

The 'Utilitarian-Anxiety Paradox': A TAM-based Analysis of Junior High School English Teachers' Artificial Intelligence Acceptance

Faisal^{1,*}, Maulida Qurrota A'yunina², Condro Nur Alim³, & Jiraporn Yiamkhamnuan⁴

¹Master of English Education, Universitas Muhammadiyah Purwokerto, Indonesia

²English Language Education Study Program, Universitas Muhammadiyah Purwokerto, Indonesia

³English Literature, Universitas Muhammadiyah Purwokerto, Indonesia

⁴Bachelor of Arts Degree in Business English, Prince of Songkla University, Thailand

*Corresponding email: faisal@ump.ac.id

Received: 27 January 2026

Accepted: 05 June 2026

Published: 26 June 2026

Abstract: Despite the widespread perception that artificial intelligence (AI) has the potential to transform English teaching, the psychological dimension of teachers' acceptance, particularly the coexistence of high perceived usefulness and persistent anxiety, remains under-theorized in the Indonesian junior-secondary context. Using the Technology Acceptance Model (TAM), this study aimed to (1) determine the level of AI acceptance among junior high school English teachers in Indonesia and (2) investigate the factors shaping it, especially the proposed 'utilitarian-anxiety paradox.' In a quantitative cross-sectional survey, 42 teachers completed a Likert-scale instrument derived from Wang et al. (2021), measuring six TAM constructs: perceived usefulness (PU), perceived ease of use (PEU), self-efficacy (SE), anxiety (AN), attitude toward use (ATU), and behavioral intention (BI). Data were analyzed using descriptive statistics, Pearson correlations, multiple linear regression, and a moderation analysis. Overall acceptance was high ($M = 3.96$), with PU ($M = 4.32$) and BI ($M = 4.08$) rated most positively. At the same time, anxiety remained moderate ($M = 3.54$), and analysis showed that anxiety did not decrease with teacher perception of AI as more useful or easier to use. A multiple linear regression model explained 70.6% of the variance in behavioral intention ($R^2 = .706$, $p < .001$); emotional comfort (reverse-scored anxiety) was the strongest predictor ($\beta = .427$), followed by PU ($\beta = .366$) and SE ($\beta = .334$). In contrast, PEU was not significant ($\beta = -.105$). Although anxiety did not significantly moderate the usefulness–intention relationship overall ($p = .13$), a simple-slopes analysis indicated that perceived usefulness mattered most when teacher anxiety was high. These findings provide evidence for a 'utilitarian-anxiety paradox,' suggesting that positive usability perceptions do not fully account for teachers' emotional readiness to adopt AI, and call for context-sensitive professional development to build digital resilience in Indonesian secondary settings.

Keywords: artificial intelligence acceptance, english teachers, junior high schools.

Article's DOI: <https://doi.org/10.23960/jpp.v16i2.pp1130-1155>

■ INTRODUCTION

The paradigm shift in international education is currently being driven by artificial intelligence (AI), which is influencing enhanced adaptive learning and instructional efficacy (Hwang & Tu, 2021; Limna et al., 2022). Since addressing this shift is essential, the Indonesian government has implemented rules and requirements for lecturers and teachers to meet in order to enhance AI integration in instruction (Faisal et al., 2026;

Suharno et al., 2025). Nonetheless, transitioning from traditional to AI-enhanced education entails numerous complex processes, including both supporting and impeding teachers' adoption and integration of technology (Efimova et al., 2021; Hang, 2026).

At the junior high school level (*Sekolah Menengah Pertama*, SMP), in Indonesia, teachers are increasingly incorporating AI into their teaching practices due to its advantages. AI

can offer tailored learning experiences, enhance teaching support, foster better interaction between students and teachers, and help develop digital skills (Helmiatin et al., 2024; Wahyuningsih, 2024). These advantages highlight the potential of AI to assist in and enhance the transformation and improvement of educational paradigms and the capabilities of teachers and students (Alifah & Hidayat, 2025; Hartono et al., 2023). However, how AI is effectively utilized in instruction is affected by teachers' readiness and educational institutions' sufficient support; Kelly et al. (2023) and Yi and Choi (2023) assert that examining how the psychological and functional dimensions further shape teachers' perspectives on using AI in their learning process is crucial.

Regardless of AI's strategic importance, varying levels of teacher readiness affect AI integration in instructional activities. Furthermore, although teachers are required to have sufficient digital literacy to facilitate learning, discrepancies between policy expectations and actual classroom activities remain apparent (Noor et al., 2026; Wardani et al., 2025). This study, accordingly, considers that successful AI implementations, including differentiated instruction and automated assessment, are fundamentally dependent on how teachers accept the usefulness of AI and innovations in enhancing their daily classroom practices (Brandhofer & Tengler, 2024; Cabero-Almenara et al., 2024; Wang et al., 2023).

The necessity of this research is further increased by the recent implementation of the *Kurikulum Merdeka* (Merdeka Curriculum) by the Indonesian Ministry of Primary and Secondary Education (MPSE) (2025b), which articulates differentiated instruction and student-centered learning. AI is set to play a major role in this shift as educational authorities promote a more individualized teaching style. Nevertheless, this change faces an interesting contradiction in the socio-technical environment of Indonesia's

secondary schools. There are instances in which the organizational and teacher-training systems are slow to adopt a technology-oriented approach (Apreliani et al., 2025; Fitria, 2021). Therefore, teachers find themselves in a difficult situation due to their dual responsibilities of professional teaching and the uncertainty brought about by technological developments (Insani et al., 2024; Pangestu & Dwiniasih, 2024). Such an encounter implies that the study of the human side of technological acceptance is not only important academically but also necessary to avoid a digital divide in the national education system.

In this sense, the association between pedagogical knowledge and technology use is a critical factor in acceptance. Teachers will likely adopt AI-based tools if they have a strong understanding of how technology can facilitate instruction and improve students' learning outcomes (Mariscal et al., 2023; Sun & Mei, 2022). Not only does digital literacy require more than teachers' technological expertise, but it also requires their analytical and critical abilities to assess whether technology integration can, for example, foster collaborative engagement among students (Farooq et al., 2024; Gümü° & Kukul, 2023). When such a level of literacy is lacking, teachers struggle to recognize the potential value of AI (Soleimani et al., 2014; Zhang & Zhang, 2024).

The existing AI-related scholarly work has generally focused on instructors' readiness and technology acceptance. The former includes, but is not limited to, university teachers' readiness for AI integration in, for example, China (Cao, 2025; Liu, 2025) and Malaysia (Noor et al., 2026; Shahid et al., 2024). Other studies examined pre-service (Bautista et al., 2024; Özer-Altýnkaya & Yetkin, 2025) or secondary (Bernstein, 2025; Lytvynova et al., 2023) teachers' perceived readiness to use AI in their instructional activities.

In relation to technology acceptance, scholars have primarily investigated its functions

and observable performance. For instance, Farooq et al. (2024) and Chang et al. (2021) identified that AI, particularly the automation of writing feedback, is considered a key factor in enhancing writing outcomes in the Asian context. In a similar vein, Vo and Nguyen (2024) and Copeland (2024) argue that teachers and students have become familiar and fluent in using AI-driven applications such as ChatGPT and smartphones, given their immediate impacts on both learning processes and outcomes. Framed within TAM, PU and PEU are regarded as the key utilitarian factors in, for example, Kuwaiti and Japanese higher education contexts (Al-Anezi & Alajmi, 2021; Rentler & Apple, 2020). Furthermore, Kartika et al. (2024), Kavitha and Joshith (2024), and Soleimani et al. (2014) reported that TAM is closely associated with mobile learning. However, the extent to which the two factors affect the use of AI in instructional activities remains a subject of debate among scholars.

Technology acceptance studies have progressed from the generic TAM to more specialized frameworks, such as the AI Acceptance (AIA) model (Liu, 2025; Milutinoviæ, 2022). According to the original TAM, PU and PEU are the primary drivers of the adoption process (Aurangzeb et al., 2024; Ibrahim & Shiring, 2022). Nevertheless, recent studies show that applying AI requires the inclusion of additional factors. Researchers have emphasized the importance of psychological components such as AN and SE due to the complexity of the algorithms and the issue of changing people's occupations (Dehghani & Mashhadi, 2024; Faisal et al., 2026). In this work, acceptance is seen as a multidimensional construct with external and internal components that work together in this process. The latter includes institutional support and digital literacy, as well as emotional factors, such as AN and SE. This study further develops this advanced approach to investigate the intersection of external

and internal components of acceptance under localized conditions.

Recent literature on Indonesian EFL contexts has mirrored the abovementioned negotiation, highlighting a general positivity toward ICT while revealing a struggle with consistent application. For instance, while Pardede (2020) found that many EFL teachers hold positive views of ICT, others have documented significant hurdles, including limited digital literacy and high levels of technology-related anxiety among secondary school teachers (Faisal et al., 2026; Fitria, 2021; Ramadhani et al., 2023). These studies suggest an emerging utilitarian-anxiety paradox in the Indonesian context.

A more complex issue in the existing literature, nonetheless, indicates that acceptance is not merely a functional outcome but also a negotiated psychological experience. Wang et al. (2024) underline that self-efficacy and emotions are considerable moderators. In turn, even the most advanced tools might encounter resistance when one has low self-efficacy or emotional conditions. Li (2021) and Hang (2026) contend that Chinese and Vietnamese teachers, respectively, experienced such a tension when shifting from offline to online instruction. Accordingly, while teachers perceive the usefulness of AI, their low self-efficacy creates an emotional barrier manifested as anxiety.

Taken together, the reviewed studies suggest an emerging tension between technology utilization and anxiety. The literature indeed examines factors driving technology acceptance among English teachers at the secondary and higher education levels, pre-service teachers, and college students. However, a conceptual gap regarding how tension manifests among secondary school English teachers in a localized setting remains under-researched. Furthermore, the specific institutional demands these teachers face suggest that AIA is more complex, even

though current frameworks conceptualize TAM as a linear process.

