers' trust in using AI for teaching can be conceptualised as a multidimensional construct and RQ2, how teachers' general attitude towards AI is correlated with their trust in using AI in higher education teaching. In addition, the questionnaire captures teachers' patterns of AI use in higher education and their AI-related associations/meanings as contextual variables to support the trust and attitudes.

Hypotheses

- H1: Teachers' trust in AI for teaching is a multidimensional construct; factor analysis will be used to examine whether the structure can be represented by interrelated dimensions reflecting perceived advantages/benefits, AI-related skills/competence and reasons for distrust.
- H2: General attitudes towards AI are positively correlated with teachers' trust in the use of AI in higher education teaching.

Method

Participants

A total of 210 higher education teachers and teaching assistants from the social sciences and the humanities participated in the study. A total of 75.7% (N = 159) of the sample were female and 24.3% (N = 51) were male. Approximately two-thirds of the participants worked in the social sciences (N = 133; 63.3%), while slightly more than a third were employed in the humanities (N = 74; 35.2%). Three respondents were scientifically trained in the natural sciences but taught within social sciences and humanities study programmes (e.g. teacher education or early and preschool education) and were therefore included in the sample.

In terms of years of professional experience in higher education and research, 50 participants (23.8%) had between 0 and 6 years of service, 40 respondents (19.0%) had 7–13 years and the largest group (N = 84; 40.0%) reported working in the field for 14–20 years. A total of 22 participants (10.5%) had 21–27 years of service, while 14 respondents (6.7%) had 28 or more years of experience, indicating representation across different career stages. With respect to academic positions, 69% of respondents held scientific-teaching titles (assistant professors, N = 54; associate professors, N = 54; full professors N = 37), 21.4% were teaching assistants (assistants, N = 31; senior assistants, N = 14) and 9.5% held teaching titles (lecturers and senior lectures, N = 20).

Measuring instrument

The questionnaire collected information on the participants sociodemographic and professional variables (e.g. gender, academic titles/positions and years of service in the higher education and research system), as well as AI-related associations and patterns of AI use in higher education. Two validated scales adapted to the higher education context were used to examine general attitudes and trust towards AI among higher education teachers.

Teachers' trust in AI was measured using the Teacher Trust in AI-Based Educational Technology Scale (Nazaretsky et al. 2022). A linguistically and terminologically adapted version of the scale was used in this study, which was conducted in the context of Croatian higher education. The adapted scale includes 22 items rated on a 5-point Likert scale (1 = *completely disagree* to 5 = *completely agree*). Negatively worded items were reverse-scored, with higher scores indicating stronger trust (or, depending on the item direction, greater intensity of the respective trust-related dimension).

General attitudes towards AI were measured using the Attitudes Towards Artificial Intelligence Scale (ATTARI-12) (Stein et al. 2024). The scale consists of 12 items distributed across cognitive, affective and behavioural components (four items per component), rated on a 5-point Likert scale (1 = *completely disagree* to 5 = *completely agree*). Negatively formulated items were reverse-scored, and the total attitude score was computed as the mean of all items, with higher scores indicating a more positive general attitude towards AI.

Research procedure and data analysis

The Google Forms questionnaire was distributed to all faculties in the Republic of Croatia offering study programmes in the social sciences and the humanities. The research was conducted during November and December 2024 with the approval of the Ethics Committee of the author's institution and with the consent of the heads of higher education institutions and organisational units involved in the study. Invitations containing information about the study, instructions and a link to the online questionnaire were sent to potential participants via their official email addresses. Participation in the research was voluntary and anonymous.

To address RQ1/H1, factor analysis was applied to the trust scale items to examine the dimensionality of teachers' trust in AI for teaching and to identify its main dimensions. A correlational analysis was conducted to address RQ2/H2 and assess the association between general attitudes towards AI and teachers' trust in AI use in higher education teaching. Scale scores were computed after reverse-scoring negatively worded items.

