The Role of AI Tools in Improving Practices in E-Learning Environment: A Pilot Study

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Abstract **– This paper explores the role of artificial intelligence (AI) tools in enhancing teaching practices and faculty behaviour in higher education. The study applies a quantitative research approach to examine faculty perceptions, student engagement, and instructional efficiency within an e-learning environment. The research object is the use of digital learning platforms in higher education, while the research subject is the influence of artificial intelligence tools on faculty teaching practices. The central research problem concerns faculty behaviour during the integration of Artificial Intelligence into their teaching. The study aims to identify whether such tools improve instructional methods and faculty performance in delivering education. The findings suggest that the use of Artificial Intelligence positively affects course design, teaching methodology, and student motivation. Nevertheless, the study highlights concerns related to ethical implications and potential over-reliance on technology. The results indicate a need for comprehensive institutional policies and further research to clarify and optimize the role of Artificial Intelligence in higher education.**

Keywords **– AI, e-learning, faculty practices, higher education.**

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1. Introduction

Artificial intelligence (AI) tools are sophisticated technological systems designed to perform tasks that traditionally require human intelligence, such as learning, reasoning, problem-solving, and language processing. In the context of education, these tools include language learning platforms, intelligent tutoring systems, and generative models such as ChatGPT, capable of processing large volumes of information and generating human-like responses [1]. AI tools are increasingly used to personalize learning experiences, automate routine academic tasks, and facilitate real-time interactions, thereby supporting both students and educators in achieving improved educational outcomes [2], [3].

Recent data suggest a growing presence of AI in academic environments. Approximately 60% of instructors have incorporated AI into their daily teaching activities, and over half (51%) of teachers believe AI has a positive impact on education, while 21% express concerns. Among students, 39% report using generative AI out of curiosity, and 53% of college students have employed AI tools to produce graded assignments [4]. Tools such as Duolingo and Grammarly offer gamified and adaptive language learning experiences, while generative AI like ChatGPT is being integrated into English Language Teaching (ELT) to enable immediate feedback and differentiated instruction [5]. Beyond language learning, AI is applied in disciplines such as chemistry and history to support the teaching of abstract concepts [2], and adaptive learning platforms cater to diverse learning styles and paces [6].

Despite increasing adoption, literature identifies several research gaps. One notable gap is the absence of a universally accepted framework for the design and implementation of AI chatbots in educational settings, limiting consistent application and evaluation [7]. There is also a lack of empirical evidence regarding the pedagogical effectiveness of assessments redesigned to incorporate both traditional and generative AI tools [1].

Furthermore, more research is needed to understand the interactions between technical complexity, knowledge application, and learner self-efficacy [8]. In addition, recent studies highlight the importance of examining AI's impact on students' critical thinking, especially in reading and writing tasks [9], and the behavioral and psychological aspects of AI use, such as social and computer anxiety, which can affect student motivation and satisfaction.

Given these gaps, this study investigates the role of AI tools in improving teaching practices and faculty behavior within e-learning environments in higher education. The subject of research is the e-learning environment, while the subject is the role of AI tools in enhancing faculty teaching practices. The central research problem lies in understanding how faculty members integrate AI tools into their instructional approaches, with an additional focus on the tools' influence on student motivation and engagement. The main aim of the study is to explore how AI can support faculty members in delivering more effective and engaging instruction.

The paper is structured as follows: The Materials and Methods section outlines the context of AI integration in e-learning and describes the quantitative research design used in this study. The Results section presents empirical findings related to faculty attitudes, student engagement, and instructional efficiency. The Discussion section interprets these findings in light of existing literature, identifying both the benefits and ongoing challenges of AI use in education. Finally, the Conclusion summarizes the key insights and outlines directions for future research concerning the integration of AI in higher education.

2. Materials and Methods

This section presents the methodological framework adopted in the study. It begins with a review of prior research on the role of AI tools in education, followed by an overview of the specific features of the e-learning environment and teachers' attitudes towards AI integration. The final part describes the design of the empirical survey, including sampling, instrument structure, and reliability checks, and outlines the study's main limitations. Together, these elements provide the foundation for analyzing how AI tools influence teaching practices and faculty behaviour in higher education.

