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DEVELOPING AN ASSESSMENT TOOLKIT TO EVALUATE PRE-SERVICE TEACHERS' ARTIFICIAL INTELLIGENCE ACCEPTANCE BASED ON THE TECHNOLOGY ACCEPTANCE MODEL (TAM)

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Abstract. This study aims to develop a measurement scale assessing AI acceptance among pre-service teachers, grounded in the Technology Acceptance Model (TAM) – an informative systems theory that explains how users accept and use a certain technology, and extended with a foundational component: conceptual understanding of AI. The proposed instrument comprises five components: Conceptual Understanding (CON), Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward AI (ATT), and Behavioral Intention to Use AI (BIU). The research employs an in-depth literature review method aimed at systematizing theoretical and practical concepts related to the Technology Acceptance Model (TAM) and the application of AI in education. A total of 50 items are developed through literature review. The study contributes to the expansion of the TAM framework in educational contexts and offers a measurement instrument applicable to teacher training programs and future research on AI integration in education.

Keywords: Artificial Intelligence, Technology Acceptance Model, pre-service teachers, scale development, teacher education.

1. Introduction

The rapid advancement of Artificial Intelligence (AI) has profoundly impacted numerous sectors, including education [1]. From intelligent automated grading systems to personalized learning recommendations and text-generating tools such as ChatGPT, the integration of AI into education is no longer a distant prospect but a tangible and increasingly prevalent reality. As teacher education programs seek to adapt to these technological transformations, understanding how future educators perceive and accept AI becomes critically important to ensure its effective integration into teaching and learning environments. The acceptance and adoption of AI by pre-service teachers play a pivotal role in shaping future pedagogical practices. While AI holds significant potential to personalize learning, optimize assessment, and enhance student engagement, the actual impact of these technologies depends largely on teachers' readiness and ability to use them effectively. Therefore, assessing pre-service teachers' awareness, attitudes,

and behavioral intentions toward AI constitutes a foundational step for successful implementation.

In this context, there has been a growing call for the development of reliable and context-sensitive measurement tools to evaluate AI acceptance in teacher education, particularly in developing countries such as Vietnam. The Technology Acceptance Model (TAM), developed by Davis (1989)[17], provides a robust theoretical framework for explaining users' acceptance of technology. The model posits that two core constructs Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) influence users' attitudes toward technology, which in turn shape their behavioral intentions to use it. TAM has been widely validated across various educational studies and remains a dominant model for examining technology integration in the classroom [2] [3]. Despite its extensive application in educational technology research, few studies have specifically employed TAM to examine AI acceptance among pre-service teachers. Moreover, existing instruments often overlook a foundational component: conceptual understanding of AI, namely knowledge of its nature, underlying principles, and distinctions from traditional digital tools. This gap is particularly critical for pre-service teachers, who are still in the process of forming pedagogical beliefs and developing technological competencies. To address this research gap, the present study aims to develop and propose a framework and item pool for future validation to assess AI acceptance among pre-service teachers. This framework is grounded in TAM and extended with an additional construct: conceptual understanding of AI. Recent studies emphasize the need for specialized tools to assess readiness for AI in education. For example, Ramazanoğlu and Akın (2024) developed the "Ready for Artificial Intelligence Applications Scale" (RAIS), which evaluates teachers' readiness based on technological self-efficacy, student interaction, and ethical awareness [15]. Similarly, Alejandro et al. (2024) confirmed the effectiveness of an extended TAM model in measuring pre-service teachers' acceptance of AI, highlighting the impact of perceived usefulness and positive attitudes on their intention to use AI in teaching [16].

The proposed instrument comprises five components: (1) Conceptual Understanding (CON), (2) Perceived Usefulness (PU), (3) Perceived Ease of Use (PEOU), (4) Attitude Toward AI (ATT), and (5) Behavioral Intention to Use AI (BIU). By incorporating conceptual understanding, the instrument not only captures affective and behavioral dimensions but also reflects learners' cognitive depth aligning with the broader goal of developing well-rounded teacher competencies. This study contributes to the field of educational research in two key ways: (1) by extending the TAM framework with the addition of conceptual understanding of AI, and (2) by applying the model in a practical context teacher education in Vietnam where empirical data remains limited. It also responds to recent scholarly calls to develop culturally and contextually relevant measurement tools. [2]

