

STUDENTS' PERCEPTIONS TOWARD THE USE OF ARTIFICIAL INTELLIGENCE TOOLS FOR GRAMMAR LEARNING IN ENGLISH EDUCATION PROGRAMS

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ABSTRACT

The rapid development of Artificial Intelligence (AI) has transformed educational practices by providing new opportunities for personalized learning, automated feedback, and independent learning support. In English language education, AI-based tools have emerged as potential learning assistants, particularly in grammar learning, which remains challenging for many English as a Foreign Language (EFL) learners. This study aims to investigate students' perceptions toward the use of Artificial Intelligence tools for grammar learning among English Education students at STKIP Insan Madani Airmolek. This study employed a descriptive quantitative research design involving 97 students selected through a total sampling technique. Data were collected using a structured questionnaire based on the Technology Acceptance Model (TAM) developed by Davis (1989), consisting of four dimensions: perceived usefulness, perceived ease of use, attitude toward AI utilization, and perceived challenges. The data were analyzed using descriptive statistical analysis, including frequency, percentage, and mean score analysis. The findings revealed that students demonstrated a high level of acceptance toward AI-based grammar learning tools, with an overall mean score of 4.07. The highest perception was found in the attitude toward AI utilization dimension ($M = 4.25$), followed by perceived usefulness ($M = 4.21$) and perceived ease of use ($M = 4.18$). Although students recognized the benefits of AI in providing immediate feedback, improving grammar understanding, and supporting independent learning, they also expressed concerns regarding AI dependency, accuracy of AI-generated feedback, and academic integrity. The study concludes that AI tools have significant potential to support grammar learning among English Education students; however, effective implementation requires appropriate guidance to ensure critical, ethical, and responsible use of AI technology.

Informasi Artikel

Kata Kunci:

Artificial Intelligence, pembelajaran grammar, persepsi mahasiswa, Technology Acceptance Model, Pendidikan Bahasa Inggris

ABSTRAK

Perkembangan pesat Artificial Intelligence (AI) telah membawa perubahan dalam praktik pendidikan melalui penyediaan peluang pembelajaran yang lebih personal, pemberian umpan balik otomatis, serta dukungan terhadap pembelajaran mandiri. Dalam pendidikan bahasa Inggris, teknologi berbasis AI mulai dimanfaatkan sebagai alat bantu pembelajaran, khususnya dalam pembelajaran tata bahasa (grammar) yang masih menjadi tantangan bagi banyak pembelajar bahasa Inggris sebagai bahasa asing (EFL). Penelitian ini bertujuan untuk mengetahui persepsi mahasiswa terhadap penggunaan teknologi Artificial Intelligence dalam pembelajaran grammar pada mahasiswa Program Studi Pendidikan Bahasa Inggris STKIP Insan Madani Airmolek. Penelitian ini menggunakan desain penelitian deskriptif kuantitatif dengan melibatkan 97 mahasiswa yang dipilih menggunakan teknik total sampling. Pengumpulan data dilakukan menggunakan kuesioner terstruktur yang dikembangkan berdasarkan Technology Acceptance Model (TAM) dari Davis (1989), yang terdiri atas empat dimensi, yaitu perceived usefulness, perceived ease of use, attitude toward AI utilization, dan perceived challenges. Data dianalisis menggunakan statistik deskriptif melalui analisis frekuensi, persentase, dan skor rata-rata. Hasil penelitian menunjukkan bahwa mahasiswa memiliki tingkat penerimaan yang tinggi terhadap penggunaan AI dalam pembelajaran grammar dengan nilai rata-rata keseluruhan sebesar 4,07. Dimensi dengan persepsi tertinggi adalah attitude toward AI utilization ($M = 4,25$), diikuti perceived usefulness ($M = 4,21$) dan perceived ease of use ($M = 4,18$). Meskipun mahasiswa mengakui manfaat AI dalam memberikan umpan balik secara langsung, meningkatkan pemahaman konsep grammar, dan mendukung pembelajaran mandiri, mahasiswa juga menunjukkan beberapa kekhawatiran terkait ketergantungan terhadap AI, keakuratan hasil umpan balik, serta permasalahan integritas akademik. Penelitian ini menyimpulkan bahwa teknologi AI memiliki potensi besar dalam mendukung pembelajaran grammar bagi mahasiswa Pendidikan Bahasa Inggris, namun implementasinya perlu disertai dengan arahan yang tepat agar penggunaan AI berlangsung secara kritis, etis, dan bertanggung jawab.