2.1. The Impact of AI tools on Education

AI technologies in higher education are the subject of a complex discussion that focuses on how they could improve pedagogical techniques, increase administrative efficiency, and promote individualized learning.

The use of AI tools in higher education offers many benefits and is transforming the field of education. In order to fulfil different requirements and learning styles of students, AI) improves study efficiency and changes learning experiences [10], [11], [12]. AI enhances the whole educational experience by automating monotonous tasks, freeing up professors to concentrate on key teaching aspects like personalized feedback and evaluation. The AI systems promote adaptive learning by providing customized educational materials that take into consideration different learning styles and speeds, which can result in more productive and interesting learning settings [6]. The accuracy and efficiency of academic assessments are enhanced by AI's capacity to evaluate broad datasets. It can also anticipate students' requirements and provide timely support, such extra tutoring [13]. As AI makes communication, evaluation, and feedback easier, it plays a vital role in virtual cooperation and teamwork, preparing students for the working world [14]. AI not only improves instruction and learning but also boosts administrative effectiveness by expediting procedures such as hiring and course selection, which may raise student success and retention rates [13].

There are a number of challenges that must be taken seriously while adopting AI in the educational process, despite all the advantages that it offers in higher education.

There are several worries about striking a balance between traditional teaching approaches and AI-assisted ones [15]. According to the Technology Acceptance Model (TAM), perceived utility and usability have an impact on users' acceptance of AI technologies, underscoring the necessity of thorough AI literacy training for instructors and students equally [15], [16].

Another significant problem raised by AI tools for e-learning is the ethical question around academic integrity. By offering pre-made solutions, AI technologies may foster plagiarism and hinder critical thinking, harming the learning process. According to the statistical data, 64% of students were using AI-powered generators to complete written assignments; 31% were using chatbots or voice assistants for assistance during the exams; 29% were using AI-driven translation tools during language exams [4].

A behaviourist approach to education may also result from the ease of implementing AI, which would restrict its scope of learning and create an information cocoon effect because of algorithmic choices [17]. There is also a psychological component, where students worry about the accuracy and dependability of AI tools and worry about becoming overly dependent on technology, which may affect their future employability and competence [16].

Data privacy and security are ongoing problems, as AI systems frequently necessitate large amounts of data for training, raising concerns regarding the protection of personal information [18], [19]. The AI's role in adaptive learning systems gives challenges such as data bias, insufficient emotion monitoring, and technological inequity, which may hinder personalized learning experiences. The ethical implementation of AI in education involves addressing automated bias and ensuring equity in AI-driven assessment tools [20]. To overcome these challenges, it is essential to establish clear rules and ethical frameworks, practice continuous research, and provide support and training for both educators and students to navigate the complexity of AI in e-learning [19].

As the previous studies show, AI tools significantly impact human behaviour and psychological factors, influencing emotions, decision-making, and social interactions. For example, students may experience a range of emotions in response to AI integration in educational settings, ranging from worries about ethics and privacy to fear about trustworthiness and over-reliance. According to the Technology Acceptance Model, these psychological dynamics are essential for the effective adoption of AI. By addressing these issues, specific approaches may turn worry into success [16]. AI has an impact on human psychology in a variety of fields outside of schooling. It may have negative consequences including the spread of false information and anxiety related to work automation by changing emotional reactions and decision-making processes [21]. Artificial intelligence (AI) develops new human-machine connections through social robots and virtual assistants, which might result in closeness with others but also carry dangers of dehumanization and loneliness. Stress and anxiety are made worse by the worry that automation brought on by AI might end up in job displacement [22]. AI use in education can improve student engagement and cognitive performance, but it also carries concerns of social isolation, stress, and over-reliance. Due to the complex and situation-specific psychological effects, implementing AI requires rigorous planning and ethical concerns [23]. Plus, the widespread usage of AI in daily life affects people's decisions and actions, highlighting the necessity of comprehending these new habits in order to forecast future developments in AI-infused environments [24]. All things considered, even if AI has many advantages, its behavioural and psychological effects must be carefully managed to reduce risks and maximize benefits.

Overall, while AI presents opportunities for innovation in higher education, it requires careful consideration of ethical, pedagogical, and psychological factors to maximize its potential benefits [25]. Institutions are encouraged to establish ethical guidelines and policies for AI usage, ensuring that AI tools are used responsibly and effectively [26].