However, the readiness of pre-service teachers to embrace AI in education is not solely dependent on cognitive understanding of the technology. Several cultural, social, and infrastructural factors play a significant role in shaping this readiness. For instance, students may be concerned about AI potentially replacing human jobs or may perceive the technology as overly complex, hindering their willingness to integrate AI into their learning. Moreover, the limited opportunities for hands-on exposure to AI in educational settings mean that many pre-service teachers lack the practical experience necessary to develop the skills and confidence to use AI effectively. Additionally, the support from educational policies and infrastructure is essential. Government and educational institutions must invest in technological resources, including computers, software, and high-speed internet, to provide an environment that facilitates AI access for students. Furthermore, the attitude of instructors toward technology has a profound impact. If instructors hold negative views or lack understanding of AI, it becomes difficult for students to develop the readiness to engage with this technology. Conversely, when instructors are open-

minded and knowledgeable about AI, they inspire and support students in applying the technology to their learning.

By offering a proposed instrument that comprehensively assesses pre-service teachers' perceptions, attitudes, and behavioral intentions toward AI, this research opens new avenues for future studies on AI acceptance in education. It also supports the development and refinement of teacher training programs amid the rise of artificial intelligence. By bridging conceptual knowledge with behavioral prediction, this study contributes both theoretically and practically to the field of AI in education. It offers a conceptually grounded assessment framework tailored to teacher training and underscores the importance of equipping future educators with foundational knowledge of AI. To better understand the factors influencing AI acceptance in teacher education—particularly among pre-service teachers who are still developing their pedagogical beliefs and technological competencies—it is essential to construct a comprehensive measurement instrument. Grounded in the extended Technology Acceptance Model (TAM), which incorporates the construct of conceptual understanding of AI, this study raises the following research question to guide the development of the proposed scale:

What are the key components necessary to develop a comprehensive measurement scale for assessing AI acceptance among pre-service teachers based on the extended Technology Acceptance Model (TAM)?

2. Content

2.1. Artificial Intelligence in Education

Artificial Intelligence (AI) is broadly defined as the simulation of human intelligence processes by computer systems. In recent years, AI has emerged as a transformative force across all levels of education, with applications ranging from personalized learning [4], automated grading, learning analytics, and intelligent tutoring systems to natural language tools such as Generative AI and Grammarly. Many universities around the world have been building online training systems to manage learning and organize online exams [5]. AI is increasingly embedded not only as a support tool but also as a direct component in instructional design, curriculum development, and learning analysis. However, AI can also potentially undermine student learning, prompting the need to understand learning processes in generative AI-supported contexts (SLA-GAI) [6].

Artificial Intelligence (AI) has a significant influence on the field of teacher education. Pre-service teachers need not only learn how to use AI to support teaching but also develop a critical understanding of its ethical implications, data privacy issues, and the socio-technical nature of AI tools. Therefore, assessing pre-service teachers' conceptual understanding of AI is essential for evaluating their pedagogical and ethical readiness to apply such technologies in the classroom.

Despite AI's growing prevalence, its conceptual dimensions such as its core characteristics, operational mechanisms, and distinctions from traditional digital tools remain underexplored in educational contexts [7]. Conceptual understanding of AI includes knowledge of machine learning algorithms, adaptive feedback systems, its role in learning personalization, and its limitations in replicating human pedagogical capabilities [8]

Most existing studies on AI in education focus on functional applications and outcomes rather than the underlying conceptual cognition. However, pre-service teachers' understanding of AI's nature fundamentally influences their beliefs, willingness to use, and perceptions of the technology's usefulness and ease of use. Recent scholars have emphasized the need to incorporate conceptual understanding into research, especially in teacher education, where critical thinking and the evaluation of technological innovation are crucial. Integrating this factor enhances the explanatory power of the Technology Acceptance Model (TAM).

2.2. Core Constructs and Extensions of the Technology Acceptance Model (TAM) in Education

The Technology Acceptance Model (TAM), developed by Davis (1989)[17], is one of the most robust theoretical frameworks for explaining users' acceptance of technology. TAM posits that two primary constructs Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) influence users' Attitude toward the technology (ATT), which in turn shapes their Behavioral Intention to Use (BIU).

In education, TAM has been widely validated to explain the acceptance of learning management systems [Teo, 2011], mobile learning [9], and various digital teaching tools. For pre-service teachers, PU is often linked to the capacity of AI to support lesson planning, enhance teaching efficiency, and increase learner engagement. Meanwhile, PEOU concerns whether AI tools are intuitive, easy to learn, and seamlessly integrable into classroom practice.