Results and discussion

Using AI tools from the perspective of higher education teachers

This subsection reports descriptive findings on the teachers' associations with AI and their self-reported use of AI use tools over the past year in both teaching and non-teaching contexts. The respondents were asked an open-ended question in which they could freely provide associative elements in relation to associations connected with the term *artificial intelligence*. Their responses were analysed using qualitative content analysis, resulting in four substantive categories. Five respondents provided no answers (Table 1).

Category	Frequency/ percent (%)	Examples of open responses
No answer	5 (2.4%)	-
Tool and technology	80 (38.1%)	machine learning; deep learning; computer programs and apps (…)
Challenge	47 (22.4%)	progress, the future; the unknown; cutting-edge, thrilling, uncharted; an overwhelming flood of information, sheer speed (…)
Negative association	29 (13.8%)	lack of logic; errors, superficiality; cold, artificial, machine-like; robots, something beyond human nature (…)
Need and help	49 (23.3%)	advanced technology; the current highest level of computer processing; answers to questions; speed; usefulness; tools that support you in your work (…)

Table 1: Associative categories related to AI

An analysis of association frequencies showed that 80 respondents (38.1%) linked the term to *tools and technological solutions* (e.g. ChatGPT, robots, computers), while 22.4% of respondents associated it with *challenges* (e.g. complexi-

ty, uncertainty or ethical concerns). A similar proportion (23.3%) expressed associations related to *needs and help* (e.g. assistance and support), whereas 13.8% of respondents expressed *negative associations* (e.g. fear or perceived threat). A total of 82.4% of respondents reported having used AI tools in the past year, while 17.6% stated that they had not used such tools.

The analysis included 210 respondents. The results are presented in a contingency table (Table 2). The variable »Use of AI tools in the past year« had two categories (yes/no), while the variable »Use of AI tools in teaching« consisted of four categories. Values below 5 are not shown to protect respondent identity.

General AI use in the past year	General professional + student-facing use (frequent)	Student-facing use only (periodic)	Lesson/ syllabus preparation only (rare)	No teaching-related student work (never)	Total
Yes (N = 173)	69	24	26	54	173
Not (N = 37)	< 5	< 5	< 5	37	37
Total	69	24	26	91	210

Table 2: Contingency table for AI tool use in general and for teaching purposes

Table 2 shows that 173 respondents (82.4% of the total sample) used AI tools in general during the past year. Among them, 69 respondents (39.9%) reported frequently using such tools both for general professional tasks and for preparing teaching activities and student assignments. »General professional tasks« refers to work-related, teacher-facing use of AI tools (e.g. drafting, summarising, translating, planning) and does not mean private/personal use. »In-class/student-facing use« refers to preparations for activities and assignments for students and other teaching-related work involving students.

A total of 24 respondents (13.9%) reported periodically using AI specifically for preparing teaching activities and student work, while a nearly equal number (N = 26; 15.0%) reported rarely using AI, mainly limited to lesson and syllabus preparation. Non-use of AI for teaching-related work with students was recorded for 54 respondents (31.2% of the sample). Additionally, 37 respondents (17.6%) indicated that they had not used any AI tools in the past year. Overall, the results indicate that general AI tool use is associated with the likelihood of using AI for teaching-related purposes, including lesson preparation and working with students.

A chi-square test of independence was conducted to examine the relationship between the use of AI tools in the past year and their application in teaching.

Test	χ^2	df	N	p	Note
Pearson chi-square	58.73	3	210	<.001	Statistically significant association
Likelihood ratio	72.58	3	210	<.001	Confirms the result of the Pearson test
Linear-by-linear association	45.80	1	210	<.001	Linear relationship between the variables
Min. expected frequency	-	-	-	-	4.23 in 2 cells (25%) < 5; interpret with caution

Table 3: Results of the chi-square test of the association between the use of AI tools in general and in teaching (N = 210)

The results of the Pearson chi-square test showed a statistically significant association between AI tool use in the past year and reported AI use in teaching, χ^2 (3) = 58.73, p < .001, Cramér's V = .53. This indicates that general AI tool use is associated with the reported use of AI for teaching-related purposes. Because 25% of cells had expected counts below 5 (minimum expected value = 4.23), the chi-square results should be interpreted with caution; however, the overall pattern of the results consistently points to a strong association between general AI use and AI use in teaching.