2.2. Peculiarities of E-Learning Environment

By providing creative answers to traditional educational problems and promoting a more individualized, effective, and accessible learning environment, AI tools play a critical role in enhancing e-learning. A number of unique characteristics set the e-learning environment apart from regular educational environments. One of the main characteristics is that a progressive educational setting that promotes analysis and group projects helps students transition from being passive knowledge consumers to active seekers. The unique characteristics of teacher-student interaction, which vary greatly from conventional settings and necessitate the development of new methods to increase communication and learning results, further enrich this environment [27]. By combining different pedagogical resources like information, communication, and administration, the digital educational environment creates a system that encourages creative learning by giving students more flexibility and diversity in their educational activities [28]. Plus, by eliminating the requirement for in-person travel, e-learning significantly reduces fuel consumption and greenhouse gas emissions. By removing time and location constraints and providing access to a worldwide community of learners and resources, the idea of a Networked Learning Environment expands these opportunities. Artificial Intelligence, Virtual Reality, and gamification are examples of cutting-edge technologies that are being incorporated into modern e-learning systems. These technologies improve the learning experience and present opportunities for further advancement [29]. Through elements like anonymity, choice, and feedback — all of which are essential for objective evaluation and creativity—e-learning environments foster critical and creative thinking [30]. Using cutting-edge communication tools and subject-specific teaching techniques, the virtual learning environment, which is a component of the e-learning system, promotes global collaboration and the growth of highly qualified professionals [31]. All things considered, the e-learning environment is a vibrant, multidimensional setting that encourages creativity, enables a range of learning paths, and provides substantial educational and environmental advantages.

2.3. The Attitude of Teachers towards AI Integration

According to the studies cited, it is essential to comprehend how educators feel about AI tools for a number of reasons. First of all, educators are at the front of educational change, and the effective integration of AI in classrooms is greatly influenced by their perspectives. While negative attitudes may impede this process, positive attitudes can promote the use of AI tools, improving educational results and instructional effectiveness [32]. To fully utilize AI's ability to customize instruction and expedite administrative duties, educators must be willing to adopt the technology, which is reflected in their attitudes [33]. The necessity for a balanced approach to AI integration is highlighted by educators' worries about data privacy, ethical difficulties, and potential loss of the human touch in education [34]. Designing professional development programs that address these issues and give educators the tools they need to use AI effectively requires an understanding of these attitudes [35]. Additionally, since students often go to their professors for advice on new technology, teachers' views can affect how students view and adopt AI tools [36]. To ensure that AI technologies are created to suit the real needs of educators and students, teachers' perspectives can also help policymakers and AI developers understand the opportunities and practical hurdles in educational contexts [32], [34]. In order to create an educational environment that optimizes AI's advantages while minimizing its risks and, ultimately, improves the calibre and efficacy of education, it is critical to comprehend instructors' attitudes toward the technology [37].

Fred Davis developed the Technology Acceptance Model (TAM) in 1986 to explain why people accept Information Technology. According to TAM, users' behavioural intentions, which are based on their perceptions of the technology's utility and ease of use, predict whether or not technology will be accepted [38]. It is still a crucial foundation for understanding the implementation of technology, in particular in educational environments. It focuses primarily on two factors that affect the intention to use (ITU) technology: Perceived usefulness (PU) and perceived ease of use (PEOU) [39]. The model's adaptability and significance have been highlighted by recent studies that have examined its implementation in a variety of educational contexts, such as online and medical education [38].

Previous studies show that AI tools are instrumental in fostering innovation and efficiency in e-learning environments, addressing the core aim of identifying their role in improving faculty behaviours and practices.

Faculty members become active learning facilitators because of AI's support of an interactive and developing learning environment. But in order to fully realize the advantages of AI in higher education, authors found a number of important challenges that need to be overcome, from moral dilemmas to the psychological effects of AI adoption. To optimize the beneficial effects of AI technologies, the research stresses the necessity of thorough frameworks, AI literacy initiatives, and ethical standards. In order to employ AI to improve teaching methods and guarantee its fair and responsible application in the delivery of education, it is imperative that these factors be addressed.