Nevertheless, the traditional TAM framework assumes a functional user interaction with technology and often omits a foundational cognitive construct conceptual understanding. Recent studies have extended TAM by incorporating variables such as computing self-efficacy, perceived risks, or social influences. This study expands TAM by introducing conceptual understanding of AI as a core cognitive antecedent.

Within TAM, Attitude (ATT) refers to the user's emotional responses and evaluations of the technology. Positive attitudes are typically shaped by favorable experiences, perceived reliability, and ethical considerations [10]. In the AI context, attitudes also reflect beliefs about autonomy, transparency, and AI-generated outcomes [11].

In educational settings, teachers' attitudes toward AI are influenced by how AI is framed whether as a supportive tool or as a replacement for teachers [12]. Pre-service teachers often exhibit ambivalence: while they recognize AI's potential to reduce workload and personalize instruction, they also express concerns about fairness, transparency, and the potential for human displacement. Measuring attitudes is thus crucial for identifying motivational drivers and barriers to AI adoption in teaching.

Behavioral Intention (BIU) reflects an individual's motivation or willingness to use AI in the future. It is widely regarded as the closest predictor of actual usage. Among pre-service teachers, BIU is influenced by prior technology experiences, organizational support, digital competence, and access to AI tools during training [13].

However, intention does not always translate into practice particularly in the presence of infrastructural, ethical, or policy-related barriers. Therefore, BIU must be analyzed within specific contexts. This study assesses BIU among pre-service teachers who do not yet have full classroom autonomy, but whose intentions are key indicators of their future professional orientation.

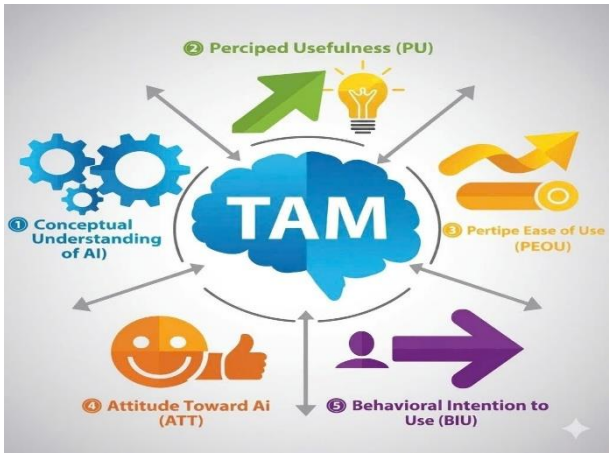
Although numerous TAM-based instruments have been developed for educational settings, most focus on generic digital technologies rather than AI-specific applications. Moreover, very few tools have been tailored for or validated with pre-service teacher populations – a group characterized by developing pedagogical beliefs and limited classroom experience.

Notably, existing tools often neglect conceptual understanding of AI, limiting their contextual validity in teacher education. Additionally, many rely solely on self-report surveys without integrating expert validation or pilot testing [14]. This study addresses these gaps by designing a context-appropriate, psychometrically validated instrument that includes the conceptual understanding component and is tailored for pre-service teachers.

2.3. A system of criteria for assessing pre-service teachers' artificial intelligence acceptance

The Technology Acceptance Model (TAM), proposed by Davis (1989)[17], is a widely used theoretical framework for explaining users' acceptance of technology. It identifies two key factors—Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) that influence users' attitudes and behavioral intentions toward technology adoption. Over time, TAM has evolved into TAM2, TAM3, and UTAUT, integrating additional variables such as social influence, self-efficacy, and facilitating conditions. In education, TAM has been applied to study various technologies; however, few studies have incorporated conceptual understanding, especially in the context of AI, into the model, which this study seeks to address. This study contributes to the literature by clarifying the relationship among foundational knowledge, perceived functionality, emotional responses, and behavioral outcomes in the context of AI. The multi-dimensional structure of the instrument aligns with the logic of cognitive and professional development in teacher preparation.

The tool has potential applications not only for assessment purposes but also in designing AI capacity-building programs for students and educators. Furthermore, it can be adapted for use in various educational settings, such as in-service teacher training, postgraduate education, and international comparative studies.