Overall, respondents who used AI tools in general during the past year were likelier to report using them for teaching-related purposes. All respondents who reported not using AI tools outside of teaching in the past year also stated also stated that they never or only very rarely used them in teaching. In contrast, AI tool users exhibited more diverse usage patterns in educational contexts, with nearly 40% reporting frequent use both for general professional tasks and for preparing teaching activities and student assignments.

Multidimensional structure of general attitudes towards AI

The Attitudes Towards Artificial Intelligence (AI) scale was subjected to factor analysis to verify the assumed multidimensionality of the construct (Table 4). The adequacy of the correlation matrix was examined prior to the analysis. The results indicated a high level of suitability for factorisation (KMO = 0.906). Moreover, Bartlett's test of sphericity was statistically significant (χ^2 (66) = 1093.304; p < 0.001), further confirming the appropriateness of applying factor analysis. Using principal component analysis with Varimax rotation, two components were extracted, which together explained almost 57% of the total variance.

Statements	F1 - positive and affirmative attitude towards AI	F2 - negative attitude towards AI
Q5. I look forward to the future development of AI.	.755 M = 3.23; SD = 1.17	
Q6. AI offers a solution to many problems in the world.	.751 M = 2.93; SD = 1.06	
Q1. AI will make the world a better place.	.733 M = 2.78; SD = 1.10	
Q9. I would rather choose technology with AI than technology without AI.	.698 M = 2.99; SD = 1.11	
Q3. I want to use technologies that rely on AI.	.646 M = 3.53; SD = 1.16	
Q11. I feel safe when I think about AI.	.607 M = 2.67; SD = 1.07	
Q12. I would rather avoid technologies based on AI.*	.502 M = 2.54; SD = 1.21	
Q7. I prefer technologies that do not have AI built into them.*	.488 M = 3.07; SD = 1.15	
Q2. I feel angry when using AI.		.871 M = 1.94; SD = 1.05
Q8. I feel uncomfortable using AI.		.826 M = 2.26; SD = 1.22
Q10. AI creates problems instead of solving them.		.536 M = 2.50; SD = 1.04
Q4. AI has more disadvantages than advantages.		.475 M = 2.74; SD = 1.00
Total number of items	8	4
Characteristic root	5.638	1.194
% explained variance	46.99%	9.95%
Cronbach α	.872	.754
Extraction Method: Principal component analysis. Rotation method: varimax with Kaiser normalisation. a. Rotation converged in 3 iterations.		

*Table 4: Factor structure of the scale of general attitudes towards AI (N = 210), *standardised factor saturations and average results according to statements*

The first component (F1) includes eight items with high factor loadings. A content analysis suggests that this factor reflects an affirmative attitude towards AI. The reliability of this subscale was high (Cronbach's α = 0.872). Based on the content of the items loading on this component, this dimension evidently represents a positive and supportive attitude towards AI. The items indicate: (1) positive expectations regarding the development and application of AI (e.g. »I look forward to the future development of AI«, »AI will make the world a better place«), (2) perceived usefulness of AI in solving complex global issues (»AI offers a solution to many problems in the world«), (3) personal preference and confidence in using AI-based technologies (»I want to use technologies that

rely on AI«, »I feel safe when I think about AI«) and (4) a preference for AI-based technologies over non-AI technologies (»I would rather choose technology with AI than technology without AI«). Two negatively worded items (»I would rather avoid technologies based on AI« and »I prefer technologies that do not have AI built into them«) load inversely on this factor, meaning that respondents who disagree with these items also demonstrate a more positive attitude towards AI. Overall, this component reflects the participants' general liking of, trust in and readiness to adopt AI-based technologies, which justifies its label: affirmative attitude towards AI**.**