2.4. Research Design and Methodology

TAM framework was applied for conducting the empirical part of the study, create the survey and gather the data from respondents. The investigation focuses on sustainable development priorities, particularly SDG 4 – quality education and – takes into consideration global sustainable transformation under current challenges.

The study employed a quantitative research design, and the authors constructed the survey using the Google Survey platform. The survey, using the authors` developed questionnaire, was distributed during the period of November 4-20, 2024. 50 respondents from Latvia and Lithuania were surveyed. The target respondents for the study were faculty members of higher education institutions.

The survey intended to analyse the role of AI tools in improving the behaviour and practices of faculty members in the delivery of education in an e-learning environment. It was mentioned to be completely anonymous, with additional information that data will be processed for statistical purposes.

The questionnaire was designed in 5 parts – A, B, C, and D and consisted of 48 questions in total, starting with Respondent profile questions, like gender, age, level of education, etc. Questions were designed as multiple-choice questions and questions with an evaluation scale. A Likert scale ranging from 1 to 5 was used, where 1 indicates strong disagreement and 5 indicates strong agreement.

The structure of the research is presented in Table 1. The questionnaire was designed in 5 parts – A, B, C, D, and E.

Table 1. Structure of the research

	Description		
Part of the survey	**Types of the questions**	**Evaluation scale**	**Codes**
A: Respondent profile	Open/ Closed	Multiple-choice	A1-A10
B: The influence of AI tools on e-learning process aims	Closed	1-strongly disagree; 5 – strongly agree	B1-B7
C: The influence of AI tools on teaching methods in e-learning process	Closed	1-strongly disagree; 5 – strongly agree	C1-C7
D: The influence of AI tools on faculty members practices in general	Closed	1-strongly disagree; 5 – strongly agree	D1-D10
D: The stimuli for faculty members to apply AI tools to the process of e-learning	Closed	1-strongly disagree; 5 – strongly agree	D1-D13

The authors conducted the reliability analysis to indicate the validity of the data. The results are presented in Table 2.

Table 2. Reliability analysis

	Number of items	**Cronbach's α**
B scale: The influence of AI tools on e-learning process aims	7	0.825
C scale: The influence of AI tools on teaching methods in e-learning process	7	0.828
D scale: The influence of AI tools on faculty member practices in general	10	0.902
E scale: The stimuli for faculty members to apply ASI tools to the process of e-learning	13	0.922

These values of Cronbach alpha indicate high internal consistency, making the survey reliable.

Table 3 presents the detailed descriptive statistics of the respondents, offering a thorough overview of their profiles for subsequent analysis.

Table 3. Descriptive statistics of the respondents

Criterion	**Response**	**Number of respondents**	**Percentage (%)**
Gender	Female	33	66%
	Male	17	34%
Age	18-30	2	4%
	31-45	26	52%
	46-60	17	34%
	61+	5	10%
Level of education	Bachelor's degree	6	12%
	Master's degree	26	52%
	Doctoral degree	18	36%
Major field of science	Social Sciences	28	56%
	Natural Sciences	4	8%
	Humanities and arts	8	16%
	Engineering and Technology	9	18%
	Medical and Health Sciences	1	2%
Experience in traditional teaching process delivery	1-5 years	11	22%
	6-10 years	8	16%
	More than 10 years	31	62%
Experience in teaching process delivery in e-learning environment (such as Moodle or others)	1-5 years	22	44%
	6-10 years	17	34%
	More than 10 years	11	22%
Experience at using artificial intelligence tools (ChatGPT, Midjourney, Gemini or any other)	Less than 1 year	18	36%
	1-3 years	27	54%
	I don`t have any experience at all	5	10%

Table 3 Illustrates the diversity of the respondents, representing various gender, age, and education groups. The majority of respondents are female, indicating significant female representation in the faculty population surveyed. A large portion of respondents are mid-career professionals aged 31-45 (52%) and late-career professionals aged 46-60 (34%). Together, these groups form 86% of the sample, which indicates a mature, experienced faculty likely to have a blend of traditional and modern teaching approaches. The respondents are highly educated, with a majority holding postgraduate qualifications: 52% have master's degrees, and 36% hold doctoral degrees. Social Sciences dominate the respondent pool, with more than half (56%), Engineering and Technology (18%), and Humanities and Arts (16%) also have notable representation, whereas Natural Sciences (8%) and Medical Sciences (2%) contribute a smaller portion. A significant majority (62%) of respondents have over a decade of traditional teaching experience. While many respondents (78%) have less than 10 years of experience in e-learning environments, a substantial portion (44%) have 1-5 years of experience. A majority of respondents (54%) have been using AI tools for 1-3 years, while 36% have less than one year of experience. Only 10% lack any experience with AI tools.