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1. Introduction

The rapid advancement of digital technology has significantly influenced educational practices by transforming conventional learning approaches into technology-supported environments. In recent years, educational institutions have increasingly integrated digital innovations to improve learning accessibility, effectiveness, and student engagement. One of the most significant technological developments in education is Artificial Intelligence (AI), which provides various possibilities for supporting personalized learning, automated feedback, and independent learning processes. Artificial Intelligence in education has the potential to enhance teaching and learning by providing adaptive systems that respond to students' individual needs (1). AI applications in education can support learning through intelligent tutoring systems, automated assessment, and data-driven learning recommendations (2). These developments indicate that AI is no longer merely a technological innovation but has become an emerging educational tool that requires further exploration regarding its implementation and acceptance among learners.

In English language education, grammar remains a fundamental aspect that influences students' ability to communicate accurately and effectively. Grammar provides learners with essential knowledge regarding sentence structures, language patterns, and appropriate forms of communication. However, grammar learning is often considered challenging for English as a Foreign Language (EFL) learners because grammatical rules are complex and require continuous practice to be applied appropriately in different contexts. Grammar learning involves not only understanding linguistic forms but also developing the ability to use those forms meaningfully in communication (3). Grammatical competence is an important component of communicative competence because it enables learners to produce accurate and comprehensible language (4). Therefore, effective grammar learning requires innovative approaches that can provide students with opportunities for continuous practice, feedback, and self-correction.

In English language education, grammar remains a fundamental aspect that influences students' ability to communicate accurately and effectively. Grammar provides learners with essential knowledge regarding sentence structures, language patterns, and appropriate forms of communication. However, grammar learning is often considered challenging for English as a Foreign Language (EFL) learners because grammatical rules are complex and require continuous practice to be applied appropriately in different contexts. Grammar learning involves not only understanding linguistic forms but also developing the ability to use those forms meaningfully in communication (3). Grammatical competence is an important component of communicative competence because it enables learners to produce accurate and comprehensible language (4). Recent perspectives on language learning also highlight that grammar acquisition requires meaningful interaction, contextualized practice, and learner engagement. Effective grammar instruction should integrate explicit knowledge of grammatical forms with opportunities for communicative practice, allowing learners to develop both accuracy and

fluency (5). Second language grammar development is influenced by continuous exposure, interaction, and feedback, as these processes help learners notice linguistic patterns and modify their language production (6). Technology-supported language learning environments can enhance grammar development by providing learners with increased opportunities for practice, corrective feedback, and self-directed learning (7). Therefore, effective grammar learning requires innovative approaches that can provide students with opportunities for continuous practice, feedback, and self-correction.

The emergence of Artificial Intelligence tools has created new opportunities for improving grammar learning among English learners. AI-based applications, such as Grammarly, ChatGPT, and automated writing evaluation systems, are capable of identifying grammatical errors, providing explanations, and offering suggestions for language improvement. Artificial intelligence has expanded the role of technology in language learning by providing interactive and personalized assistance that supports learners beyond classroom limitations (8). AI tools can function as learning companions that allow students to receive immediate feedback and develop greater awareness of their language errors. For English Education students, the utilization of AI tools is particularly relevant because they are not only language learners but also prospective teachers who are expected to possess digital literacy and technological competence in future teaching practices.

However, the successful implementation of AI tools in grammar learning does not solely depend on technological availability but also on students' acceptance and perceptions toward these technologies. The Technology Acceptance Model (TAM), which explains that individuals' acceptance of technology is primarily influenced by two main factors: perceived usefulness and perceived ease of use (9). Perceived usefulness refers to the extent to which individuals believe that technology can improve their performance, while perceived ease of use refers to the extent to which technology is considered effortless to operate. In the context of English learning, students who perceive AI tools as useful and easy to access are more likely to adopt them as part of their learning strategies. Conversely, concerns regarding technological dependency, inaccurate feedback, academic integrity, and reduced independent thinking may influence students' willingness to use AI-based learning tools.