The second component (F2) consists of four items related to negative perceptions and experiences of AI. The reliability of this subscale was satisfactory (Cronbach's $\alpha = 0.754$). This component includes items that express emotional discomfort, distrust and negative evaluations of AI. Respondents who score high on this factor tend to show pronounced doubts, concerns and resistance to using AI. The four items reflect (1) negative emotional reactions when interacting with AI, such as anger (»I feel angry when using AI«) and discomfort (»I feel uncomfortable when using AI«), (2) negative cognitive evaluations of AI's usefulness (»AI creates problems instead of solving them«) and (3) general distrust of AI-based technologies (»AI has more disadvantages than advantages«). This component therefore indicates the scepticism and emotional strain associated with the use of AI. The items cover feelings of uncertainty and the belief that AI causes more harm than good, which may stem from personal experiences, lack of knowledge or broader societal narratives about the potential dangers of AI. The term negative attitude towards artificial intelligence thus adequately summarises the psychological content of this dimension, which includes both emotional resistance and rational doubts regarding the value and safety of AI applications.

Multidimensional structure of teachers' trust according to AI

The modified version of the Teacher Trust Scale was subjected to an exploratory factor analysis to verify the assumed multidimensionality of the construct and to identify its latent dimensions in the context of higher education. The suitability of the correlation matrix for factor analysis was confirmed through preliminary checks of sampling adequacy (KMO = 0.893) and a statistically significant Bartlett's test of sphericity (χ^2 (253) = 2767.27; $p < 0.001$). Using maximum likelihood extraction with Varimax rotation, three factors were retained, jointly explaining 56.84% of the total variance (Table 5). All items were rated on a 1–5 Likert scale and final factor scores were calculated as mean values of the items loading on each factor.

Statements	F1 - Perceived pedagogical values of AI	F2 - Familiarity- and usefulness-based trust (experience-based reliance on AI)	F3 – Concerns and reasons for distrust in AI
Q29. AI can help teachers identify the difficulties students face and offer solutions for personalised learning for each student.	.844 * M = 3.24; SD = 1.05		
Q30. AI can assist teachers in higher education with classroom activities, such as identifying students who have difficulty solving assignments.	.776 * M = 3.14; SD = 1.04		
Q28. AI can help create intelligent tools that can serve as help in learning and teaching.	.726 * M = 3.67; SD =.99		
Q27. AI can help in creating and designing individualised (self-)learning paths for students.	.719 * M = 3.36; SD =. 97		
Q31. AI can help teachers in higher education in planning activities and assignments within lectures, seminars and exercises.	.632 * M = 3.67; SD = 1.05		
Q26. AI can assist in the formative assessment of complex assignments and suggest personalised feedback in real time.	.611 * M = 3.20; SD = 1.05		
Q32. AI can improve and develop the competences of teachers in higher education and influence the quality of their teaching work.	.597 * M = 3.56; SD = 1.07		
Q45. The clearer it is to me why AI offered a particular answer or solution, the more I trust it.		.760 * M = 3.51; SD = 1.06	
Q46. I feel confident that I can phrase my questions or instructions in a way that helps AI provide useful answers.		.726 M = 3.61; SD = 1.09	
Q44. I would trust AI tools more if their performance proved to be consistently reliable and accurate over time.		.726 M = 3.14; SD = 1.02	
Q47. The solutions provided by AI for some questions in class are at least as valuable as the recommendations and solutions given by fellow teachers on the same issue.		.603 M = 2.94; SD = 1.09	
Q42. I believe I will be successful in using AI tools to personalise student learning.		.580 M = 3.31; SD = 1.07	
Q41. The more I use AI, the more confident I become in its usefulness for personalised learning.		.579 M = 3.13; SD = 0.99	
Q43. I am certain that using AI-based tools to personalise student learning will require a significant change in my teaching practice.		.518 M = 3.31; SD = 1.03	
Q48. I rely on solutions from AI-based tools at least as much as I trust the recommendations of an expert in any field of research.		.357 M = 2.42; SD = 1.10	