The study contributes to the theoretical literature by proposing the 'Utilitarian-Anxiety Paradox' as a major extension to the current TAM paradigm. The traditional models are primarily based on the assumption of a linear, cumulative process in which high benefit eventually overcomes the initial benefit (Ma et al., 2025; Nuralam et al., 2024). On the contrary, this paradox points to a non-linear negotiation in which a tool could be perceived as very valuable (PU) yet rather stressful (AN) (Chen et al., 2024; Faisal et al., 2024). Such a negotiation leads to functional hesitation, which linear models do not predict. The paradox serves as a prism through which to critique the utilitarian bias of adoption theories and to suggest that, in the case of AI, psychological resilience is as important as ease of use. This theoretical shift moves the discussion from how teachers learn to operate AI to how they negotiate their professional confidence in the face of automated tools, offering a more nuanced lens for analyzing technology transition in complex, localized secondary education contexts.

Considering these broader perspectives, this study used the framework proposed by Wang et al. (2021) to investigate the interaction between perceived use and anxiety, rather than reporting descriptively. The reason for selecting the six-indicator framework is not only its high empirical validity (0.809) but also its ability to assist teachers in overcoming the difficulties associated with integrating AI (Cabero-Almenara et al., 2024; Faisal et al., 2026). PU involves perceptions regarding the capacity of the AI-based technology to improve the efficiency of the teaching process and learning outcomes of the students, while PEU relates to ease and comfort while integrating AI into teaching. SE is related to confidence in the effective use of AI for educational purposes. Anxiety pertains to indications of tension and fear of change in

integrating AI into practice. Attitude refers to a positive or negative perspective on the use of AI. Finally, behavioral intention concerns the willingness to adopt and apply AI in pedagogically related activities.

This study has been carried out for three main reasons. First, junior secondary (SMP) English teachers in Indonesia are in a strategic pedagogical position because they are the first teachers students encounter when they begin sustained exposure to academic English. Thus, these teachers' decision-making regarding the integration of AI may significantly influence the direction of digital literacy development for an entire cohort of students (Faisal et al., 2026; Wahyuningsih, 2024). Second, there are considerable variations in the level of support – both infrastructural and professional – provided in different regencies in Indonesia, as shown by regional and policy-level data (MPSE, 2025a; Suharno et al., 2025). These variations make the collection of local empirical evidence a prerequisite for supporting evidence-based policy decisions. Third, and most importantly theoretically, the prevailing predictive TAM posits that affective barriers should decrease when perceived usefulness (PU) and perceived ease of use (PEU) are high (Davis, 1989; Wang et al., 2021).

However, the preliminary Indonesian data suggest that this is not the case, as even in contexts where PU and PEU are expressed strongly, anxiety is still present for many (albeit with varying levels of intensity). Such a presence suggests a potential disconnect between these constructs; therefore, the model's causal structure will need to be modified in light of this empirical finding. This study will fill this gap in the literature by exploring the configuration of patterns among the six constructs aligned with the TAM in the localized SMP context and theorizing their interaction, resulting in a utilitarian-anxiety paradox.

This study aims to address the following questions: (1) What is the prevailing level of SMP English teachers’ AIA? and (2) What synthesized factors influence their responses, thereby challenging existing adoption theories?

METHOD

This present study applied a quantitative approach to describe and analyze teachers’ AIA in English language teaching. Not only does such an approach help collect numerical data, but it also assists in examining the relationships between variables objectively (Cresswell, 2014; Siroj et al., 2024). In particular, a survey method was utilized to represent participants’ attitudes, behaviors, and characteristics; however, it also warrants efficient reach of the intended participants (Unaradjan, 2019).

Participants

This study involved the voluntary participation of 42 junior high school English teachers from several urban school districts in a regency. The study employed convenience sampling to gather data quickly and easily during the study period by involving teachers who were accessible in the area (Cresswell, 2014; Memon et al., 2025). The sampling approach was

deemed appropriate given the study’s exploratory nature and the practical challenges of gaining access to school settings. Moreover, the existing local administrative procedures facilitated participant recruitment, thereby increasing participation within the limited research time.

The results should be interpreted with caution due to convenience sampling and the small sample size. However, rather than making broad generalizations about Indonesian EFL teachers, the study offers localized insights into how the proposed utilitarian-anxiety paradox manifests in a specific educational context. This local focus makes the study relevant to the contextual realities and also provides a useful basis for future investigations in similar settings.

Based on the MPSE (2025a) data, a total of 136 active English teachers are recorded in these districts. Totally, 42 or 30.8% of teachers voluntarily completed the survey after the head of the Subject Teacher Conference (*Musyawarah Guru Mata Pelajaran*, MGMP) granted permission. The participation rate was considered sufficient since, in a local setting, at least 30% of the population is generally required (Mertens, 2019; Sugiyono, 2022). In this regard, this sample can be used to examine how they viewed AIA.

Table 1. Demographic information of the participants

Gender		Teaching experience		School affiliation		Certification status	
Female	Male	Less than 5 years	More than five years	State	Private	Certified	Not Certified
32	10	13	29	34	8	30	12

Research Design and Procedures

This study employed a quantitative survey research design to investigate the attitudes and perceptions of junior high school English teachers towards integrating AI into teaching and learning processes. The quantitative survey design was chosen because it enables the systematic collection and statistical analysis of numerical data to identify patterns, trends, and relationships

among variables within a specific population (Cohen et al., 2018; Cresswell, 2014; Memon et al., 2025; Siroj et al., 2024). The study design enabled the investigation of core constructs in the AIA framework. In addition, the survey method provides a reliable picture of teacher acceptance in a localized context, ensuring that their candid views are accurately and efficiently reflected (Sukardi, 2021; Unaradjan, 2019).

The research procedures were grouped into three major phases: instrument preparation, data collection, and data analysis. The first stage involved adapting the questionnaire from instruments used in prior studies and reviewing it to assess its clarity, relevance, and appropriateness for the current research context. Further evaluation of the instrument was conducted to ensure its validity and internal consistency before its dissemination. The second stage involved administering the questionnaire online to the participating teachers to obtain data on their acceptance of AI in the educational context. The online distribution mode enabled efficient data collection and allowed participants to respond to the questionnaire voluntarily within the specified time frame.

The collected data were finally organized, tabulated, and analyzed using descriptive statistics

to reveal patterns and trends in the constructs under investigation. The use of these systematic procedures ensured consistency throughout the research process and minimized the likelihood of errors in data management and interpretation (Cohen et al., 2018; Cresswell, 2014).

Instruments

The data were gathered using a closed-ended questionnaire, which was considered appropriate as it is expected to make the data comparable and eliminate any inconsistencies that may be found in open-ended questions (Vinten, 1988). This research tool contains two main parts. The demographic data include certification level, teaching experience, type of school, gender, and employment status. Part two of the questionnaire used a 17-item scale by Wang et al. (2021), which covered six major dimensions of AIA.

Table 2. Description of the adapted AIA instrument

Construct	Items (n)	Conceptual meaning	Representative item	Cronbach's Alpha
Perceived Usefulness (PU)	3 (PU1 – PU3)	Belief that AI tools enhance instructional efficiency and learning outcomes.	“AI tools can help improve the quality of my teaching performance.”	0.828
Perceived Ease of Use (PEU)	2 (PEU4 – PEU5)	Belief that AI tools are easy to learn and integrate into teaching.	“I find AI tools flexible and easy to integrate into my teaching practices.”	0.733
Self-Efficacy (SE)	2 (SE6 – SE7)	Confidence in one's capability to deploy and troubleshoot AI tools.	“I am confident in my ability to solve technical problems when using AI tools.”	0.742
Anxiety (AN)	3 (AN9 – AN11)	Tension, fear, or apprehension about using AI in teaching.	“I do not feel worried about making mistakes when using AI tools in teaching and learning.” (reverse-coded)	0.628
Attitude Toward Use (ATU)	2 (ATU12 – ATU13)	Positive or negative evaluative orientation toward the use of AI in teaching.	“I am interested in using AI tools to improve my teaching practices.”	0.642
Behavioral Intention (BI)	4 (BI14 – BI17)	Stated willingness to adopt and continue using AI in pedagogical activities.	“I plan to incorporate AI tools into my teaching activities within the next semester.”	0.872

While all items were highly valid and reliable (Cronbach's Alpha: 0.809) (Wang et al., 2021), this study repiloted and retested all the items to ensure their validity and reliability. The results are presented in the following table.

As shown in Table 2, the Cronbach's alpha for most indicators was greater than 0.7, indicating acceptable internal consistency (Arslan, 2020; Okmen & Kilic, 2016). The indicators 'AN' and 'ATU', however, yielded alpha values of 0.628

Table 3. Validity and reliability of the instrument

Statements	r _{counted}	r _{table (n=30)}	Status	Indicator	Cronbach's Alpha	Status
PU ^a 1	0.809	0.4312	Valid	PU	0.828	Reliable
PU2	0.923	0.4312	Valid			
PU3	0.873	0.4312	Valid			
PEU ^b 4	0.879	0.4312	Valid	PEU	0.733	Reliable
PEU5	0.899	0.4312	Valid			
SE ^c 6	0.924	0.4312	Valid	SE	0.742	Reliable
SE7	0.867	0.4312	Valid			
AN ^d 8	0.704	0.4312	Valid	AN	0.628	Reliable
AN9	0.590	0.4312	Valid			
AN10	0.790	0.4312	Valid			
AN11	0.713	0.4312	Valid			
ATU ^e 12	0.870	0.4312	Valid	ATU	0.642	Reliable
ATU13	0.847	0.4312	Valid			
BI ^f 14	0.873	0.4312	Valid	BI	0.872	Reliable
BI15	0.884	0.4312	Valid			
BI16	0.860	0.4312	Valid			
BI17	0.802	0.4312	Valid			

Note: ^aPerceived Usefulness, ^bPerceived Ease of Use, ^cSelf-efficacy, ^dAnxiety, ^eAttitude toward Use, ^fBehavioral Intention

and 0.642, respectively. These values remain within the acceptable range for exploratory research in social sciences and education (Hair et al., 2019; Taber, 2018; Taherdoost, 2016) despite being lower than the traditional 0.7 cut-off. The utilization of this instrument was appropriate, as it addressed the cognitive and affective domains of technology acceptance in the educational context (Ahmed & Roche, 2022; Faisal et al., 2026; Rachmawati et al., 2025).