The importance of examining students' perceptions toward AI utilization is particularly relevant in English Education Programs because students are future educators who will face increasing demands for technology-integrated teaching practices. Through the Technological Pedagogical Content Knowledge (TPACK) framework, effective technology integration requires teachers to possess the ability to combine technological knowledge, pedagogical knowledge, and subject matter knowledge (10). Therefore, English Education students need opportunities to develop positive but critical attitudes toward educational technologies, including AI-based grammar learning tools. Understanding students' perceptions can provide valuable information regarding their readiness, acceptance, and challenges in adopting AI for language learning.

Several previous studies have investigated the integration of Artificial Intelligence in English language

learning. University students' perceptions of AI-based tools in English writing courses and found that students generally perceived AI tools positively because they improved writing accuracy, provided language feedback, and supported independent learning (11). However, the study also revealed concerns regarding excessive dependence on AI technology. Similarly, undergraduate students' perceptions of generative AI use in English academic writing and reported that students recognized AI as a useful tool for improving writing processes but emphasized the importance of responsible usage and academic integrity (12). Students perceived AI positively because of its accessibility, immediate feedback, and motivational benefits in English learning, although students also identified limitations related to reliability and overdependence (13).

Although previous studies have provided valuable insights into AI utilization in English learning, most research has focused on general language skills, particularly writing improvement, rather than specifically examining AI utilization for grammar learning. In addition, research exploring students' perceptions toward AI-based grammar learning among English Education students in Indonesian higher education institutions remains limited. This issue is particularly important in teacher education institutions because students' perceptions may influence their future ability to integrate AI technology into classroom practices. Therefore, investigating how English Education students perceive AI tools for grammar learning can provide deeper understanding regarding the benefits, challenges, and readiness of prospective teachers in adopting AI-supported language learning.

STKIP Insan Madani Airmolek, as an institution focusing on teacher education development, particularly through the English Education Program, is expected to prepare students with linguistic competence, pedagogical understanding, and digital literacy skills. The increasing presence of AI technology provides both opportunities and challenges for students in developing their English grammar competence. However, empirical evidence regarding how students at STKIP Insan Madani Airmolek perceive AI tools for grammar learning remains unavailable. Understanding these perceptions is necessary to determine whether AI tools are considered effective learning assistants, how students experience their use, and what challenges need to be addressed in future technology-based learning implementation.

Based on these considerations, this study aims to explore students' perceptions toward the use of Artificial Intelligence tools for grammar learning among English Education students at STKIP Insan Madani Airmolek. This study is expected to contribute theoretically by expanding discussions regarding technology acceptance in English language education and practically by providing recommendations for lecturers and institutions in implementing AI-supported grammar learning strategies. Furthermore, the findings may support the development of digitally competent English teachers who are capable of utilizing Artificial Intelligence tools effectively, critically, and responsibly in contemporary educational contexts.

2. Research Method

This study employed a descriptive quantitative research

design to investigate students' perceptions toward the use of Artificial Intelligence (AI) tools for grammar learning among English Education students at STKIP Insan Madani Airmolek. A quantitative approach was selected because this study aimed to identify students' perceptions, acceptance levels, and attitudes toward AI-based grammar learning tools through numerical data obtained from questionnaires. The study was based on the Technology Acceptance Model (TAM), which explains that technology acceptance is primarily influenced by two main factors, namely perceived usefulness and perceived ease of use (9). In this study, TAM was used as the theoretical framework to examine students' perceptions regarding the benefits, usability, acceptance, and challenges associated with the utilization of AI tools in grammar learning.

This research was conducted at STKIP Insan Madani Airmolek, Riau, Indonesia, involving students from the English Education Study Program. The population of this study consisted of all active students enrolled in the English Education Program. The sample consisted of 97 students selected through a total sampling technique. Total sampling was applied because the population size was considered manageable, allowing all members of the population to participate as research respondents. The participants represented students from different academic levels within the English Education Program who had experience using Artificial Intelligence-based applications for English learning activities. The inclusion criteria for participants were active students enrolled in the English Education Study Program at STKIP Insan Madani Airmolek, students who had experience using AI-based tools such as ChatGPT, Grammarly, QuillBot, or other AI-assisted applications, students who had utilized AI tools to support English learning activities, particularly grammar-related activities such as sentence correction, grammar explanation, or writing improvement, and students who were willing to participate voluntarily in the research. The demographic characteristics of participants included academic semester and previous experience using AI tools for English learning, which were analyzed to provide contextual information regarding students' perceptions toward AI utilization.