Q35. Current AI tools have a limited capacity to incorporate socio-emotional and contextual aspects of teaching and learning.			.770 M = 3.86; SD = 1.03
Q37. AI-generated suggestions may not align with teachers' professional judgments about what is appropriate for a given classroom situation.			.694 M = 3.42; SD = 1.05
Q34. AI has many shortcomings because education experts are not involved in its development.			.639 M = 3.38; SD = 1.05
Q33. There are differences between the diagnosis made by the AI and the teacher's opinion.			.484 M = 3.81; SD = 0.87
Q38. AI tools reduce teachers' autonomy and control over the teaching process.			.444 M = 2.84; SD = 1.14
Q40. The use of data and information generated by AI increases the risk of violating the privacy of teachers and students.			.432 M = 3.26; SD = 1.13
Q36. Teachers have the opportunity to demonstrate group management competencies in the teaching process.			.391 M = 4.03; SD = 0.92
Total number of items	7	8	7
Characteristic root	8.74	2.72	1.62
% explained variance	37.98	11.82	7.04
Cronbach α	.920	.886	.756
Extraction Method: Maximum likelihood. Rotation method: varimax with Kaiser normalisation. Rotation converged in 5 iterations.			

*Table 5: Factor structure of the Teacher Trust Scale according to AI (N = 210), *standardised factor saturations and average results according to items*

The original instrument is grounded in theoretical assumptions about trust in technology. An adapted version of the instrument, which focuses on the Croatian higher education context, was applied in this study. Factor analysis conducted on the collected data confirmed three relevant dimensions: (F1) *perceived pedagogical value of AI*, (F2) *familiarity- and usefulness-based trust (experience--based reliance on AI)* and (F3) *concerns and reasons for distrust towards AI*. All items were rated on an identical 1–5 Likert scale, and the final dimension scores were calculated as mean values. The scale demonstrated good internal reliability and validity in previous research, which was also confirmed in this study.

Given the content of the seven items loading on the first factor, this dimension reflects the perceived benefits and pedagogical usefulness of AI for higher education teachers. These seven items emphasise AI as functional support for instructional planning and classroom activities, personalised learning pathways, formative assessment, identifying student needs, providing timely feedback and supporting teachers' professional development. Accordingly, this factor is labelled »perceived pedagogical value of AI«. Higher scores indicate stronger beliefs that AI can enhance the quality and effectiveness of teaching and learning. This aligns with prior work suggesting that the perceived benefits of AI in higher

education often relate to improving learning and teaching processes, increasing engagement and enhancing administrative efficiency (e.g. Pisica et al. 2023).

The second factor captures a form of trust grounded primarily in AI use as well as AI's perceived usefulness and controllability rather than in objectively verifiable knowledge of AI algorithms. The items reflect (a) increasing confidence through experience (e.g. greater use is associated with greater perceived usefulness), (b) a sense of self-efficacy in working with AI tools (e.g. believing one can successfully use AI to personalise learning) and (c) a subjective sense of transparency/understandability of AI outputs (e.g. reporting that knowing more about how the tool provides solutions is linked with trust). Importantly, within this factor, knowing is best interpreted as perceived transparency and familiarity built through interaction, not a literal understanding of underlying AI mechanisms. Similarly, the item suggesting that better questioning increases trust can be read as concerning prompting self-efficacy/perceived controllability; in practice, the direction may be bidirectional (useful outputs may also help users learn how to ask better questions). Finally, the future-oriented statement about AI »gaining full trust« as it improves reflects conditional trust contingent on expected performance gains. For these reasons, we label this dimension familiarity- and usefulness-based trust (experience-based reliance on AI). Higher scores indicate greater confidence in using AI and a greater willingness to rely on its recommendations in higher education teaching contexts.