The proposed Technology Acceptance Model (TAM) explains the factors influencing the acceptance and use of new technologies, particularly Artificial Intelligence (AI). The process begins with Conceptual Understanding of AI (CON), where users develop an understanding of AI. This leads to the formation of Perceived Usefulness (PU), as users recognize the potential benefits of AI for work or personal tasks. Based on their perception of usefulness, users then evaluate the Perceived Ease of Use (PEOU), which concerns how convenient and easy it is to interact with AI. These perceptions influence the Attitude Toward AI (ATT), shaping whether users feel positive or negative about using AI. Finally, users' Behavioral Intention to Use AI (BIU) is formed, determining their likelihood of continued use or rejection of AI in the future. These five factors interact, with each stage influencing the next, providing a comprehensive framework for understanding AI adoption.

2.3.1. Conceptual Understanding of AI (CON) – Remembering Level

This section measures students' ability to understand definitions, basic terms, and core concepts related to AI in education. As part of the extended Technology Acceptance Model (TAM) employed in this study, conceptual understanding of artificial intelligence (AI) was introduced as a foundational construct to reflect pre-service teachers' cognitive awareness of AI's nature, functions, and educational relevance. The following ten items (CON1–CON10) are divided into three cognitive levels: recognition, interpretation, and application based on Bloom's revised taxonomy. This scale not only measures declarative knowledge but also encourages pre-

service teachers to reflect critically on how AI distinguishes itself from traditional tools and how it can be utilized in instructional settings. The inclusion of this component is expected to provide deeper insights into the factors shaping future educators' acceptance and responsible use of AI in teaching and learning environments.

Item	Statement
CON1	I know that Artificial Intelligence (AI) is a technology that simulates human thinking and learning capabilities, commonly used in education today (e.g., ChatGPT, Grammarly, Khanmigo, etc.).
CON2	I am aware of the differences between AI (which can process natural language, images, and learning data) and conventional digital tools.
CON3	I understand that AI is a technological trend in modern education.
CON4	I can distinguish between machine learning-based AI and traditional automation tools.
CON5	I understand that AI can adapt learning content based on individual learner ability.
CON6	I understand the components of an AI system, such as data, algorithms, and deep learning models.
CON7	I can explain the nature of an AI tool I have used to someone else.
CON8	I can demonstrate the role of AI in a specific pedagogical scenario (e.g., differentiated instruction).
CON9	I can compare AI-based and non-AI learning tools in terms of functionality and effectiveness.
CON10	I can make a preliminary evaluation of the strengths and limitations of AI based on my conceptual understanding.

2.3.2. Perceived Usefulness (PU)

This section evaluates the extent to which students believe AI enhances learning, teaching effectiveness, and professional development. To evaluate how pre-service teachers perceive the benefits of artificial intelligence (AI) in educational contexts, this study adopts the "Perceived Usefulness" (PU) construct from the original Technology Acceptance Model (TAM) as one of its core components. The ten items listed below (PU1–PU10) are divided into three cognitive levels: recognition, interpretation, and application based on Bloom's revised taxonomy. These ten questions aim to capture pre-service teachers' beliefs about the practical value of AI in supporting academic activities. These include enhancing access to academic content, streamlining lesson planning, improving feedback and assessment quality, facilitating classroom management, and encouraging active learning. The items also assess the extent to which participants believe AI contributes to personal learning efficiency and future teaching preparedness. By exploring perceptions of AI's usefulness in both learning and teaching scenarios, this dimension offers insights into the motivational drivers that may influence behavioral intention to use AI in future educational practice. The findings are expected to inform AI integration strategies in teacher preparation programs.

Item	Statement
PU1	AI helps me access academic information quickly and accurately.
PU2	Using AI helps me save time when completing assignments.
PU3	I understand that AI can support lesson planning and instructional design aligned with student needs.

PU4	I perceive that AI can facilitate personalization and learning analytics for students.
PU5	I understand that AI can improve the quality of feedback and assessment in teaching.
PU6	I believe AI is a beneficial tool for future teachers.
PU7	I can suggest instructional scenarios where AI plays a supportive role.
PU8	I understand that AI can support more effective classroom management.
PU9	I know how to use AI to develop active learning activities.
PU10	I believe AI can help me learn more effectively.

2.3.3. Perceived Ease of Use (PEOU)

This construct measures students' perception of how accessible, learnable, and integrable AI tools are in the learning process. In this study, PEOU is employed to assess how pre-service teachers evaluate the usability, accessibility, and learnability of AI tools in educational settings. The ten items presented in the table below (PEOU1- PEOU10) are divided into three cognitive levels—recognition, interpretation, and application based on Bloom's revised taxonomy. These ten questions were designed to reflect pre-service teachers' experiences and perceptions regarding their ability to engage with AI tools with minimal difficulty. These items cover various aspects such as intuitive user interfaces, ease of integration into learning plans, self-directed learning capabilities, and the ability to support peers in using AI technologies. Additionally, the scale gauges their confidence in applying AI in both instructional and assessment contexts.