While the Cronbach's alpha values for Anxiety (AN, alpha = 0.628) and Attitude Toward Use (ATU, alpha = 0.642) are acceptable for exploratory research, these lower reliability coefficients represent a methodological limitation that requires careful interpretation. These values indicate that, while the items

successfully capture the broad trends in teacher sentiment, there is some measurement error, meaning the individual questions within these scales may not consistently capture the same dimensions of the constructs. Consequently, the relationships involving AN and ATU observed in this study should be viewed as preliminary indicators rather than definitive connections, as the lower internal consistency slightly weakens the statistical power of these specific scales.

To address this limitation, future research must prioritize refining and further validating the research instrument. Subsequent studies should adapt the scale items to align more precisely with localized educational settings, perhaps by conducting cognitive interviews with teachers to ensure the phrasing is unambiguous. Additionally,

running a confirmatory factor analysis (CFA) on a larger, more diverse sample of educators would help isolate and eliminate low-performing items, ultimately strengthening the internal consistency of both the anxiety and attitude frameworks.

Following a review of the research instrument's construct validity, item AN8 was excluded from the final analysis. It was determined

that this item primarily measured 'Perceived Ease of Use' rather than the emotional state of 'Anxiety.' Removing this item ensures that the Anxiety scale remains a focused measure of teachers' emotional comfort and stress levels, preventing overlap with the tools' technical simplicity. Table 4 below presents the distributions of statements.

Table 4. The blueprint of the questionnaire

Indicators	Number of Statements	Item Number
Perceived usefulness (PU)	3	1, 2, 3
Perceived ease of use (PEU)	2	4, 5
Self-efficacy (SE)	2	6, 7
Anxiety (AN)	3	9, 10, 11
Attitude towards AI (ATU)	2	12, 13
Behavior intentions (BI)	4	14, 15, 16, 17
Total Number of Statements	16	

The questionnaire was then distributed via a Google Form accessible from 1 to 30 April 2025 and shared on the official MGMP's WhatsApp channel. Despite its practicality for accessing the target population (Annese et al., 2022; Mavhandu-Mudzusi et al., 2022), using this platform requires critical awareness of potential response biases and sampling limitations. Only active members might respond to the survey within the timeframe (Kohne et al., 2023; Singer et al., 2023). Despite this challenge, this communication channel was effective in reaching the intended number of SMP English teachers in this localized study.

Data Analysis

The data analysis was conducted systematically to convert responses into numerical patterns (Cresswell, 2014). To begin with, this research collected all participants' responses and tabulated them in a full-scale score chart to ensure clarity and accuracy. Secondly, it used IBM SPSS Statistics to calculate and sum the scores and percentages for each measure. It classified teacher participants' mean scores on the 5-point

Likert items as high (3.68–5.00), moderate (2.34–3.67), and low (1.00–2.33). This method is the standard method, as described by Best and Kahn (2016), and has been used in the same studies to ensure that the categories are split fairly and objectively (Faisal et al., 2026; Pimentel, 2010). These intervals determined the overall level of agreement with each statement. The classification provides a concise, reproducible summary of central tendency for Likert-scale responses (Ho'gör, 2021; Lindner, 2024). In addition, Pearson correlation analyses were conducted to examine relationships among variables. Multiple linear regression was performed to identify predictors of Behavioral Intention (BI). A moderation analysis using Hayes's PROCESS Macro Model 1 was also conducted to test whether Anxiety moderated the relationship between Perceived Usefulness and Behavioral Intention.

■ RESULT AND DISCUSSION

This section elaborates on findings from the quantitative analysis to address the first research question. After the data were collected, they were

computed and presented as means. It is organized to address the research questions: the AIA levels and their contributing factors. It is important to note, however, that this present study involved 42 active English teachers and applied convenience sampling. Accordingly, the findings presented here are specific to the surveyed group and should not be generalized to the entire population of English teachers in Indonesia.

Teachers' artificial intelligence acceptance levels

This section presents findings from the quantitative analysis to address the first research question (See Appendix for detailed computation).

Table 5 shows that the findings indicate a broadly positive AIA, with an overall mean score of 3.96, which is classified as high. Furthermore,

Table 5. Overall quantitative results and associated AIA levels

Statements	Mean	Level	Indicators	Mean	Level
PU ^a 1	4.26	High	PU	4.32	High
PU2	4.31	High			
PU3	4.38	High			
PEU ^b 4	4.02	High	PEU	4.05	High
PEU5	4.07	High			
SE ^c 6	3.88	High	SE	3.85	High
SE7	3.81	High			
AN ^d 9	3.26	Moderate	AN	3.54	Moderate
AN10	3.64	Moderate			
AN11	3.71	High			
ATU ^e 12	3.86	High	ATU	4.00	High
ATU13	4.14	High			
BI ^f 14	4.10	High	BI	4.08	High
BI15	4.05	High			
BI16	4.02	High			
BI17	4.17	High			
Average				3.96	High

Note: ^aPerceived Usefulness, ^bPerceived Ease of Use, ^cSelf-efficacy, ^dAnxiety, ^eAttitude toward Use, ^fBehavioral Intention

higher than 50% of the indicators gained means above 4.0, indicating that teacher participants generally acknowledged the integration of AI into their instructional activities. However, the relatively low scores of the indicators related to anxiety show that help is needed from institutions to ease the fear in the teachers' minds so that they can use AI in their classes with more confidence.

A consistently high level of AIA was observed across most indicators, with PU, PEU, ATU, and BI attaining average scores above 4.0. As for the AN indicator, it appeared to be at a moderate level compared with the other indicators. In conclusion, from the above results, there is a high level of AIA among respondents,

though with moderate levels of anxiety. Figure 1 presents the quantitative analysis results by indicator (See Appendix for detailed computation).

As seen from Table 5 and Figure 1, the indicator 'Perceived Usefulness' appears to fall into the higher category, attaining average marks of 4.26, 4.31, and 4.38 for PU1, PU2, and PU3, respectively, suggesting that the participating teachers believe that AI-based tools have some utility value in facilitating their instruction. Notably, more than one-third of the surveyed subjects selected the answer 'Neutral', which may be attributed to concerns that some of the participating individuals may lack adequate experience with AI-based instruments. It could

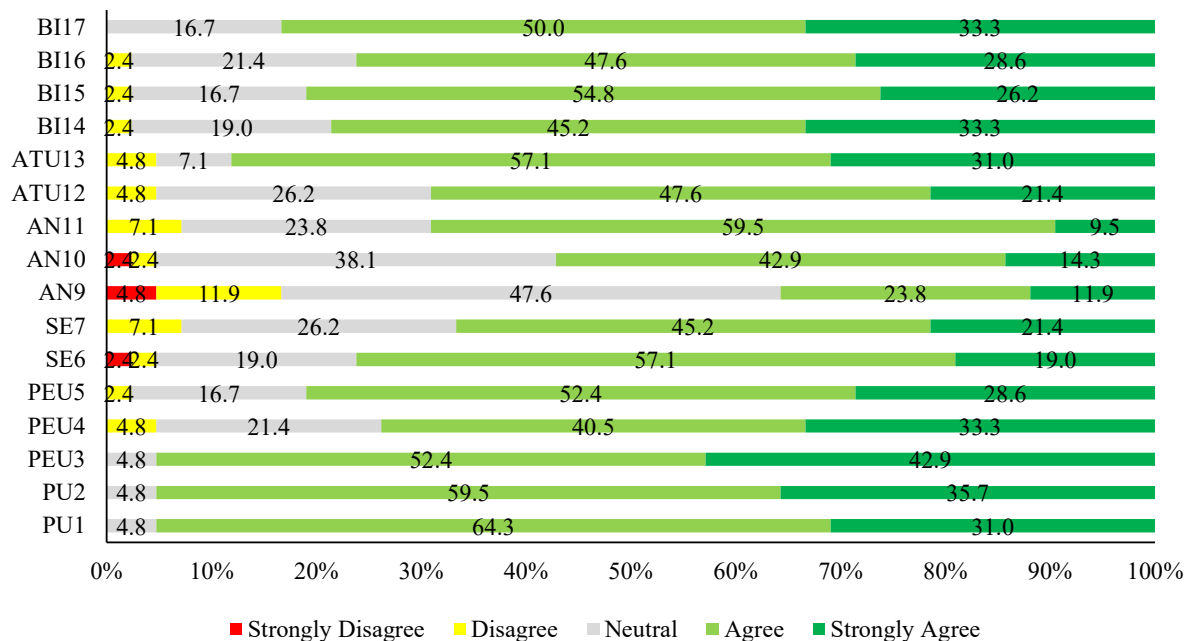


Figure 1. Overall teachers' AIA levels

also be that they find it challenging to appreciate the benefits of AI tools in enhancing their teaching or learning experiences.

The indicator 'Perceived Ease of Use' is also ranked very highly. In particular, almost half of the participants-educators believe that the use of artificial intelligence tools will efficiently support the teaching and learning process. The above indicator is supported by the response from 52.4% of educators who agree that AI-based applications are highly flexible and convenient to use. It should also be mentioned that both 21.4% and 16.7% of educators chose 'Neutral' in responding to each statement.

The 'Self-efficacy' indicator had a mean score of 3.84, considered high, suggesting that most teachers were confident in their ability to use AI tools. Nevertheless, the substantial proportion of neutral responses suggests that some individuals are unsure about their abilities. The uncertainty might stem from limited digital proficiency, which casts doubt on their ability to use AI resources effectively. However, the study reveals that teachers generally feel confident in their capabilities to use AI in pedagogical settings.