The third factor comprises items that reflect teachers' reservations, scepticism and perceived risks related to using AI in education. The items point to perceived limitations in AI's ability to accommodate the social, emotional, motivational and contextual aspects of teaching, concerns about discrepancies between AI-generated and teacher judgments, and broader professional and ethical issues such as reduced autonomy and privacy risks. While some items use everyday language that attributes understanding or knowing to AI, we interpret these statements as teachers' perceptions that current AI tools cannot sufficiently account for pedagogical context and socioemotional dimensions rather than as literal claims about humanlike cognition. Accordingly, this factor is labelled as »concerns and reasons for distrust towards AI«. Higher scores indicate more pronounced distrust based on perceived shortcomings, professional risks and ethical concerns associated with AI in higher education.

Similar negative aspects are identified in the work of Pisica et al. (2023) that relate to psychosocial consequences, data security risks, ethical issues and threats of unemployment. Several negative aspects of AI implementation in higher education were less frequently mentioned by teachers, particularly those concerning the financial and organisational costs associated with implementing AI systems. One explanation lies in the lack of a clear institutional strategic vision regarding AI integration and the relatively early stage of digitalisation in some higher education systems. Furthermore, Skonieczny and Vendramin (2024) conclude that AI use can be considered malpractice when: (1) an AI tool performs a task instead of the student; (2) AI is used inappropriately; or (3) AI is used for certain types of assessment tasks, such as examinations or final theses. Consequently, several authors (e.g. Mohammed et al. 2021) offer recommendati-

ons for overcoming these challenges, including the development of infrastructure that supports AI (e.g. learning resources, internet access and digital libraries), improving technological competencies in teacher education programmes and encouraging higher education teachers to adopt AI techniques in a high-quality and effective manner.

Descriptive indicators and bivariate associations

As shown in Table 6, the perceived pedagogical value of AI was statistically significantly correlated with familiarity- and usefulness-based trust (experience--based reliance on AI) (ρ = .683, p <.001) and with a general affirmative attitude towards AI (ρ = .675, p < .001). Conversely, it was negatively correlated with concerns and reasons for distrust towards AI (ρ = –.290, p < .001) and with a negative general attitude towards AI (ρ = –.446, p < .001). Overall, teachers who perceive higher pedagogical value in AI in higher education also tend to report higher trust in and more favourable general attitudes towards AI. The strong correlation among general attitudes and familiarity- and usefulness-based trust (experience-based reliance on AI) (ρ =.683, p < .001) suggests that teachers who recognise the practical usefulness of AI tend to report higher trust grounded in their understanding, competence and direct experience with technology. This is consistent with conceptualisations of informed and rational trust, where trust is grounded not in emotions or social expectations but in perceptions of competence, predictability and usefulness (McKnight et al. 2011; Söllner et al. 2016). Likewise, the significant correlation between perceived value and a generally affirmative attitude towards AI (ρ = .675, p < .001) suggests that cognitive appraisal of AI's benefits is closely related to positive affective and behavioural attitudes towards its implementation in educational contexts. These findings align with TAM frameworks (Davis 1989; Venkatesh and Davis 2000), in which perceived usefulness is a central predictor of attitudes, intentions and eventual technology adoption.