By evaluating PEOU, this component provides insight into students' confidence and autonomy in adopting AI, which plays a critical role in shaping their attitudes and behavioral intentions. Understanding pre-service teachers' perceptions is essential to supporting AI integration in teacher education curricula and ensuring sustainable AI use in their future teaching practices.

No.	Item
PEOU1	I find today's AI tools easily accessible for students.
PEOU2	Learning how to use AI for educational purposes is not overly complicated for students.
PEOU3	AI tools have user-friendly interfaces, features, and support multiple accessible languages.
PEOU4	I can explain and teach others how to use certain AI tools in learning.
PEOU5	I understand the basic steps needed to use AI tools in teaching.
PEOU6	I find it easy to integrate AI into my learning plan, especially in group discussions.
PEOU7	I am proactive in exploring and using updated AI tools.
PEOU8	I can incorporate AI into assessment design or learning activities.
PEOU9	I do not encounter significant difficulties in accessing AI technologies.
PEOU10	I am able to self-learn how to use AI through documents or video tutorials.

2.3.4. Attitude Toward AI (ATT)

This section assesses emotional responses, agreement, and trust toward AI in education. Attitude toward Artificial Intelligence (AI) represents a critical psychological factor influencing users' willingness to adopt and integrate new technologies. In the Technology Acceptance Model (TAM), attitude refers to the degree of positive or negative feelings an individual holds toward using a particular technology. Within the context of teacher education, this construct reflects how

pre-service teachers emotionally and cognitively evaluate the use of AI in both learning and instructional contexts. The ten items in the table below (ATT1–ATT10) are divided into three cognitive levels: recognition, interpretation, and application based on Bloom's revised taxonomy and developed to measure affective responses, beliefs, and levels of trust regarding AI implementation. These items encompass key aspects such as perceived necessity, professional interest, ethical awareness, trust in AI-assisted outcomes, and critical reflection on its limitations. The scale also captures students' proactive behaviors in suggesting AI use for collaborative learning and educational innovation. By assessing attitudes toward AI, this component helps reveal the extent to which pre-service teachers are prepared to embrace technology while maintaining pedagogical responsibility. Positive yet critical attitudes serve as an important bridge between perceived usefulness and actual behavioral intention. Understanding these attitudes is crucial for designing responsive teacher training programs that foster ethical and informed technology adoption in education.

No.	Item
ATT1	I believe using AI in education is necessary.
ATT2	AI could become an important part of my future teaching.
ATT3	I feel interested in using AI in learning.
ATT4	I understand that ethical and legal considerations must accompany AI usage.
ATT5	I believe AI should be used as a supportive tool and cannot replace teachers' roles in classrooms.
ATT6	I actively propose the use of AI in learning, especially for group work, projects, or education-focused seminars.
ATT7	I regularly use AI as part of my self-directed learning.
ATT8	I trust AI-supported outcomes but believe they require teacher oversight and direction.
ATT9	I clearly understand AI's strengths and limitations and have critiqued ineffective uses of AI in classrooms.
ATT10	I know how to choose AI tools that fit different learning objectives.

2.3.5. Behavioral Intention to Use AI (BIU)

This section measures behavioral tendencies and students' readiness to use AI now and in the future. Behavioral intention (BIU) is a central component of the Technology Acceptance Model (TAM), representing an individual's readiness and likelihood to engage with a particular technology in the future. In this study, BIU is employed to capture pre-service teachers' willingness to adopt AI tools as part of their academic and future instructional practices. Measuring this intention provides valuable insights into the long-term sustainability and practical impact of AI integration in education. The ten items below (BIU1–BIU10) are divided into three cognitive levels: recognition, interpretation, and application based on Bloom's revised taxonomy and were carefully designed to assess various dimensions of behavioral intention, including ongoing usage, proactive learning, integration into teaching, peer influence, and evaluative experimentation. These items reflect the extent to which pre-service teachers not only envision AI as part of their future classroom but also demonstrate active engagement and self-initiated exploration of AI tools during their current studies. Understanding these intentions is essential for curriculum designers and educational policymakers aiming to foster AI-related competencies in teacher training programs. The results also support strategic efforts to align teacher preparation with the evolving demands of AI-driven education.