The instrument used in this study was a structured questionnaire developed based on the Technology Acceptance Model (TAM) framework. The questionnaire was designed to measure students' perceptions toward AI utilization in grammar learning through four main dimensions: perceived usefulness, perceived ease of use, attitude toward AI utilization, and perceived challenges. The perceived usefulness dimension examined students' beliefs regarding the extent to which AI tools contribute to improving grammar learning, including improving understanding of grammatical concepts, providing immediate correction and feedback, supporting independent grammar practice, and improving English writing accuracy. The perceived ease of use dimension focused on students' perceptions regarding the accessibility and usability of AI applications, including ease of accessing AI tools, ease of understanding AI-generated explanations, and convenience in using AI during learning activities. The attitude toward AI utilization dimension measured students' acceptance and willingness to integrate AI tools into grammar learning, including positive attitudes toward AI-supported learning,

willingness to continue using AI tools, and interest in applying AI for future learning activities. Meanwhile, the perceived challenges dimension explored students' concerns regarding AI utilization, including the possibility of becoming dependent on AI, the accuracy and reliability of AI-generated feedback, academic integrity issues, and reduced independent thinking ability. All questionnaire items were measured using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) (9).

The data collection process was conducted through an online questionnaire distributed to 97 students of the English Education Study Program at STKIP Insan Madani Airmolek. Before completing the questionnaire, participants were informed about the objectives of the research, the procedures for completing the questionnaire, and their rights as research participants. The questionnaire was distributed during the research period, and respondents were provided with sufficient time to complete all statements. The collected responses were subsequently compiled and analyzed statistically to identify students' perceptions toward AI-based grammar learning tools.

The collected data were analyzed using descriptive statistical analysis to determine students' perceptions regarding AI utilization in grammar learning based on the TAM framework. The analysis included frequency and percentage calculations to describe students' responses toward each questionnaire item, as well as mean score analysis to determine the overall perception level across each dimension of technology acceptance, including perceived usefulness, perceived ease of use, attitude toward AI utilization, and perceived challenges. The interpretation of mean scores was categorized into five levels: 4.21–5.00 was categorized as very high, 3.41–4.20 as high, 2.61–3.40 as moderate, 1.81–2.60 as low, and 1.00–1.80 as very low.

Before the questionnaire was distributed, the research instrument was evaluated to ensure its validity and reliability. Content validity was established through expert judgment to confirm that the questionnaire items appropriately represented the research objectives and the dimensions of the Technology Acceptance Model (TAM). Furthermore, reliability testing was conducted using Cronbach's Alpha coefficient to examine the internal consistency of the questionnaire items. A Cronbach's Alpha value of 0.70 or higher indicates acceptable reliability, demonstrating that the instrument has adequate consistency for measuring the intended constructs (14).

Ethical considerations were maintained throughout the research process. Participation in this study was voluntary, and respondents were informed about the purpose and procedures of the research before completing the questionnaire. The confidentiality and anonymity of participants were maintained, and all collected data were used solely for academic research purposes.

3. Result and Discussion

Result

a. Respondents' Demographic Characteristics

This study involved 97 students from the English Education Study Program at STKIP Insan Madani Airmolek. The respondents consisted of students from different

academic semesters who had experience using Artificial Intelligence (AI) tools for English learning activities.

Table 1. Demographic Characteristics of Respondents

Characteristics	Category	Frequency	Percentage (%)
Semester	Second Semester	34	35.1
	Fourth Semester	33	34.0
	Sixth Semester	30	30.9
AI Usage Experience	Less than 1 year	28	28.9
	1–2 years	51	52.6
	More than 2 years	18	18.5

The results indicate that respondents represented various academic levels within the English Education Program. Regarding AI usage experience, most students (52.6%) had used AI tools for approximately 1–2 years, indicating that AI-based applications had become relatively familiar among students for supporting English learning activities.

3.2 Reliability Test

Before analyzing students' perceptions, the reliability of the questionnaire instrument was examined using Cronbach's Alpha coefficient.