With a mean value of 3.54, anxiety was determined to be at a moderate level, as can be seen from the data in Table 5 and Figure 1. This level indicates that although most teachers did not exhibit high levels of anxiety, they appeared pressured and possibly concerned about the risk of making errors when working with the technologies involved. Surprisingly, because more than 50% of teacher respondents chose the options 'Neutral', 'Disagree', and 'Strongly Disagree', AN9 and AN10 statements have been categorized as 'Moderate'. This category shows that the teacher respondents had worries about making errors and were stressed working with AI technologies. Moreover, most teacher respondents may have felt anxious about becoming too dependent on AI technologies, which could cause problems and stress for them.

The findings for the 'Attitude Toward Use' indicator in Table 5 and Figure 1 indicate a positive perception among the surveyed teachers, who consider themselves willing and open to AI tools. Interestingly, the neutral answer was chosen by 26.2% and 7.1% of the teacher respondents regarding how they felt about learning and solving

technical problems while working with AI tools to perform educational tasks. Thus, the general attitude toward the use of AI tools was positive; however, some respondents were unsure of their technical readiness.

The mean score for the indicator 'Behavioral Intention' is 4.08, indicating a high level. It should be noted that some teacher participants selected the 'Neutral' option for each item. Likely, this is an indicator that, even though teacher participants are not very willing to assist their teaching process with AI tools, the choice of neutrality shows that there are no negative or positive attitudes toward such technologies; they might find AI interesting, but still be careful.

Factors that Contribute to the Findings

The following paragraphs discuss the findings derived from the quantitative analyses. It first summarizes the key findings, then discusses potential factors that may have affected teachers' responses, thereby addressing the second research question.

The findings of this study, however, need to be acknowledged with the following limitations. First, in terms of scope, this study was conducted in specific districts within a regency; hence, the findings cannot be overgeneralized to the whole Indonesian archipelago. Second, the participants were recruited using convenience sampling, which demands caution against overgeneralization. Hence, while the PU and PEU scores were high in this localized context, they may not reflect the actual readiness in a broader context. Finally, the results showing that BI was classified as a high level and AN as a moderate level should not be regarded as a national profile of EFL teachers, because the sample of English teacher participants was only 42.

Despite the limitations, the results provide useful guidance to local school principals and district policymakers. The paradox of high usefulness and moderate anxiety in this study

suggests that simply providing AI tools or requiring their use alone is not sufficient to ensure success (Cho & Seo, 2024; Ismail & Joshy, 2025). School leaders must focus on establishing a low-stakes environment in which teachers can try out new technologies without fear of immediate professional assessment or technical failure (Chen et al., 2024; Firdaus et al., 2025). Creating school-based support networks or providing clear, flexible guidelines that allow teachers to integrate AI on their own terms, rather than under rigid curriculum deadlines, could help foster that kind of environment.

Moreover, the teacher training programs should be more practical for this particular district rather than general theoretical workshops. More specifically, training should focus on troubleshooting simulations in which teachers can practice resolving common technical issues in a controlled environment, thereby directly addressing the moderate anxiety identified in this study (Firdaus et al., 2025; Pratama et al., 2025). The district is also encouraged to adopt a peer-mentoring model in which teachers who feel more comfortable with the technology can help walk their colleagues through integrating specific tools into their existing lesson plans. Focusing training on these concrete, day-to-day classroom issues can help teachers turn their positive attitudes into a more confident, sustainable use of AI.

The overall results of the study indicate a generally high level of agreement among respondents across the measured variables, reflecting a strong perception of AI use in education. The high PU level (See Table 5) suggests that teacher participants perceived AI-based tools as beneficial for enhancing instructional quality and effectiveness. This finding aligns with, for example, Pardede's (2020), Al Darayseh's (2023), and Brandhofer's and Tengler's (2024) observations that ICT integration not only supports learning processes but also facilitates teachers' skill development.

In the specific context of Indonesian junior high schools, this strong perception of utility is likely driven by the practical need to manage large classes and diverse student abilities (Annisa et al., 2025; Pangestu & Dwiniasih, 2024). Teachers see AI as a valuable tool for creating interactive materials and automating administrative tasks, which allows them to focus more on classroom interaction. This recognition of AI's value is further supported by the current national push for more innovative and student-centered teaching methods, making the functional benefits of AI very clear to the participants (Hastomo et al., 2025; MPSE, 2025b).

This high level of perceived usefulness is central to the paradox highlighted in this study's title. It reveals a complex situation in which teachers are logically convinced of the benefits of AI yet still feel a moderate level of concern about its actual use (Annisa et al., 2025; Pratama et al., 2025). This significance indicates that seeing a tool as useful does not automatically make a teacher feel comfortable using it. The paradox suggests that for these Indonesian teachers, the transition to AI is a careful balance between their professional desire to improve their teaching and their personal concerns about technical challenges (Mukminin et al., 2022; Pardede, 2020). Therefore, understanding this tension is more important for successful adoption than simply looking at how useful the tools are.

In a similar vein, the PEU indicator (See Table 5) was high, indicating that such tools are easy to use and adaptable for enhancing teaching and learning activities. As with Kartika et al. (2024), Na et al. (2022), and Al-Anezi and Alajmi (2021), this study finds that facilitating ease of use led to greater confidence among teachers who use AI in their classes.

Similarly, this study revealed high levels of the SE, ATU, and BI indicators. Regarding the SE indicator, as shown in Table 5, the results indicate a high level of participants' self-efficacy,

suggesting that they feel capable of solving problems arising from the use of AI tools in their instruction. Such a high level of self-efficacy is consistent with the findings of Pardede (2020) and Joo et al. (2018), which show that teachers have the necessary skills to troubleshoot technical issues that arise during instruction when using digital devices. This SE level also implies the need to ensure that such high-level self-efficacy is developed and maintained to support the sustainable implementation of AI in the classroom.

As shown in Table 5, the participants have high levels of ATU, indicating strong confidence in their ability to integrate AI tools into their instruction. The high level of ATU is consistent with the research by Kartika et al. (2024) and Dehghani and Mashhadi (2024), which highlights that appropriate teacher training can positively influence perceptions of the technology, thereby fostering its acceptance. It can therefore be concluded that professional development is critical to ensuring that teachers' positive dispositions towards new technologies translate into successful implementation. The participants reveal high BI, indicating a strong intention to adapt and use AI tools in their instruction, and a willingness to receive relevant training. This high behavioral intention is consistent with the studies by Faisal et al. (2026) and Alejandro et al. (2024), which show that educators are willing to integrate technological innovations when they believe they are useful and accessible.

Interestingly, the 'Anxiety' indicator shows a moderate level (see Table 5), suggesting that the teachers may be experiencing some degree of reduced confidence and comfort when using AI tools in their teaching. This result indicates that although teachers are aware of the benefits of AI, their perception of the technology does not reduce the emotional distress associated with its use (Firdaus et al., 2025; Pratama et al., 2025). The moderate anxiety in the face of high perceived usefulness indicates that teachers are intellectually

convinced of the benefits, but emotionally wary. This disconnect shows that a tool might be perceived as useful, but feeling fully confident using it in a live classroom setting is a different story.

This increase in anxiety especially seems to be caused by some intense curriculum demands and a seeming lack of consistent institutional support (e.g., Annisa et al., 2025; Pratama et al., 2025). Teachers are encouraged to be creative, but there can be a lot of pressure to meet certain educational standards that can be stressful and create a sense of urgency. This tension is exacerbated when schools do not provide clear guidance or ongoing technical support, forcing teachers to learn complex tools on their own. This moderate level of apprehension, even when the tools are easy to use, is also attributed to uncertainty about the effect of AI on their professional roles and to anxiety about making technical errors in front of students (Annisa et al., 2025; Sulistiyo et al., 2022).

The statement for the 'Anxiety' is in line with the results of prior investigations carried out by Çoban et al. (2025) and Faisal et al. (2026). Their research suggests some anxiety among teachers

while integrating AI into the educational process. Concerns can include potential changes in teachers' roles, doubts about the effectiveness of AI-driven learning, and implementation issues.

The co-existence of high perceived usefulness and moderate anxiety constitutes a paradox because it contradicts the typical logic of technology adoption. Usually, when teachers find a tool that is both beneficial and easy to operate, their worry or stress tends to disappear. However, in this study, these two factors exist together in a state of tension. This suggests that a teacher's logical understanding of AI's value does not automatically resolve their emotional concerns (Faisal et al., 2026; Suharno et al., 2025). This 'utilitarian-anxiety paradox' highlights a conflict between the mind and the heart: the mind recognizes the necessity of the tool, but the heart remains cautious about the personal and professional risks of its implementation. To verify this emotional conflict with empirical data, a correlation analysis was conducted among the three variables. The resulting patterns provide the statistical evidence needed to substantiate this paradox, presented in the following table (See Appendix for detailed computation).

Table 6. Correlation analyses of the indicators PU, PEU, and AN

		PU	PEU	AN
PU	Pearson Correlation	1	.629 ^a	.442 ^a
	Sig. (1-tailed)		.000	.002
	N	42	42	42
PEU	Pearson Correlation	.629 ^a	1	.450 ^a
	Sig. (1-tailed)	.000		.001
	N	42	42	42
AN	Pearson Correlation	.442 ^a	.450 ^a	1
	Sig. (1-tailed)	.002	.001	
	N	42	42	42

Note: ^a Correlation is significant at the 0.01 level (1-tailed)

The results indicate a significant yet moderate positive correlation of AN with PU ($r = .442$) and PEU ($r = .450$) (Akoglu, 2018; Edelsbrunner et al., 2025). Because the anxiety scale (AN) was operationalized to measure the

presence of emotional comfort and the absence of worry, a higher scale score indicates a lower state of anxiety. Thus, these positive correlation values indicate that the greater the perceived value and ease of use of AI by teachers, the lower their

actual anxiety. However, the statistical indication of the paradox is the modest strength of these correlations; it reveals that utility and ease improve a teacher's emotional state, but not sufficiently to remove the underlying stress.