	1. Perceived pedagogical value of AI	2. Familiarity- and usefulness-based trust (experience-based reliance on AI)	3. Concerns and reasons for distrust towards AI	4. Affirmative attitudes towards AI	5. Negative attitudes towards AI	Gender	M	SD
1. Perceived pedagogical value of AI	1	.683**	–.290**	.675**	–.446**	–.090	3.406	0.85
2. Familiarity- and usefulness-based trust (experience-based reliance on AI)		1	–.316**	.661**	–.429**	–.093	3.173	0.78
3. Concerns and reasons for distrust towards AI			1	–.454**	.459**	.025	3.515	0.65
4. Affirmative attitudes towards AI				1	–.697**	–.198**	3.101	0.82
5. Negative attitudes towards AI					1	.161*	2.363	0.82
Gender						1	-	-
Cronbach's alpha (α) and number of items	.920 (7)	.886 (8)	.756 (7)	.872 (8)	.754 (4)	-	-	-
Note. Values are Spearman's ρ. ** p <.01, * p <.05 (two-tailed).								

Table 6: Descriptive indicators and Spearman correlation coefficients (ρ) between dimensions of teachers' trust in artificial intelligence and dimensions of general attitudes towards artificial intelligence

Conversely, the negative correlations between concerns and reasons for distrust ($\rho = -.290$, $p < .001$) and negative general attitudes towards AI ($\rho = -.446$, $p < .001$) suggest that teachers who perceive AI as more pedagogically valuable tend to express fewer concerns about AI's ethical, contextual or professional risks. This is consistent with previous findings (Nazaretsky et al. 2022; Stein et al. 2024) indicating that users' perceptions of AI's competence and potential are associated with attitudes about its legitimacy and acceptability in educational environments.

The familiarity- and usefulness-based trust (experience-based reliance on AI) dimension was statistically significantly positively correlated with an affirmative attitude towards AI ($\rho = .661$, $p < .001$) and negatively correlated with concerns and reasons for distrust ($\rho = -.316$, $p < .001$) and with a negative general

attitude towards AI ($\rho = -.429$, $p < .001$). This demonstrates a strong psychological and conceptual connection between experience-based trust and teachers' broader attitudes towards AI in higher education.

The positive correlation with an affirmative attitude towards AI use ($\rho = .661$, $p < .001$) indicates that teachers who report higher levels of experience-based trust – based on understanding, competence and previous experience – also tend to hold more positive general attitudes towards AI. This suggests that rational, experience-based trust is linked to greater affective and behavioural readiness to adopt new technologies, consistent with models such as TAM (Davis 1989) and the Unified Theory of Acceptance and Use of Technology (Venkatesh et al. 2003).

The negative correlations between perceived pedagogical value of AI and concerns and reasons for distrust ($\rho = -.316$, $p < .001$) and with general negative attitudes ($\rho = -.429$, $p < .001$) indicate that higher levels of experience-based trust are associated with lower levels of fear, scepticism and concern regarding the potential negative consequences of AI implementation. Teachers who understand how AI works and feel competent in using it may be less likely to express distrust or resistance. These findings reflect established assumptions that competence and knowledge in using technology are linked to lower perceived risks and uncertainties (McKnight et al. 2011; Nazaretsky et al. 2022) and that education and experience are crucial for forming reliable, positive attitudes towards new digital tools (Söllner et al. 2016).

The dimension of concerns and mistrust towards AI was statistically significantly positively related to a general negative attitude towards AI ($\rho = .459$, $p < .001$) and negatively related to affirmative attitudes towards AI ($\rho = -.454$, $p < .001$). The positive correlation ($\rho = .459$, $p < .001$) indicates that the more teachers worry about risks, shortcomings, loss of control, privacy issues, or ethical dilemmas associated with AI, the more negative their overall attitude towards AI tends to be. This relationship is expected and suggests that the cognitive and emotional components of distrust may reinforce negative attitude – findings consistent with those from research on educational technology acceptance (Slade and Prinsloo 2013).

The negative correlation between concerns and affirmative attitudes ($\rho = -.454$, $p < .001$) suggests that teachers who express greater concern regarding AI are less likely to recognise AI's benefits, effectiveness and potential. In essence, heightened concern is associated with lower openness to AI's positive possibilities, consistent with theories of cognitive dissonance (Festinger 1957), in which distrust may lead individuals to discount or minimise positive information. This finding reflects a clear psychological pattern: concerns and mistrust regarding AI in higher education are strongly associated with negative attitudes while being inversely related to positive, affirmative perceptions of AI.