Table 2. Reliability Test Results

Dimension	Number of Items	Cronbach's Alpha	Interpretation
Perceived Usefulness	5	0.862	Reliable
Perceived Ease of Use	5	0.841	Reliable
Attitude Toward AI Utilization	5	0.878	Reliable
Perceived Challenges	5	0.814	Reliable
Overall Instrument	20	0.891	Highly Reliable

The reliability analysis showed that all dimensions obtained Cronbach's Alpha values above 0.70. Therefore, the questionnaire demonstrated good internal consistency and was considered reliable for measuring students' perceptions toward AI tools in grammar learning.

b. Overall Students' Perceptions Toward AI Tools for Grammar Learning

The students' perceptions were analyzed based on four dimensions of the Technology Acceptance Model (TAM), namely perceived usefulness, perceived ease of use, attitude toward AI utilization, and perceived challenges.

Table 3. Overall Perception Scores

Dimension	Mean Score	Interpretation
Perceived Usefulness	4.21	Very High
Perceived Ease of Use	4.18	High
Attitude Toward AI Utilization	4.25	Very High
Perceived Challenges	3.62	High
Overall Mean	4.07	High

The findings demonstrate that students showed a high level of acceptance toward AI tools for grammar learning with an overall mean score of 4.07. Among the four dimensions, attitude toward AI utilization obtained the highest mean score ($M = 4.25$), indicating that students generally accepted AI as a supportive technology in their learning process. Meanwhile, perceived challenges obtained the lowest mean score ($M = 3.62$), suggesting that although students recognized the benefits of AI, they remained aware of potential limitations.

c. Students' Perceived Usefulness of AI Tools

The perceived usefulness dimension examined students' beliefs regarding the contribution of AI tools to improving grammar learning.

Table 4. Perceived Usefulness Dimension

Statement	Mean Score	Interpretation
AI tools help me understand grammar rules more clearly.	4.30	Very High
AI tools provide immediate feedback on grammatical errors.	4.35	Very High
AI tools support independent grammar practice.	4.18	High
AI tools improve my English writing accuracy.	4.15	High
AI tools help me identify my grammar weaknesses.	4.08	High

The results indicate that students perceived AI tools as beneficial for grammar learning. The highest-rated statement was related to immediate feedback on grammatical errors ($M = 4.35$). This finding suggests that students valued AI applications because they could receive instant corrections and explanations that might not always

be available during classroom learning.

d. Students' Perceived Ease of Use of AI Tools

The perceived ease of use dimension measured students' perceptions regarding the accessibility and usability of AI-based applications.

Table 5. Perceived Ease of Use Dimension

Statement	Mean Score	Interpretation
AI tools are easy to access whenever I need them.	4.32	Very High
AI applications are easy to operate.	4.25	Very High
AI-generated explanations are easy to understand.	4.10	High
I can quickly learn how to use AI tools.	4.08	High
AI tools are convenient for grammar learning activities.	4.15	High

The findings show that students considered AI tools relatively easy to use. Accessibility and operational simplicity were identified as important factors encouraging students to adopt AI-based applications for grammar learning.

e. Students' Attitudes Toward AI Utilization

Students' attitudes toward AI utilization were analyzed to identify their acceptance and willingness to continue using AI tools.

Table 6. Attitude Toward AI Utilization

Statement	Mean Score	Interpretation
AI tools are useful learning assistants for grammar.	4.40	Very High
I am interested in using AI tools in future learning activities.	4.28	Very High
AI tools make grammar learning more engaging.	4.22	Very High
AI tools can complement traditional grammar learning.	4.18	High
I recommend using AI tools responsibly in English learning.	4.15	High

The findings indicate that students demonstrated positive attitudes toward AI utilization. Most respondents viewed AI as a complementary learning assistant rather than a replacement for teachers or independent learning.

f. Students' Perceived Challenges in Using AI Tools

Although students demonstrated positive perceptions, they also identified several challenges associated with AI utilization.

Table 7. Perceived Challenges Dimension

Statement	Mean Score	Interpretation
I am concerned that students may become dependent on AI tools.	3.82	High
AI-generated feedback may sometimes be inaccurate.	3.75	High
Excessive AI use may reduce independent thinking.	3.60	High
Academic integrity issues may occur when using AI.	3.55	High
I need guidance to use AI responsibly.	3.40	Moderate

The results indicate that students were aware of several challenges related to AI adoption. The highest concern was potential dependency on AI tools ($M = 3.82$). This suggests that students recognized the importance of maintaining critical thinking and independent learning while utilizing AI-based technologies.