Important implications for the TAM result from this study's findings. The traditional TAM model posits a relatively linear path, in which perceived usefulness and perceived ease of use directly lead to smooth technology adoption (Al Darayseh, 2023; Wang et al., 2021). This study implies that the way to complex tools like AI is not a straight line but a constant negotiation between logic and emotion. This dynamic adds to the TAM framework by demonstrating that emotional readiness is a separate and important force. This demonstration suggests that the adoption of even a well-designed and highly useful tool can be hampered by stubborn emotional caution (Chen et al., 2024; Faisal et al., 2026) to which the traditional model is often blind.

Finally, it is important to contrast this dynamic with simply having two parallel or unrelated findings. Similarly, a teacher might find a tool useful and be stressed for other reasons. Nevertheless, in this paradox, the two are intimately connected. The moderate correlation shows that the teachers are trying to link their logical appreciation of AI with their emotional fears. In fact, the anxiety is a reaction to the high stakes of using such a powerful tool, and because

they realize its great utility, they feel a greater pressure to use it correctly (Cho & Seo, 2024; Sulistiyo et al., 2022), which maintains their moderate level of anxiety. This interaction creates a kind of guarded acceptance that is much more complex than simply having two separate feelings at once.

Predicting Behavioral Intention: Regression and Moderation Analyses

To extend the analysis beyond descriptive and correlational evidence and to test the proposed model directly, multiple linear regression and moderation analyses were conducted. Four directional hypotheses were proposed: Perceived Usefulness (H1), Perceived Ease of Use (H2), Self-Efficacy (H3), and Anxiety, operationalized as emotional comfort (H4), each of which has a significant positive influence on teachers' Behavioral Intention (BI) to adopt AI.

A multiple linear regression was performed with all four factors entered simultaneously to predict Behavioral Intention. The overall model was statistically significant, $F(4, 37) = 22.262$, $p < .001$, explaining 70.6% of the variance in behavioral intention ($R = .841$, $R^2 = .706$, Adjusted $R^2 = .675$). This indicates that the proposed model has substantial explanatory power for understanding teachers' AI adoption in this context (see the Appendix for detailed computations).

Table 7. Multiple linear regression results for predictors of behavioral intention

Predictor	B	SE B	β	t	p	Hypothesis
(Constant)	-0.343	2.066	—	-0.166	.869	—
Perceived Usefulness (PU)	0.640	0.206	.366	3.108	.004	H1: Supported
Perceived Ease of Use (PEU)	-0.181	0.250	-.105	-0.722	.475	H2: Not supported
Self-Efficacy (SE)	0.570	0.233	.334	2.441	.020	H3: Supported
Anxiety / Emotional Comfort (AN)	0.515	0.131	.427	3.939	.000	H4: Supported

Note. $N = 42$. $R = .841$; $R^2 = .706$; Adjusted $R^2 = .675$; $F(4, 37) = 22.262$, $p < .001$. Dependent variable: Behavioral Intention (BI). AN is reverse-scored, so a positive coefficient denotes that greater emotional comfort (lower anxiety) predicts stronger intention.

As shown in Table 7, three of the four factors significantly predicted behavioral intention. Anxiety (emotional comfort) was the strongest predictor ($\hat{\alpha} = .427$, $t = 3.939$, $p < .001$), followed by Perceived Usefulness ($\hat{\alpha} = .366$, $t = 3.108$, $p = .004$) and Self-Efficacy ($\hat{\alpha} = .334$, $t = 2.441$, $p = .020$); H1, H3, and H4 were therefore supported. Perceived Ease of Use did not make a statistically significant independent contribution ($\hat{\alpha} = -.105$, $t = -0.722$, $p = .475$), so H2 was not supported. Importantly, the high descriptive rating of PEU reported earlier remains valid; the regression simply shows that, once usefulness, capability, and emotional comfort are accounted for, ease of use no longer adds independent

predictive power. These findings provide empirical support for the proposed utilitarian-anxiety, confirming that adoption among these teachers is as much an emotional as a rational process.

The Moderating Role of Anxiety

A moderation analysis using Hayes' PROCESS macro (Model 1) tested whether Anxiety (emotional comfort) moderates the relationship between Perceived Usefulness and Behavioral Intention. The overall model was significant, $F(3, 38) = 26.12$, $p < .001$, explaining 67% of the variance ($R^2 = .67$) (See Appendix for detailed computation).

Table 8. Moderation analysis for the effect of perceived usefulness on behavioral intention moderated by anxiety

Predictor	b	SE	t	p	LLCI	ULCI
Constant	-13.27	8.96	-1.48	.15	-31.42	4.87
Perceived Usefulness (PU)	1.72	0.68	2.55	.01	0.36	3.09
Emotional Comfort (AN)	1.97	0.87	2.27	.03	0.21	3.74
PU $\times$ AN (Int_1)	-0.10	0.06	-1.54	.13	-0.23	0.03

Note. N = 42. Outcome variable: Behavioral Intention (BI). $R^2 = .67$; $F(3, 38) = 26.12$, $p < .001$. LLCI and ULCI are the lower and upper limits of the 95% confidence interval. Int_1 = PU $\times$ AN interaction term. AN is reverse-scored (higher = greater emotional comfort).

Both Perceived Usefulness ($b = 1.72$, $p = .01$) and Emotional Comfort ($b = 1.97$, $p = .03$) were significant direct predictors. However, the interaction term (PU $\times$ AN) was not statistically significant ($b = -0.10$, $p = .13$), indicating that anxiety did not significantly moderate the usefulness–intention relationship at the overall model level; the moderation hypothesis was

therefore not supported in a strict statistical sense. A simple slopes analysis was nonetheless conducted to explore the pattern of effects across levels of emotional comfort (See Appendix for detailed computation).

As Table 9 shows, the influence of Perceived Usefulness on Behavioral Intention was strongest among teachers with high anxiety (low

Table 9. Conditional effects of perceived usefulness on behavioral intention at different levels of anxiety/emotional comfort

Level of AN (Emotional Comfort)	Effect (b)	SE	t	p	95% CI [LL, UL]
8.88 — High anxiety (16th pct.)	0.85	0.20	4.27	.000	[0.45, 1.25]

11.00 — Average anxiety (50th pct.)	0.64	0.19	3.41	.001	[0.26, 1.02]
13.00 — Low anxiety (84th pct.)	0.44	0.25	1.75	.090	[-0.07, 0.96]

Note. N = 42. The AN values are the 16th, 50th, and 84th percentiles of emotional comfort. Because AN is reverse-scored, a low score (8.88) corresponds to high actual anxiety and a high score (13.00) to low actual anxiety. 95% CI = 95% confidence interval [lower limit, upper limit].

comfort, AN = 8.88; $b = 0.85$, $p < .001$), weakened at average comfort (AN = 11.00; $b = 0.64$, $p = .001$), and became non-significant at low anxiety (high comfort, AN = 13.00; $b = 0.44$, $p = .09$). Because the interaction term itself was non-significant, this pattern should be read as exploratory rather than confirmatory. Even so, it suggests that perceived usefulness functions as a cognitive counterbalance that matters most precisely when teachers feel anxious, reinforcing the study's central argument that AI adoption is negotiated at the intersection of logic and emotion rather than along the linear path assumed by the traditional TAM framework.

With reference to the results of the current investigation, the level of AIA for the teacher sample under analysis can be considered high. The following may be possible reasons for such an average AIA level, including PU and PEU. From this perspective, participants' familiarity with technology and the compatibility between AI tools and professional development objectives might be regarded as important factors contributing to the formation of high AIA. With respect to the first factor, the participants could be well-acquainted with the use of such digital platforms as Google Classroom (Cantos et al., 2023; Joseph & Khan, 2020) (Cantos et al., 2023; Joseph & Khan, 2020) and Grammarly (Ebadi et al., 2023; Faisal & Carabella, 2023). This familiarity reinforces their perception that AI can further enhance both teaching efficiency and student engagement, ultimately strengthening their overall AIA in education.

Another factor potentially associated with teachers' strong AIA is that AI-driven applications and tools seem to align with the goals of professional development programs (Efimova et al., 2021; Aen & Yildiz, 2022). These teachers might perceive AI as a valuable aid in enhancing teaching quality, which, in turn, leads to sustainable improvement in instructional activities. Furthermore, they appreciate the AI abilities to facilitate innovative, interactive, and adaptive learning, thereby supporting their efforts not only for more creative and engaging classroom experiences (Lytvynova et al., 2023; Yi & Choi, 2023), but also cultivating self-directed learning, which may motivate teachers to adopt technology-integrated approaches (Yiamkhamnuan & Phuttharak, 2020).

In summary, teachers' high AIA among the teacher participants is associated with their belief that it can enhance instructional effectiveness and student learning. Their previous use of digital tools makes adopting AI feel like a natural and manageable step. Furthermore, the compatibility of AI with professional goals appears to be a significant factor that motivates teachers to integrate it into their classroom practices.

Regarding the moderate level of anxiety identified in this study (see Table 5 and Figure 1), the data suggest that this psychological response is potentially associated with two primary factors: limited digital literacy and fear of making mistakes. In this study, while participants recorded high scores for perceived ease of use, neutrality, and disagreement might indicate that

they may not be fully confident in their capability to use AI tools effectively, leading to uncertainty and hesitation when operating them. Faisal et al. (2026) and Schiavo et al. (2024) share the observation that, lacking sufficient digital-related knowledge and skills, teachers often struggle to integrate AI into instruction. Accordingly, such an insufficiency can trigger anxiety and fear of making mistakes, and concern about not being able to keep up with rapid technological advancement in education.

The fear of making mistakes seems to stem from a lack of self-confidence in teachers' ability to use AI technology appropriately, as well as concerns that such issues could affect their professionalism and teaching effectiveness (Çoban et al., 2025; Huttayavilaiphan, 2024). In this sense, the moderate anxiety level, however, should not be considered as an AI rejection. Rather, it is a reflection of the high professional and competent standards they set for themselves, where even minor errors can become significant sources of stress, despite their genuine interest and willingness to explore the use of AI-related technologies.