Additionally in Part A respondents were asked two following questions: "I know my university has provided training on AI tools use" and "Which AI tools have you ever used for educational purposes (several answers are possible)".

Most faculty members (22 respondents) agree that their university has provided training on AI tools. A significant number of respondents (18) neither agree nor disagree about the training provision. A smaller group (9 respondents) disagrees or strongly disagrees with the statement.

The most widely used tool, mentioned by 44 respondents, was Chat GPT, what indicates its dominance in AI-supported educational tasks. Its versatility and accessibility make it a go-to solution for faculty members across agreement levels.

Grammarly was the second most commonly used tool (19 mentions), while Google Gemini, Midjourney, and DALL-E saw moderate adoption (10, 9, and 6 mentions, respectively). QuillBot (4 mentions) and other unspecified tools (10 mentions) indicate a niche group of users experimenting with alternatives.

2.5. Limitations of the Study and Further Research

Authors formulated several research limitations for this study.

Sample size limitation - common in pilot studies, where the aim is to test the methodology and to collect the preliminary data. Due to the relatively small sample size, the results of 50 respondents are limited in terms of generalizability. To address this limitation in future studies, it is necessary to include a larger number of respondents and form a diversified sample.

Respondents from Latvia and Lithuania participated in the pilot study, which may create a regional bias. Education systems and technology adaptation practices are quite similar in both countries but may significantly differ in other regions. Therefore, the results are limited in reflecting the experience and opinions of educators from other European countries or the world. The choice of these two countries is primarily determinate to regional convenience and data availability. To reduce this limitation, future studies should expand the international context, as well as assess how regional factors affect the integration of AI tools in education.

The data collection method for this pilot study was a self-reported survey, which may be subject to response bias (socially desirable responses, consent bias, etc.). Educators may overestimate their knowledge and skills about AI and provide answers that would be expected in a particular institution. Although the self-reported method is valuable for understanding individuals' perceptions and attitudes, future studies should integrate such as interviews or observations or other to reduce response bias and increase the reliability of the results.

The study sample is represented by educators from Latvian and Lithuanian higher education institutions, who can provide cultural homogeneity in responses. In order to obtain a higher degree of generalizability of the results, how AI tools are perceived in different aspects of education, future studies need to involve other stakeholders, representing different cultures.

Despite several limitations of the study, valuable data were obtained that can serve as a basis for deeper and broader research.

3. Results

This section reports the statistical analysis and results addressing the two research questions formulated in the study.

The research question: RQ1 What is the role of AI tools in improving teaching practices?

To test the RQ1 authors used the One Sample t-test. The results provide quantitative evidence on how educators perceive the role of AI tools in the teaching process.

The authors used the test value 3 ("Neither agree or disagree") to compare mean responses to a hypothetical average. If the mean responses are significantly above 3, it indicates that educators believe AI tools positively influence teaching practices, supporting the hypothesis that AI contributes to improvement. Conversely, if the mean is significantly below 3, it suggests scepticism or perceived challenges in using AI for teaching practices.) The significant result from the calculations on One Sample T-test and descriptives are provided below in Table 4.