Concluding considerations

AI offers significant benefits for higher education teaching; however, concerns regarding higher education teachers' trust and acceptance in the techno-

logy remain. Relevant policy frameworks within the EHEA define guidelines, expectations and the professional context of higher education teachers' work in relation to the use of AI. Understanding the factors that influence educators' trust and attitudes in higher education towards AI in the social sciences and humanities is essential for enabling the responsible and effective integration of AI into higher education. Teachers' trust in AI is a multidimensional construct that this paper validates conceptually and empirically by exploring three factors: perceived pedagogical values of AI, familiarity- and usefulness-based trust (experience-based reliance on AI) and concerns and reasons for distrust in AI.

Due to the limitations of the study's realised sample (e.g. its size, convenience, nature and structure), caution is necessary when generalising these results. Exploring what students have to say about the use of AI in higher education teaching is an interesting avenue of future research. Lastly, further studies should include higher education teachers who come from other fields of science and who come from universities outside of Croatia.

Statement on access to research data

Data are accessible with restrictions (legal/ethical restrictions)

The research data used in this article are not publicly available due to restrictions related to personal data protection and/or copyright (in accordance with ZVOP-2 and/or ZASP). Access to anonymized or restricted versions of the data is possible upon reasonable request to the authors of the article.

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UMETNA INTELIGENCA V VISOKOŠOLSKEM IZOBRAŽEVANJU: UPORABA, STALIŠČA IN ZAUPANJE MED HRVAŠKIMI VISOKOŠOLSKIMI UČITELJI

Povzetek: Umetna inteligenca (UI) prinaša številne koristi za visoko šolstvo, vključno s personaliziranim učenjem, avtomatizacijo nalog in izboljšanimi učnimi metodami. Vendar pa vzbuja tudi pomisleke glede zaupanja in sprejemanja med visokošolskimi učitelji. Za podporo konstruktivni in odgovorni integraciji UI v visokošolskem izobraževanju je bistveno preučiti dejavnike, ki vplivajo na zaupanje profesorjev in njihovo sprejemanje ali zavračanje tehnologij UI. Ta študija raziskuje ključne dejavnike, ki oblikujejo zaupanje in stališča visokošolskih učiteljev do UI v akademskem poučevanju. Natančneje, raziskuje, kako na zaupanje in sprejemanje vplivajo splošna stališča do UI, predhodne izkušnje z orodji UI, zaznave vloge UI v akademskem okolju in značilnosti posameznih profesorjev. Raziskava je bila izvedena na vzorcu 210 visokošolskih učiteljev družboslovja in humanistike v Republiki Hrvaški. Podatki so bili zbrani z uporabo prilagojenih različic lestvice zaupanja profesorjev (Nazaretsky idr. 2022) in lestvice stališč do UI (Stein idr. 2024), skupaj z dodatnimi relevantnimi konstrukti. Faktorska analiza je potrdila, da je zaupanje profesorjev v UI večdimenzionalna konstrukcija, ki obsega tri ključne dimenzije: (1) zaznane pedagoške vrednosti UI, (2) zaupanje, ki temelji na poznavanju in uporabnosti (zanašanje na UI na podlagi izkušenj), in (3) pomisleki in razlogi za nezaupanje v UI. Ugotovitve ponujajo dragocene vpoglede v dojemanje UI med visokošolskimi učitelji, ki so bistveni za razumevanje in oblikovanje sodobnega poučevanja v visokem šolstvu ter za razvoj učinkovitih učnih strategij, podprtih z UI.

Ključne besede: (ne)zaupanje, umetna inteligenca, poučevanje v visokem šolstvu, družboslovje in humanistika

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