No.	Item
BIU1	I plan to continue using AI in my studies and am willing to take additional courses to keep pace with AI developments in education.
BIU2	I intend to integrate AI into my teaching practices when I become a teacher.
BIU3	I am willing to apply AI across various aspects of learning.
BIU4	I recognize that developing AI skills will benefit my professional career.
BIU5	I understand that AI can help solve many teaching-related challenges.
BIU6	I have used AI to complete specific academic tasks (e.g., lesson planning, proofreading).
BIU7	I am willing to recommend useful AI tools to my peers or colleagues.
BIU8	I believe AI will be an integral part of my future classroom.
BIU9	I understand that using AI requires critical thinking and creativity.
BIU10	I have experimented with several AI tools and evaluated their effectiveness.

Based on the findings, this study offers several practical and theoretical recommendations. For teacher education institutions, it is essential to systematically integrate AI-related content into training curricula, including conceptual understanding, technical proficiency, and ethical awareness. The developed assessment instrument can be employed to evaluate AI competencies at both the entry and exit points of teacher preparation programs. For education policymakers, digital competency frameworks for teachers should explicitly incorporate AI-related components, ranging from foundational knowledge to responsible professional behavior. The framework presented in this study may serve as a standardized tool to support the design, implementation, and evaluation of professional development initiatives in emerging technologies. In terms of future research, further validation of the instrument is recommended with broader participant groups such as in-service teachers, university lecturers, and students from non-education disciplines. Structural Equation Modeling (SEM) should be utilized to explore the model's theoretical fit and the causal relationships among core constructs. Lastly, for classroom practice, teacher educators may use this instrument as a diagnostic tool to assess students' readiness prior to implementing AI-integrated instruction. This would enable more effective alignment of content, teaching strategies, and learning resources with students' competencies and expectations.

3. Conclusions

In the context of a rapidly transforming global education landscape driven by the Fourth Industrial Revolution, Artificial Intelligence (AI) is becoming an essential element in teaching and learning. For pre-service teachers, the ability to perceive, evaluate, and be ready to integrate AI into professional practice is a critical prerequisite for ensuring educational quality in the digital age. However, to comprehensively assess AI acceptance among this specific group, a reliable, theoretically grounded, and contextually relevant measurement tool is essential.

This study developed an assessment instrument designed to measure the level of AI acceptance among pre-service teachers, based on the Technology Acceptance Model (TAM) extended with a conceptual understanding dimension. The instrument comprises 50 items divided into five core constructs: (1) Conceptual Understanding of AI(CON), (2) Perceived Usefulness (PU), (3) Perceived Ease of Use (PEOU), (4) Attitude Toward AI (ATT), and (5) Behavioral Intention to Use AI (BIU). This study contributes to the expansion of TAM in teacher education

and offers a practically valuable measurement tool that can be widely applied in evaluation, training, teaching foreign languages, and international comparative research on AI acceptance in education.

The five-factor tool based on the Technology Acceptance Model (TAM) holds great potential for application in teacher education in Vietnam. First, when pre-service teachers are provided with basic knowledge of AI, Conceptual Understanding of AI (CON) will help them overcome concerns about the technology. Perceived Usefulness (PU) will improve as students become more aware of AI's benefits in education, such as optimizing teaching and learning processes. Perceived Ease of Use (PEOU) can become more favorable if AI tools are designed to be accessible and effectively support students. Positive attitudes from both students and instructors toward AI (Attitude Toward AI - ATT) will encourage the use of this technology in teaching. Finally, Behavioral Intention to Use AI (BIU) will increase as students recognize the benefits and receive support from instructors and modern technological infrastructure.

However, a limitation of this study lies in the fact that the developed instrument has not yet undergone full-scale validation and standardization testing. Although the instrument is grounded in the theoretical framework of TAM and has been carefully designed, further testing is still necessary to ensure its reliability and validity across different cultural and educational contexts. In future studies, it is recommended to conduct a comprehensive validation of the instrument with a broader sample, including pre-service teachers from different regions and educational backgrounds. Structural equation modeling (SEM) could be used to assess the theoretical fit and explore the causal relationships among the constructs. Additionally, pilot studies in real classroom settings could provide valuable feedback to refine the tool further. These steps would ensure that the measurement instrument is robust and effective in assessing AI acceptance among pre-service teachers, ultimately contributing to the integration of AI in teacher education programs.

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