Table 4. One sample t-test (n=42)

	Mean	SD	Student's t	df	p
B1. Interaction between students and teacher improves	3,36	0.821	2.819**	41.0	0.007
B5. Needs of the students are better taken into consideration	3,31	0.869	2.308*	41.0	0.026
B6. Lectures goals are better arranged from simpler to more complex	3,33	0.928	2.327*	41.0	0.025
B7. The lesson objectives are implemented on time	3,36	0.791	2.927**	41.0	0.006
C2. Variety of AI tools contribute to the understanding of the course subject and suit its nature	3,45	0.968	3.029**	41.0	0.004
C3. Application of AI tools suits to the process of e-learning education delivery	3,43	0.859	3.232**	41.0	0.002
C6. Use of AI tools helps to prepare the lectures from multiple sources	3,93	0.947	6.353**	41.0	<.001
C7. Use of AI tools helps to employ teaching methods in its practical aspects	3,57	0.887	4.173**	41.0	<.001
Note. $H_a\ \mu \neq 3$ H_0=*AI tools improve teaching practices*					

The results of the One-Sample T-test shows that educators' perceptions of AI tools on teaching practices were significantly different from the neutral value in eight statements. The mean score above the neutral threshold indicates that respondents perceive AI tools as having a positive influence on teaching practices in the e-learning environment. This aligns with the hypothesis, that AI tools improve teaching practices both in the terms of e-learning aims and teaching methods.

AI tools contribute positively to the e-learning aims, especially in improving the interaction between students and teacher (B1, M=3.36, t=2.819, p=0.007), in considering more accurately the student's needs (B5, M=3.31, t=2.308, p=0.026), in structuring lectures goals (B6, M=3.33, t=2.327, p=0.025) and in timing of the implementation of the objectives (B7, M=3.36, t=2.927, p=0.006).

Regarding the teaching methods, the data indicates that AI tools contribute to the better understanding of the course subject (C2, M=3.45, t=3,029, p=0.004), appropriateness of AI tools for e-learning education delivery (C3, M=3.43, t=3.232, p=0.002), better preparation of lecture materials from multiple sources (C6, M=3.93, t=6.353, p<.001), and to better teaching methods in its practical aspects (C7, M=3.57, t=4.173, p<.001).

Considering the limitation of this study (relatively small sample size), authors conclude, that the role of AI tools in improving teaching practices can be significant in the terms of teaching aims and teaching methods, contributing to improving the interaction, considering needs of students, structuring course goals, objectives, and preparation of materials.

The second research question was formulated for this study: RQ2 What is the role of AI tools in improving faculty practices in general? To answer the research question, the authors conducted a multiple regression analysis to identify which factors influence faculty practices most significantly. The dependent variable was the aggregated measure (mean) of the scale D "The influence of AI tools on faculty members practices in general". Authors tested three models.

The first model included the predictors (independent variables) from B scale "The influence of AI tools on e-learning process aims" and the authors found out, that R2=0.551 (55.1%) of the variance in the dependent variable is explained by the independent variables in the model. This indicates a moderate level of explanatory power. Predictors explain the influence of AI tools on faculty members practices in general, and the factor "lesson objectives are implemented on time" shows the statistically significant importance. The results are presented in Table 5.

Table 5. Linear regression - model fit measures

Model	**R**	**R^2**
1	**0.743**	**0.551**
Note. Models estimated using sample size of N=42		
Model Coefficients: D scale: The influence of AI tools on faculty members practices in general		
Predictor	**Estimate**	**SE**	**t**	**p**
Intercept	0.0255	0.504	0.0507	0.960
B7. The lesson objectives are implemented on time	0.3846	0.175	2.1934*	0.035

The model presented in Table 5 shows strong explanatory power (R^2=55%), indicating that the predictors account for most of the variance in faculty practices. Faculty practices are significantly influenced by how AI tools enhance lesson objectives to be implemented on time (t=2.1934, p<0.04).

In the second model the authors used predictors factors from C scale "The influence of AI tools on teaching methods in e-learning process". The model demonstrates very strong predictability (R2=0,718 or 71,8%). The calculations are presented in Table 6.

Table 6. Linear regression - model fit measures 1

Model	**R**	**R^2**
1	0.847	0.718
Note. Models estimated using sample size of N=42		
Model Coefficients: D scale: The influence of AI tools on faculty members practices in general		
Predictor	**Estimate**	**SE**	**t**	**p**
Intercept	0.2645	0.3801	0.696	0.491
C1. AI tools help to take into consideration individualities of students	0.1725	0.0860	2.006*	0.053
C4. Use of AI tools positively impacts students' motivation to learn	0.3006	0.0872	3.447**	0.002
C6. Use of AI tools helps to prepare the lectures from multiple sources	0.2799	0.1156	2.422*	0.021

The model shows that the most significant predictors from the scale the teaching methods in e-learning process contributing to improvement of teaching practices in general are: "AI tools help to take into consideration individualities of students", "Use of AI tools positively impact students' motivation to learn", "Use of AI tools help to prepare the lectures from multiple sources".