To conclude, while the participants demonstrated a high readiness to adopt AI, the questionnaire data also revealed a persistent, moderate level of anxiety regarding its integration. Based on the surrounding literature, it is hypothesized that this moderate anxiety is likely associated with the broader challenges of digital literacy and the uncertainties of navigating new technological tools in a classroom setting. They may feel uncertain about how to implement AI effectively while considering the potential outcomes for themselves and their students. Therefore, the anxiety measured in this study does not appear to stem from a fundamental opposition to the technology; rather, it reflects a cautious approach to implementation. Consequently, these results emphasize the urgency of designing programs that help teachers build digital resilience

– the ability to manage challenges in digital environments with confidence (Ahmed & Roche, 2022; Dewi et al., 2024).

■ CONCLUSION

The research sought to examine the extent of AIA held by English teachers in urban districts within a regency, as well as the possible variables that could affect their perceptions of it. The study results reveal a significant level of acceptance of AI technology owing to high means for perceived usefulness, ease of use, and behavioral intention.

From a theoretical standpoint, this study validates the TAM framework in the specific case of Indonesia's local environment in learning English as a foreign language. This study has confirmed that PU and PEU remain important predictors of behavioral intention (Wang et al., 2021). However, while classical TAM may suggest a simple and linear progression from awareness to acceptance of a tool, the results here show a more nuanced dynamic – a co-occurrence of positive intention and moderate concern. The findings suggest that teachers may have a high intention to use AI and a significant level of technical concern, rather than a simple linear progression, implying that the link between utility and adoption is not always a given. This finding adds to the existing TAM framework by implying that although teachers perceived the tool to be useful and easy to use, moderate levels of anxiety may psychologically impede teachers' attitudes toward technology integration.

Specifically, this study introduces the utilitarian-anxiety paradox to advance the existing knowledge of technology adoption. The research shows that emotional readiness is a significant variable to consider alongside functional factors such as usefulness, as behavioral intention can coexist with moderate anxiety. It also speaks against the idea that high utility will always trump everything else, suggesting instead that the two can coexist, leading to a more careful, gradual

adoption process. In this framework, acceptance is not a functional choice but a negotiated experience, and teachers negotiate their recognition of AI's benefits with their own sense of professional confidence (e.g., Çoban et al., 2025; Faisal et al., 2024; Faisal et al., 2026).

Furthermore, this paradox should be distinguished from the mere existence of two separate or parallel findings. Parallel findings would imply that teachers like AI and, unrelatedly, happen to feel some stress. This paradox, on the other hand, reveals that the anxiety is related to the technology's high expectations. Teachers perceive AI to be very useful and powerful, which puts more pressure on them to use AI effectively, which consequently increases their fear of making mistakes (Hastomo et al., 2025; Pratama et al., 2025). Thus, utility and anxiety are not merely coinciding; they interact and influence each other. The result is a condition of wary acceptance, which is much more complex than the simple positive adoption normally predicted by traditional models.

In conclusion, the present study contributes to the field of digital education by showing that higher AIA does not negate the need for appropriate support. This contribution is particularly important, given that teacher anxiety when using AI is a factor influencing digital education, thereby highlighting the need for effective professional development programs focused on digital skills.

■ DECLARATION OF GENERATIVE AI USAGE IN THE WRITING PROCESS

During the drafting of this manuscript, the authors used Grammarly Edu and Google's Gemini Pro for students to refine syntactic structures and enhance stylistic flow. Following the use of these tools, the authors reviewed and revised the content as necessary and accept full responsibility for the final content of the article.

■ REFERENCES

- Ahmed, S., & Roche, T. (2022). Digital literacy and academic staff in an English medium instruction university: A case study. *International Journal of Computer-Assisted Language Learning and Teaching (IJCALLT)*, 12(1), 1–20. <https://doi.org/10.4018/IJCALLT.301197>
- Akoglu, H. (2018). User's guide to correlation coefficients. *Turkish Journal of Emergency Medicine*, 18(3), 91–93. <https://doi.org/https://doi.org/10.1016/j.tjem.2018.08.001>
- Al-Anezi, Y. H., & Alajmi, S. M. (2021). Factors that influence English teachers' acceptance and use of e-learning technologies. *International Education Studies*, 14(9), 15–27. <https://doi.org/10.5539/ies.v14n9p15>
- Al Darayseh, A. (2023). Acceptance of artificial intelligence in teaching science: Science teachers' perspective. *Computers and Education: Artificial Intelligence*, 4, 100132. <https://doi.org/10.1016/j.caeai.2023.100132>
- Alejandro, I. M. V., Sánchez, J. M. P., Sumalinog, G. G., Mananay, J. A., Goles, C. E., & Fernández, C. B. (2024). Pre-service teachers' technology acceptance of artificial intelligence (AI) applications in education. *STEM Education*, 4(4), 445–465. <https://doi.org/10.3934/steme.2024024>
- Alifah, N., & Hidayat, A. R. (2025). Effectiveness of artificial intelligence-based learning analytics tool in supporting personalized learning in higher education. *Jurnal Pendidikan Progresif*, 15(1), 74–84. <https://doi.org/10.23960/jpp.v15i1.pp74-84>
- Annese, S., Amenduni, F., Candido, V., McLay, K. F., & Ligorio, M. B. (2022). Tutor's role in WhatsApp learning groups: A quali-

- quantitative methodological approach. *Frontiers in Psychology*, 12, 799456. <https://doi.org/10.3389/fpsyg.2021.799456>
- Annisa, A., Suhatmady, B., & Rusmawaty, D. (2025). Investigating EFL teachers' technology adoption level of ICT Integration by using the extended technology acceptance model: A study of MGMP Bahasa Inggris in Kutai Kartanegara. *Borneo Educational Journal (Borju)*, 7(2), 701–722. <https://doi.org/10.24903/bej.v7i2.2207>
- Apreliani, D., Muamaroh, & Yeny, P. (2025). Examining technology self-efficacy in Indonesian EFL classrooms: Insights from secondary school English teachers. *Voices of English Language Education Society*, 9(1), 1–15. <https://doi.org/10.29408/veles.v9i1.27861>
- Arslan, A. (2020). Reliability and validity of instruments measuring English teachers' TPACK. *International Journal of Assessment Tools in Education*, 7(3). <https://doi.org/10.21449/ijate.679876>
- Aurangzeb, W., Kashan, S., & Rehman, Z. U. (2024). Investigating technology perceptions among secondary school teachers: A systematic literature review on perceived usefulness and ease of use. *Academy of Education and Social Sciences Review*, 4(2), 160–173. <https://doi.org/10.48112/aessr.v4i2.746>
- Bautista, A., Estrada, C., Jaravata, A. M., Mangaser, L. M., Narag, F., Soquila, R., & Asuncion, R. J. (2024). Preservice teachers' readiness towards integrating AI-based tools in education: A TPACK approach. *Educational Process: International Journal*, 13(3), 40–68. <https://doi.org/10.22521/edupij.2024.133.3>
- Bernstein, A. (2025). *Artificial Intelligence (AI) in K-8 education: Understanding teachers' perceptions and district leader readiness while preparing for AI adoption* [Concordia University Chicago]. Chicago.
- Best, J. W., & Kahn, J. V. (2016). *Research in education*. Pearson Education India.
- Brandhofer, G., & Tengler, K. (2024). Acceptance of artificial intelligence in education: Opportunities, concerns, and need for action. *Advances in Mobile Learning Educational Research*, 4(2), 1105–1113. <https://doi.org/10.25082/AMLER.2024.02.005>
- Cabero-Almenara, J., Palacios-Rodríguez, A., Loaiza-Aguirre, M. I., & Rivas-Manzano, M. d. R. d. (2024). Acceptance of educational artificial intelligence by teachers and its relationship with some variables and pedagogical beliefs. *Education Sciences*, 14(7), 740. <https://doi.org/10.3390/educsci14070740>
- Cantos, K. F. S., Coello, M. B. B., & Pintado, J. A. C. (2023). Using online tools in teaching English as a foreign language. *Ciencia Latina Revista Científica Multidisciplinar*, 7(5), 5783–5794.
- Cao, L. (2025). A study on the readiness of English teachers in Macao universities in the era of AI. *Asian Education and Development Studies*, 14(4), 680–699. <https://doi.org/10.1108/AEDS-12-2024-0314>
- Chang, T.-S., Li, Y., Huang, H.-W., & Whitfield, B. (2021). Exploring EFL students' writing performance and their acceptance of AI-based automated writing feedback. *Proceedings of the 2021 2nd International Conference on Education Development and Studies*.
- Chen, D., Liu, W., & Liu, X. (2024). What drives college students to use AI for L2 learning? Modeling the roles of self-efficacy, anxiety, and attitude based on an extended technology acceptance model. *Acta*