Overall, the findings demonstrate that English Education students at STKIP Insan Madani Airmolek showed positive perceptions toward the use of Artificial Intelligence tools for grammar learning. Students considered AI beneficial because it provided immediate feedback, supported independent learning, and improved their understanding of grammatical concepts. Furthermore, students perceived AI applications as accessible and easy to operate.

However, students also acknowledged several challenges, particularly related to dependency, reliability of AI-generated feedback, and academic integrity. These findings suggest that AI integration in grammar learning should be accompanied by appropriate guidance to ensure students use AI tools effectively, critically, and responsibly.

DISCUSSION

The findings of this study indicate that English Education students at STKIP Insan Madani Airmolek demonstrated a positive perception toward the use of Artificial Intelligence (AI) tools for grammar learning. The overall mean score ($M = 4.07$) indicates that students generally accepted AI as a supportive technology in improving their grammar learning process. This finding suggests that AI tools have been increasingly recognized not only as technological innovations but also as practical learning assistants that provide students with opportunities for independent practice, immediate feedback, and personalized learning experiences.

According to Technology Acceptance Model (TAM), users' acceptance of technology is primarily influenced by

perceived usefulness and perceived ease of use. In this study, perceived usefulness obtained a high score ($M = 4.21$), indicating that students believed AI tools could improve their grammar learning performance (9). Students particularly appreciated AI's ability to provide immediate feedback on grammatical errors and explain language rules. This finding supports the argument of Holmes, Bialik, and Fadel, who stated that AI in education has the potential to enhance learning processes through adaptive systems that respond to learners' individual needs (1). AI applications can support educational activities through intelligent feedback mechanisms and personalized learning recommendations (2).

The finding regarding the usefulness of AI tools is consistent with previous studies examining AI integration in English language learning. University students perceived AI-based applications positively because these technologies improved writing accuracy, provided language feedback, and supported independent learning (11). Focused primarily on English writing courses, the underlying benefit of immediate linguistic feedback is also relevant to grammar learning. The present study extends these findings by emphasizing that AI tools are also perceived as valuable resources for developing grammatical awareness among English Education students.

Furthermore, students' positive perception toward AI was also reflected in the perceived ease of use dimension ($M = 4.18$). Students considered AI applications accessible, convenient, and relatively easy to operate. Technologies perceived as simple and effortless are more likely to be accepted by users. In the context of English learning, the accessibility of AI tools such as ChatGPT and Grammarly enables students to obtain assistance without being limited by classroom time and teacher availability (9). AI has expanded the role of technology in language learning by providing interactive support that allows learners to engage with language materials beyond traditional classroom environments (8).

The high score obtained in the attitude toward AI utilization dimension ($M = 4.25$) demonstrates that students showed strong acceptance toward integrating AI into grammar learning activities. This finding indicates that students do not perceive AI merely as a supplementary application but as a learning partner that can support their academic development. Undergraduate students viewed generative AI as a beneficial tool for supporting academic writing processes (12). However, their study also emphasized that responsible usage and academic integrity remain important considerations. Students generally appreciated AI because of its accessibility, immediate feedback, and motivational benefits, although concerns regarding reliability and excessive dependence remained (13).

Despite the positive perceptions, this study also revealed that students recognized several challenges associated with AI utilization. The perceived challenges dimension obtained a high score ($M = 3.62$), particularly regarding concerns about dependency on AI tools and the accuracy of AI-generated feedback. This finding indicates that students possess a critical awareness of the limitations of AI technology. Rather than fully relying on AI-generated responses, students recognize the need to evaluate and verify information obtained from AI applications. Students

appreciated AI support but expressed concerns about excessive dependence on technology. Therefore, AI literacy becomes an essential component to ensure that students utilize AI effectively without reducing their independent learning ability (11).

The findings also have important implications for English Education students as prospective teachers. Since these students will become future educators, their acceptance and understanding of AI technology may influence how they integrate digital tools into future teaching practices. Technological Pedagogical Content Knowledge (TPACK) emphasizes that effective technology integration requires teachers to combine technological knowledge, pedagogical knowledge, and subject matter knowledge (10). Therefore, positive perceptions toward AI should be accompanied by critical understanding regarding appropriate pedagogical implementation. Students need to recognize that AI should function as a supporting tool rather than replacing teachers' instructional roles or students' cognitive engagement.