These results show the importance of taking students' needs into consideration especially during application of AI tools in learning process, as their motivation is directly affected then. Application of AI tools looks to be almost unavoidable during the preparation of lecture materials in the modern circumstances.

In the third model the authors used predictors factors from E scale "The stimuli for faculty members to apply AI tools to the process of e-learning". The model demonstrates very strong predictability (R^2=0,766 or 76,6%). The results are presented in Table 7.

Table 7. Linear regression - model fit measures 2

Model	**R**	**R^2**
1	0.875	0.766
Note. Models estimated using sample size of N=42		
Model Coefficients: D scale: The influence of AI tools on faculty members practices in general		
Predictor	**Estimate**	**SE**	**t**	**p**
Intercept	0.15323	0.415	0.3690	0.715
E8. Use of AI tools help students to solve better their study problems	0.32925	0.160	2.0605*	0.049

As the results show, the contribution of application of AI tools in e-learning process directly impacts students' ability to solve better their study problems. This lies directly in the consonance with the previous statement, that student motivation is affected by the application of AI tools during e-learning process, as well as their individual needs are also better taken into consideration.

To get more insights the authors conducted the analysis, how experience in using AI tools impacts the improvement of teaching practices by educators.

For this purpose, the authors applied Kruskal-Wallis non-parametric test. The authors used B scale "The influence of AI tools on e-learning process aims" and C scale "The influence of AI tools on teaching methods in e-learning process" statements.

B scale "The influence of AI tools on e-learning process aims":

1. Interaction between students and teachers improves.
2. Interaction between students improves.
3. The role of students in decision-making improves.
4. Educational goals improve.
5. The needs of the students are better taken into consideration.
6. Lecture goals are better arranged from simpler to more complex.
7. The lesson objectives are implemented on time

C scale "The influence of AI tools on teaching methods in e-learning process":

1. AI tools help to take into consideration the individualities of students.
2. A variety of AI tools contribute to the understanding of the course subject and suit its nature.
3. Application of AI tools suits to the process of e-learning education delivery.
4. The use of AI tools positively impacts students' motivation to learn.
5. The use of AI tools contributes to open discussion among students.
6. The use of AI tools helps to prepare the lectures from multiple sources.
7. The use of AI tools helps to employ teaching methods in their practical aspects.

Kruskal-Wallis non-parametric test showed that for all statements, the p> 0.05, indicating **no statistically significant differences** between groups based on experience. For two statements "Interaction between students and teacher improves" and "Use of AI tools help to employ teaching methods in its practical aspects" there were borderline results – p=0.070 and p=0.081 respectively. Based on the analysis, the authors conclude, that experience of using AI tools in e-learning does not impact the improvement of teaching practices.

The second point of interest was to explore if *experience of using AI tools in e-learning by educators* can impact *the improvement of faculty practices in general.*

For this purpose, the authors used D scale "The influence of AI tools on faculty members' practices in general" statements:

1. The use of AI tools helps me to enjoy course delivery more.
2. The use of AI tools helps me to encourage students to be more active in the study process.
3. The use of AI tools allows me to answer students` inquiries more deeply and precisely.
4. The use of AI tools helps me to develop a comprehensive study plan.
5. The use of AI tools helps me to express thoughts and ideas more clearly.
6. The use of AI tools helps me to treat students with appreciation and respect.
7. The use of AI tools directs students to benefit from them and encourages students to do so.
8. The use of AI tools provides students an opportunity to better express the results of their studies.
9. The use of AI tools helps to cultivate confidence in students.
10. The use of AI tools helps to deal with students fairly and equitably.

Kruskal-Wallis non-parametric test showed that for all statements, the p>0.05, except for the "Use of AI tools helps to develop a comprehensive study plan", where the p=0,057, which is a borderline result, but still can be considered as statistically significant. The mean rank for the statement, where the first group was the one who indicated that they have experience in usage of AI less than one year, second – 1-3 years, while the third one indicated no experience at all, was r=22.03, r=29,57 and r=16.00 respectively. In this case the authors can conclude, that the group with higher experience in AI showed higher results in a ranking of development of a comprehensive study plan, but the statistically significant difference for all other statements was not proved.