- Psychologica*, 249, 104442. <https://doi.org/10.1016/j.actpsy.2024.104442>
- Cho, K. A., & Seo, Y. H. (2024). Dual mediating effects of anxiety to use and acceptance attitude of artificial intelligence technology on the relationship between nursing students' perception of and intention to use them: a descriptive study. *BMC nursing*, 23(1), 212. <https://doi.org/10.1186/s12912-024-01887-z>
- Çoban, N., Kar, D., & Berk, ^a. N. (2025). Artificial intelligence anxiety levels of faculty of health sciences students and affecting factors. *Archives of Health Science and Research*, 12(1), 1–8. <https://doi.org/10.5152/ArcHealthSciRes.2025.24147>
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education* (8th ed.). Routledge.
- Copeland, C. (2024). Using the technology acceptance model to understand attitudes about smartphone translators for EFL writing. *Korean Journal of General Education*, 18(1), 165–183. <https://doi.org/10.46392/kjge.2024.18.1.165>
- Cresswell, J. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications, Inc.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Dehghani, H., & Mashhadi, A. (2024). Exploring Iranian English as a foreign language teachers' acceptance of ChatGPT in English language teaching: Extending the technology acceptance model. *Education and Information Technologies*, 1–22. <https://doi.org/10.1007/s10639-024-12660-9>
- Dewi, L. P. D. K., Purnamika Utami, I., & Santosa, M. H. (2024). The importance of digital literacy skills in the context of learning English for Specific Purposes: A systematic review. *Jurnal Indonesia Sosial Teknologi*, 5(8).
- Ebadi, S., Gholami, M., & Vakili, S. (2023). Investigating the effects of using Grammarly in EFL writing: The case of articles. *Computers in the Schools*, 40(1), 85–105. <https://doi.org/10.1080/07380569.2022.2150067>
- Edelsbrunner, P. A., Simonsmeier, B. A., & Schneider, M. (2025). The Cronbach's alpha of domain-specific knowledge tests before and after learning: A meta-analysis of published studies. *Educational Psychology Review*, 37(1), 4. <https://doi.org/10.1007/s10648-024-09982-y>
- Efimova, G., Sorokin, A., & Gribovskiy, M. (2021). Ideal teacher of higher school: Personal qualities and socio-professional competencies. *The Education and Science Journal*, 23(1), 202–230. <https://doi.org/10.17853/1994-5639-2021-1-202-230>
- Faisal, F., Anjarani, S., & Hendra, H. (2024). *Investigating teachers' anxiety towards artificial intelligence*. iTELL International Conference 2024, UKSW, Salatiga, Indonesia.
- Faisal, F., & Carabella, P. A. (2023). Utilizing Grammarly in an academic writing process: Higher-education students' perceived views. *Journal of English Language Teaching and Linguistics*, 8(1), 23–42. <https://doi.org/10.21462/jeltl.v8i1.1006>
- Faisal, F., Harningsih, N. O., & Razali, R. (2026). From awareness to adoption: English teachers' artificial intelligence acceptance in junior high schools. *English Learning Innovation (englie)*, 7(1). <https://doi.org/10.22219/englie.v7i1.42559>
- Farooq, M., Buzdar, H. Q., Yen, Y. Y., & Bakhsh, A. (2024). Integrating AI in sustainable writing: An empirical investigation of the

- technology acceptance model in Asian social sciences. *Journal of Logistics, Informatics and Service Science*, 11(3), 324–338. <https://doi.org/10.33168/JLISS.2024.0321>
- Firdaus, R., Habibi, A., Hendra, R., Fauzee, M. S. O., Oktaria, S. D., Sofwan, M., & Alqahtani, T. M. (2025). Factors affecting Indonesian pre-service EFL teachers' AI acceptance and use. *Texto Livre*, 18, e57135. <https://doi.org/10.1590/1983-3652.2025.57135>
- Fitria, T. N. (2021). The use of technology based on artificial intelligence in English teaching and learning. *ELT Echo: The Journal of English Language Teaching in Foreign Language Context*, 6(2), 213–223. <https://doi.org/10.24235/eltecho.v6i2.9299>
- Gümü, M. M., & Kukul, V. (2023). Developing a digital competence scale for teachers: Validity and reliability study. *Education and Information Technologies*, 28(3), 2747–2765. <https://doi.org/10.1007/s10639-022-11213-2>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8 ed.). Cengage Learning.
- Hang, N. T. (2026). Vietnamese EFL Teachers' readiness and challenges in integrating AI-generated feedback. *Language, Technology, and Social Media*, 4(1), 89–103. <https://doi.org/10.70211/ltsm.3026-7196.315>
- Hartono, W. J., Nurfitri, N., Ridwan, R., Kase, E. B., Lake, F., & Zebua, R. S. Y. (2023). Artificial intelligence (AI) solutions in English language teaching: Teachers-students perceptions and experiences. *Journal on Education*, 6(1), 1452–1461. <https://doi.org/10.31004/joe.v6i1.3101>
- Hastomo, T., Widiati, U., Ivone, F. M., & Zen, E. L. (2025). EFL teachers' self-efficacy in using AI tools: A comparative study in Indonesia. *Advanced Education*, 103–123. <https://doi.org/10.20535/2410-8286.335502>
- Helmiatin, Hidayat, A., & Kahar, M. R. (2024). Investigating the adoption of AI in higher education: A study of public universities in Indonesia. *Cogent Education*, 11(1), 2380175. <https://doi.org/10.1080/2331186X.2024.2380175>
- Hoğör, H. (2021). Application of Likert scales and the analysis of survey data in social sciences. *Journal of Social Sciences Research*, 10(2). <https://doi.org/10.24297/jssr.v10i2.8976>
- Huttayavilaiphan, R. (2024). Digital competence and anxiety in Thai university English education: Impacts on teachers and students. *World Journal of English Language*, 15(1), 225–225. <https://doi.org/10.5430/wjel.v15n1p225>
- Hwang, G.-J., & Tu, Y.-F. (2021). Roles and research trends of artificial intelligence in Mathematics education: A bibliometric mapping analysis and systematic review. *Mathematics*, 9(6), 584. <https://doi.org/10.3390/math9060584>
- Ibrahim, A., & Shiring, E. (2022). The relationship between educators' attitudes, perceived usefulness, and perceived ease of use of instructional and web-based technologies: Implications from technology acceptance model (TAM). *International Journal of Technology in Education*, 5(4), 535–551. <https://doi.org/10.46328/ijte.285>
- Insani, A. N. P., Aprilia, P. K., & Mistar, J. (2024). Challenges and opportunities: A qualitative study of EFL teachers' digital proficiency and its impact on interactive language assessment. *Voices of English Language Education Society*, 8(1), 43–51. <https://doi.org/10.29408/veles.v8i1.25095>

- Ismail, N., & Joshy, L. M. (2025). Exploring the role of perceived usefulness and AI anxiety in technology-driven self-directed learning: A paradox mindset perspective. *Management and Labour Studies*, 50(3), 448–465. <https://doi.org/10.1177/0258042X251357415>
- Joo, Y. J., Park, S., & Lim, E. (2018). Factors influencing preservice teachers' intention to use technology: TPACK, teacher self-efficacy, and technology acceptance model. *Journal of Educational Technology & Society*, 21(3), 48–59.
- Joseph, V., & Khan, N. (2020). Digital literacy tools to enhance English reading and writing skills: A detailed literature. *Global Language Review*, 3, 21–33. [https://doi.org/10.31703/glr.2020\(V-III\).03](https://doi.org/10.31703/glr.2020(V-III).03)
- Kartika, N. H., Darmawan, I. G. N., Susilo, S., & Setiawan, I. (2024). Perceptions of the technology acceptance model and the impact of mobile technology on learning in English as a foreign language classrooms: Insights from students and teachers. *Jurnal Info Sains: Informatika dan Sains*, 14(01), 733–748. <https://doi.org/10.54209/infosains.v14i01>
- Kavitha, K., & Joshith, V. (2024). Artificial intelligence powered pedagogy: Unveiling higher educators acceptance with extended TAM. *Journal of University Teaching and Learning Practice*, 21(8), 1–34.
- Kelly, S., Kaye, S.-A., & Oviedo-Trespalacios, O. (2023). What factors contribute to the acceptance of artificial intelligence? A systematic review. *Telematics and Informatics*, 77, 101925. <https://doi.org/10.1016/j.tele.2022.101925>
- Kohne, J., Elhai, J. D., & Montag, C. (2023). A practical guide to WhatsApp data in social science research. In C. Montag & H. Baumeister (Eds.), *Digital Phenotyping and Mobile Sensing: New Developments in Psychoinformatics* (pp. 171–205). Springer International Publishing. https://doi.org/10.1007/978-3-030-98546-2_11
- Li, B. (2021). Ready for online? Exploring EFL teachers' ICT acceptance and ICT literacy during COVID-19 in Mainland China. *Journal of Educational Computing Research*, 60(1), 196–219. <https://doi.org/10.1177/07356331211028934>
- Limna, P., Jakwatanatham, S., Siripipattanakul, S., Kaewpuang, P., & Sriboonruang, P. (2022). A review of artificial intelligence (AI) in education during the digital era. *Advance Knowledge for Executives*, 1(1), 1–9.
- Lindner, J. R. (2024). Interpreting Likert scale data: Best practices for agricultural education and beyond. *Journal of Agricultural Education*, 65(1). <https://doi.org/10.5032/jae.2024.01092>
- Liu, N. (2025). Exploring the factors influencing the adoption of artificial intelligence technology by university teachers: The mediating role of confidence and AI readiness. *BMC psychology*, 13(1), 311. <https://doi.org/10.1186/s40359-025-02620-4>
- Lytvynova, S., Vodopian, N., & Sysoeva, O. (2023). Artificial intelligence in secondary education: An innovative teacher's tool to ensure individualised learning for students. International Conference on New Media Pedagogy,
- Ma, J., Wang, P., Li, B., Wang, T., Pang, X. S., & Wang, D. (2025). Exploring user adoption of ChatGPT: A technology acceptance model perspective. *International Journal of Human-Computer Interaction*, 41(2), 1431–1445. <https://doi.org/10.1080/10447318.2024.2314358>
- Mariscal, L. L., Albarracín, M. R., Mobo, F. D., & Cutillas, A. L. (2023). Pedagogical competence towards technology-driven