Compared with previous studies, this research provides a specific contribution by focusing on AI utilization for grammar learning among English Education students in an Indonesian higher education context. Previous studies have largely examined AI applications in general English learning or writing improvement contexts (11) (12). Meanwhile, grammar learning has received less attention despite its fundamental role in developing English proficiency. By investigating students' perceptions toward AI-based grammar learning at STKIP Insan Madani Airmolek, this study provides contextual evidence regarding how future English teachers perceive and adopt AI-supported learning technologies.

Overall, the findings suggest that AI tools have considerable potential to support grammar learning among English Education students. However, successful implementation requires balanced integration between technological innovation and pedagogical considerations. Institutions and lecturers should provide appropriate guidance regarding ethical, critical, and effective AI utilization to ensure that students can maximize the benefits of AI while minimizing potential risks.

4. Conclusion and Recommendations

This study concludes that English Education students at STKIP Insan Madani Airmolek demonstrated a positive perception toward the use of Artificial Intelligence (AI) tools for grammar learning. Based on the Technology Acceptance Model (TAM) framework, students showed a high level of acceptance regarding AI utilization, particularly in terms of perceived usefulness, perceived ease of use, and positive attitudes toward AI-supported learning. Students considered AI tools beneficial because they provide immediate feedback, assist in identifying grammatical errors, improve understanding of grammar concepts, and support independent learning activities beyond classroom limitations.

The findings also indicate that students perceive AI applications as accessible and easy to use, which contributes to their willingness to integrate AI into their English learning process. The high level of acceptance suggests that AI tools have the potential to function as effective learning assistants in grammar instruction, especially for English Education students who are expected to develop both language

competence and digital literacy skills as future educators.

However, this study also highlights several challenges associated with AI utilization. Students expressed concerns regarding excessive dependency on AI tools, the possibility of inaccurate AI-generated feedback, and issues related to academic integrity. These findings emphasize that AI should not replace students' critical thinking abilities or teachers' instructional roles but should instead be integrated as a supportive learning medium. Therefore, effective AI implementation requires not only technological availability but also appropriate guidance regarding responsible and ethical use.

Overall, this study contributes to the understanding of students' acceptance of AI-based grammar learning tools within an Indonesian English Education context. The findings provide evidence that AI has significant potential to enhance grammar learning; however, its successful implementation depends on students' digital competence, critical awareness, and institutional support.

Based on the findings of this study, several recommendations are proposed. First, English Education lecturers are recommended to integrate AI tools into grammar learning activities through guided and purposeful implementation. Rather than prohibiting AI usage, lecturers should provide students with strategies for utilizing AI responsibly, such as using AI-generated feedback as a learning resource, verifying information, and developing independent analysis skills.

Second, students are encouraged to develop AI literacy and critical digital skills. Although AI tools can provide valuable assistance in grammar learning, students should avoid excessive dependence and continue developing their own grammatical understanding. AI should be used as a complementary learning assistant rather than a substitute for personal effort and cognitive engagement.

Third, educational institutions are recommended to establish guidelines or policies regarding AI utilization in academic activities. Clear regulations regarding ethical AI use, academic integrity, and responsible technology adoption can help students maximize the benefits of AI while minimizing potential risks.

Fourth, future researchers are recommended to conduct further studies involving broader populations and different educational contexts to provide more comprehensive insights into AI acceptance in language learning. Future research may also employ mixed-method approaches by combining quantitative surveys with interviews or classroom observations to explore students' experiences and the actual implementation of AI tools in learning environments.

Finally, future studies may investigate the effectiveness of specific AI applications, such as ChatGPT, Grammarly, or automated writing evaluation systems, in improving students' grammar competence through experimental or longitudinal research designs. Such studies would provide deeper evidence regarding the practical impact of AI integration in English language education.

5. Declaration of Conflict of Interest

The authors declare that there are no conflicts of interest, either financial or personal, that could influence the preparation, results, or reporting of this article. All contents of the article were prepared objectively and responsibly in

accordance with the principles of scientific writing.

6. Ethics Declaration

All participants provided informed consent before participating in the study. They were informed about the purpose, procedures, and their right to withdraw at any time without any consequences.

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