4. Discussion

As an initial exploratory investigation, the findings provide preliminary insights into the role of AI tools in improving teaching practices and faculty engagement in e-learning environments.

The results show that the introduction of AI tools enhances student-teacher interaction, contributes to structuring lesson content, and significantly supports faculty members in preparing educational materials. Such findings are consistent with prior studies that state AI can be a useful tool in personalized and adaptive learning experiences [8]. However, the sample size of this study is limited, and this necessitates caution in findings generalization to broader academic settings. The main finding of the research is that the faculty members positively perceive AI tools in facilitating structural lesson planning and feedback mechanisms. This statement is aligned with the study [5], that focused on AI`s ability to automate and customize instructional strategies. Still, despite the fact AI tools can support faculty members to tailor content to individual student needs, analysis of existing literature signalizes potential algorithmic biases that could reinforce learning inequalities if not properly managed [16]. Research results support this concern, as faculty members perceive AI-driven personalization as useful but potentially problematic when reliance on technology replaces pedagogical experience. Over-reliance on AI is a critical point raised in this study. Faculty members confirmed the obvious benefits of the AI tool's introduction in the study process in an e-learning environment but stated some reservations regarding its long-term implications on students` critical thinking and self-learning abilities. These findings align with previous research, which shows that excessive use of AI can lead to cognitive dependency, thus reducing students` ability to engage in deep learning and independent problem-solving [1], [25].

AI tools can improve administrative efficiency; however, some educators underlined the risk of diminishing the human element in teacher-student interactions, such a concern is echoed in several sources [36]. Integration of AI tools can be a valuable source of growth, still, the ethical challenges associated with that remain a critical concern. The results of this study show that faculty members mention different issues related to plagiarism, data privacy, and ethical use of AI-generated content. Similar concerns have been raised also before and researchers emphasized the need to structure AI literacy programs and robust institutional policies to mitigate these risks [19], [7]. This research is of a preliminary nature, however, future investigation should explore such ethical dilemmas in a wider and more diverse academic context. Also, the psychological impact of AI adoption in education might be analyzed as concerns regarding technology-induced stress and social isolation persist. Similar concerns have been reported, saying that AI can increase cognitive engagement, but it also may reduce opportunities for meaningful human interaction [23]. Moreover, AI tools might unintentionally limit students` social skills, as it was emphasized previously [24]. Such a perspective requires deeper investigation in future research. As noted above, this is a trial investigation, and its results should be viewed as indicative rather than conclusive. However, the findings highlight key trends that are worth further investigation on a larger scale. Future research should involve a more extensive and perhaps international sample to gain a deeper understanding of AI`s impact on the teaching and learning process in an e-learning environment in particular.

5. Conclusion

Considering the limitation - relatively small sample size, authors critically evaluate obtained results and conclude about the tendencies only.

The methodology used in this study is appropriate and reliable, and can be used in wider sample for broader and deeper research for understanding of AI tool's role in e-learning.

The statistical analysis shows several possibilities of improving teaching and faculty practices by applying AI tools in e-learning process. Educators view that the role of AI tools in improving teaching practices can be significant in the terms of teaching aims and teaching methods, contributing to improving the interaction, considering needs of students, structuring course goals, objectives, and preparation of materials.

The results of the regressions indicate, that faculty practices are significantly influenced by how AI tools enhance lesson objectives to be implemented on time, as well as AI tools contribute to considering more accurately the students' needs in learning process and strengthen their motivation. Application of AI tools look to be almost unavoidable during the preparation of lecture materials in the modern circumstances. AI application in e-learning process positively affects the ability of students to solve learning problems.

Additionally, authors conclude, that experience in using AI tools has no impact on evaluating the aims of the e-learning process, but there are indicated some borderline results in differences of perceiving the teaching methods between the groups with different experience of using AI tools in e-learning. Research findings revealed, that the group with higher experience in AI showed higher results in a ranking of development of a comprehensive study plan, but the statistically significant difference for all other statements was not proved.

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