- instruction on basic education. *International Journal of Multidisciplinary: Applied Business and Education Research*, 4(5), 1567–1580. <https://doi.org/10.11594/ijmaber.04.05.18>
- Mavhandu-Mudzusi, A. H., Moyo, I., Mthombeni, A., Ndou, A., Mamabolo, L., Ngwenya, T., . . . Netshapapame, T. (2022). WhatsApp as a qualitative data collection method in descriptive phenomenological studies. *International Journal of Qualitative Methods*, 21, 16094069221111124. <https://doi.org/10.1177/16094069221111124>
- Memon, M. A., Thurasamy, R., Ting, H., & Cheah, J. H. (2025). Convenience sampling: A review and guidelines for quantitative research. *Journal of Applied Structural Equation Modeling*, 9(2). [https://doi.org/https://doi.org/10.47263/JASEM.9\(2\)01](https://doi.org/https://doi.org/10.47263/JASEM.9(2)01)
- Mertens, D. M. (2019). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods*. Sage Publications.
- Milutinoviæ, V. (2022). Examining the influence of pre-service teachers' digital native traits on their technology acceptance: A Serbian perspective. *Education and Information Technologies*, 27(5), 6483–6511. <https://doi.org/10.1007/s10639-022-10887-y>
- MPSE. (2025a). *Jumlah data satuan pendidikan (DIKDAS) per kabupaten di Banyumas*. MPSE. Retrieved April 2025 from <https://referensi.data.kemendikdasmen.go.id/pendidikan/dikdas/030200/2/jf/6/s1>
- MPSE. (2025b). *Perubahan atas Peraturan Menteri Pendidikan, Kebudayaan, Riset, dan Teknologi nomor 12 Tahun 2024 tentang kurikulum pada pendidikan anak usia dini, jenjang pendidikan dasar, dan jenjang pendidikan menengah*. Jakarta
- Mukminin, A., Muhaimin, M., Diat Prasajo, L., Khaeruddin, K., Habibi, A., Marzulina, L., & Harto, K. (2022). Analyzing social media use in TEFL via the technology acceptance model in Indonesian higher education during the COVID-19 pandemic. *Teaching English with Technology*, 22(1), 3–22.
- Na, S., Heo, S., Han, S., Shin, Y., & Roh, Y. (2022). Acceptance model of artificial intelligence (AI)-based technologies in construction firms: Applying the technology acceptance model (TAM) in combination with the technology–organisation–environment (TOE) framework. *Buildings*, 12(2), 90. <https://doi.org/10.3390/buildings12020090>
- Noor, N. M. M., Anuar, N., Halim, M. A. A., Sharif, N. F. M., Tahreb, N. S., & Azhari, S. H. A. (2026). Exploring ELT instructors' readiness for AI integration: A qualitative study of student perceptions in Malaysian higher education. *International Journal of Modern Languages and Applied Linguistics*, 10(1). <https://doi.org/10.24191/ijmal.v9i3.5403>
- Nuralam, I. P., Yudiono, N., Fahmi, M. R. A., Yuliaji, E. S., & Hidayat, T. (2024). Perceived ease of use, perceived usefulness, and customer satisfaction as driving factors on repurchase intention: the perspective of the e-commerce market in Indonesia. *Cogent Business & Management*, 11(1), 2413376. <https://doi.org/10.1080/23311975.2024.2413376>
- Okmen, B., & Kilic, A. (2016). The language teaching methods scale: Reliability and validity studies. *European Journal of Educational Research*, 5(3). <https://doi.org/10.12973/eu-jer.5.3.137>

- Özer-Altýnkaya, Z., & Yetkin, R. (2025). Exploring pre-service English language teachers' readiness for AI-integrated language instruction. *Pedagogies: An International Journal*, 20(4), 584–600. <https://doi.org/10.1080/1554480X.2025.2451299>
- Pangestu, B., & Dwiniasih, D. (2024). EFL teachers' technology acceptance: applying the technology acceptance model in secondary language learning in Indonesia. *Cirebon International Conference on Education and Economics Proceeding*.
- Pardede, P. (2020). Secondary school EFL teachers' perception of ICT use in learning and teaching: A case study in Greater Jakarta. *Journal of English Teaching*, 6(2), 144–157. <https://doi.org/10.33541/jet.v6i1.190>
- Pimentel, J. L. (2010). A note on the usage of Likert scaling for research data analysis. *USM R&D Journal*, 18(2), 109–112.
- Pratama, R., Sulistiyo, U., Sadikin, A., & Wijaya, H. A. (2025). Understanding AI acceptance among Indonesian pre-service teachers: The mediating role of anxiety and self-efficacy in a UTAUT framework. *Journal of Applied Research in Higher Education*, 1–14. <https://doi.org/10.1108/JARHE-05-2025-0358>
- Rachmawati, D. L., Maruf, N., & Fadhilawati, D. (2025). Emotional AI in EFL classrooms: Redefining human–machine affect in ELT research at Islamic university. *Register Journal*, 18(2), 341–368. <https://doi.org/10.18326/register.v18i2.341-368>
- Ramadhani, F. A., Ariani, M., & Fitriyah, S. M. (2023). EFL teachers' readiness in using technology to teach English in a public junior high school. *EFL Education Journal*, 10(3), 122–137.
- Rentler, B. R., & Apple, D. (2020). Understanding the acceptance of e-learning in a Japanese university English program using the technology acceptance model. *APU Journal of Language Research*, 5, 22–37.
- Schiavo, G., Businaro, S., & Zancanaro, M. (2024). Comprehension, apprehension, and acceptance: Understanding the influence of literacy and anxiety on acceptance of artificial Intelligence. *Technology in Society*, 77, 102537. <https://doi.org/10.1016/j.techsoc.2024.102537>
- ^aen, N., & Yildiz, D. H. (2022). Examining the relationships between English teachers' lifelong learning tendencies with professional competencies and technology integrating self-efficacy. *Education and Information Technologies*, 27(5), 5953–5988. <https://doi.org/10.1007/s10639-021-10867-8>
- Shahid, M. K., Zia, T., Bangfan, L., Iqbal, Z., & Ahmad, F. (2024). Exploring the relationship of psychological factors and adoption readiness in determining university teachers' attitude on AI-based assessment systems. *The International Journal of Management Education*, 22(2), 100967. <https://doi.org/10.1016/j.ijme.2024.100967>
- Singer, B., Walsh, C. M., Gondwe, L., Reynolds, K., Lawrence, E., & Kasiya, A. (2023). WhatsApp as a medium to collect qualitative data among adolescents: Lessons learned and considerations for future use. *Gates Open Research*, 4(130), 130. <https://doi.org/10.12688/gatesopenres.13169.2>
- Siroj, R. A., Afgani, W., Fatimah, F., Septaria, D., & Salsabila, G. Z. (2024). *Metode penelitian kuantitatif pendekatan ilmiah untuk analisis data. Jurnal Review Pendidikan dan Pengajaran (JRPP)*, 7(3), 11279–11289.

- Soleimani, E., Ismail, K., & Mustaffa, R. (2014). The acceptance of mobile assisted language learning (MALL) among post graduate ESL students in UKM. *Procedia - Social and Behavioral Sciences*, 118, 457–462. <https://doi.org/http://dx.doi.org/10.1016/j.sbspro.2014.02.062>
- Sugiyono. (2022). *Metode penelitian kuantitatif, kualitatif, dan R&D*. CV Alfabeta.
- Suharno, S., Musthafa, B., & Purnawarman, P. (2025). Exploring perceptions and experiences: Integrating AI in English language teaching from the perspectives of learners and educators. *Jurnal Pendidikan Progresif*, 15(1), 499–515. <https://doi.org/10.23960/jpp.v15i1.pp499-515>
- Sukardi, M. (2021). *Metodologi penelitian pendidikan: Kompetensi dan praktiknya*. Bumi Aksara.
- Sulistiyo, U., Reli, H., Faruq, U. M., & Mujiyono, W. (2022). Determinants of technology acceptance model (TAM) towards ICT use for English language learning. *Journal of Language and Education*, 8(2 (30)), 17–30. <https://doi.org/10.17323/jle.2022.12467>
- Sun, P. P., & Mei, B. (2022). Modeling preservice Chinese-as-a-second/foreign-language teachers' adoption of educational technology: A technology acceptance perspective. *Computer Assisted Language Learning*, 35(4), 816–839. <https://doi.org/10.1080/09588221.2020.1750430>
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in science education*, 48(6), 1273–1296. <https://doi.org/10.1007/s11165-016-9602-2>
- Taherdoost, H. (2016). Validity and reliability of the research instrument: How to test the validation of a questionnaire/survey in a research. *International journal of academic research in management (IJARM)*, 5.
- Unaradjan, D. D. (2019). *Metode Penelitian Kuantitatif*. Penerbit Unika Atma Jaya Jakarta.
- Vinten, G. (1988). Open vs closed questions - A closed question? *Managerial Auditing Journal*, 3(1), 11–13. <https://doi.org/10.1108/eb002799>
- Vo, T. K. A., & Nguyen, H. (2024). Generative artificial intelligence and ChatGPT in language learning: EFL students' perceptions of technology acceptance. *Journal of University Teaching and Learning Practice*, 21(06).
- Wahyuningsih, S. (2024). Does artificial intelligence (AI) play roles in enhancing academic writing? Unraveling lecturers' voices in Indonesian higher education. *Jurnal Pendidikan Progresif*, 14(1), 489–503. <https://doi.org/10.23960/jpp.v14.i1.202436>
- Wang, X., Li, L., Tan, S. C., Yang, L., & Lei, J. (2023). Preparing for AI-enhanced education: Conceptualizing and empirically examining teachers' AI readiness. *Computers in Human Behavior*, 146, 107798. <https://doi.org/10.1016/j.chb.2023.107798>
- Wang, Y., Liu, C., & Tu, Y.-F. (2021). Factors affecting the adoption of AI-based applications in higher education. *Educational Technology & Society*, 24(3), 116–129.
- Wang, Y., Wang, Y., Pan, Z., & Ortega-Martín, J. L. (2024). The predicting role of EFL students' achievement emotions and technological self-efficacy in their technology acceptance. *The Asia-Pacific Education Researcher*, 33(4), 771–782.
- Wardani, N. A., Saefurrohman, S., & Balinas, E. S. (2025). Gamified flipped classroom

- for teaching EFL productive skills: Exploring teachers' practices and challenges in an Islamic university. *Register Journal*, 18(2), 286–318. <https://doi.org/10.18326/register.v18i2.286-318>
- Yi, M., & Choi, H. (2023). What drives the acceptance of AI technology?: The role of expectations and experiences. *arXiv preprint arXiv:2306.13670*.
- Yiamkhamnuan, J., & Phuttharak, J. (2020, August 5-7, 2020). Transition to online learning during the COVID-19 pandemic: Impact on students' learning motivation. The 8th International Conference on Creative Technology, Phetchaburi, Thailand.
- Zhang, J., & Zhang, Z. (2024). AI in teacher education: Unlocking new dimensions in teaching support, inclusive learning, and digital literacy. *Journal of Computer Assisted Learning*, 40(4), 1871-1885. <https://doi.org/10.1111/jcal.12988>