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Opportunities and Challenges of Using Artificial Intelligence for Grammar Assessment: A Case Study on the Perspectives of English Language Teachers in Ilam City

ABSTRACT

The present study aimed to investigate the opportunities and challenges associated with the use of artificial intelligence-based grammar assessment tools, such as ChatGPT and Grammarly, from the perspectives of English language teachers in Ilam city, with particular emphasis on pedagogical, infrastructural, ethical, and technological dimensions. This study employed a sequential explanatory mixed-methods design combining quantitative and qualitative approaches. The statistical population consisted of 41 English language teachers working in schools and language institutes in Ilam city. In the quantitative phase, data were collected using a standard and researcher-made questionnaire designed based on the Technology Acceptance Model (TAM). The questionnaire assessed perceived usefulness, perceived ease of use, and perceived barriers associated with AI-driven grammar assessment systems. The reliability of the instrument was confirmed through Cronbach's alpha coefficient of 0.83. In the qualitative phase, semi-structured interviews were conducted with a purposively selected subgroup of teachers representing different levels of teaching experience and educational settings. Quantitative data were analyzed using descriptive and inferential statistics in SPSS, while qualitative interview data were coded and analyzed through thematic analysis following Braun and Clarke's six-step procedure. The findings demonstrated that teachers had highly positive attitudes toward the practical benefits of AI-based grammar assessment systems, particularly regarding accelerating the correction process ($M=4.5$), providing immediate corrective feedback ($M=4.3$), and reducing occupational workload and burnout. Inferential analysis further showed that younger teachers and those with lower teaching experience expressed greater technological acceptance and stronger perceived usefulness compared to more experienced teachers. Qualitative thematic analysis identified four major categories of challenges, including infrastructural instability and internet filtering (88%), concerns regarding reduced critical thinking and learner dependency (75%), digital inequality and limited student access to technological devices (62%), and the inability of AI systems to fully understand cultural and semantic nuances in Iranian EFL contexts (45%). The integration of quantitative and qualitative findings indicated that while teachers acknowledged the pedagogical value of AI, structural and contextual barriers significantly restricted sustainable implementation in Ilam's educational environment.

Keywords: Artificial Intelligence in Education, Grammar Assessment, English Language Teachers, Ilam City, Automated Corrective Feedback, Digital Divide.

Introduction

The rapid emergence and expansion of artificial intelligence (AI) technologies have significantly transformed educational systems across the world, particularly in the field of language teaching and learning. In recent years, the integration of generative AI, intelligent tutoring systems, natural language processing, and machine learning technologies into English as a Foreign Language (EFL) education has reshaped traditional pedagogical approaches and introduced innovative opportunities for instruction, assessment, feedback, and learner engagement (1, 2). AI-driven educational technologies are increasingly being used to support language learners through personalized instruction, automated writing correction, intelligent feedback systems, adaptive learning environments, and conversational chatbots capable of simulating human interaction. These developments have attracted substantial attention among researchers, educators, and policymakers because of their potential to enhance language acquisition processes while simultaneously reducing teachers' workload and improving educational efficiency (3, 4).

One of the most influential developments in this area has been the emergence of large language models and generative AI systems such as ChatGPT, Gemini, Grammarly, and other AI-powered writing assistants. These technologies are capable of identifying grammatical errors, suggesting lexical improvements, generating coherent texts, and providing immediate feedback to learners with unprecedented speed and accuracy. Unlike traditional writing assessment approaches, which often require substantial teacher effort and time, AI-powered systems provide continuous and individualized support that can facilitate autonomous learning and improve learner motivation (5, 6). Recent studies have demonstrated that AI-assisted writing platforms can significantly improve students' writing fluency, grammatical accuracy, and engagement in language learning activities. Furthermore, these systems allow learners to revise and refine their texts repeatedly without fear of criticism or embarrassment, thereby creating a safer and more supportive learning environment for language production (7, 8).

The role of AI in language learning extends beyond writing correction and grammar assessment. Researchers have increasingly explored the integration of AI-powered chatbots, conversational tutoring systems, speech evaluation technologies, and intelligent virtual assistants into EFL instruction. AI-based conversational agents can simulate authentic communication, support speaking practice, and provide adaptive responses tailored to learners' proficiency levels. Such technologies have been shown to improve learners' confidence, reduce communication anxiety, and increase opportunities for interaction in contexts where authentic language exposure is limited (9, 10). Similarly, intelligent tutoring systems utilizing deep learning algorithms have demonstrated remarkable potential for enhancing language acquisition through personalized instruction and data-driven feedback mechanisms (11). These systems can analyze learner performance patterns and provide customized instructional recommendations that align with learners' individual strengths and weaknesses.

The growing adoption of AI in EFL education is also associated with broader transformations in educational philosophy and pedagogical practice. Traditional teacher-centered instruction is gradually shifting toward more learner-centered and technology-enhanced models in which AI acts as a supportive educational partner rather than merely a technological tool (12). Human-AI collaboration frameworks emphasize that AI technologies should augment, rather than replace, human instruction by supporting metacognitive processes, reflective learning, and learner autonomy. In this regard, AI systems can assist teachers in monitoring student progress, identifying learning difficulties, and providing individualized support while allowing educators to focus on higher-order instructional activities and emotional interaction with students (11, 13). Consequently, many scholars argue that AI integration has the potential to redefine the role of language teachers from information providers to facilitators of collaborative and adaptive learning experiences.

Despite these promising developments, the integration of AI technologies into language education remains accompanied by numerous pedagogical, ethical, technical, and psychological challenges. One major concern involves the possibility that

excessive reliance on AI systems may reduce learners' critical thinking abilities and discourage active cognitive engagement in language learning tasks. When students depend heavily on automated correction tools and generative systems to produce or revise texts, they may become passive consumers of machine-generated content rather than active constructors of linguistic knowledge (3, 4). Scholars have warned that although AI systems can accelerate learning processes, they may simultaneously weaken learners' analytical skills, creativity, and independent problem-solving capacities if used without pedagogical supervision. This issue is particularly critical in writing instruction, where the process of reflection, revision, and self-correction plays a fundamental role in language development.

Another important challenge concerns the ethical implications of AI integration in educational contexts. Issues such as data privacy, algorithmic bias, academic dishonesty, and overdependence on AI-generated outputs have become central topics in contemporary educational research (1, 14). AI systems often collect large amounts of learner data to optimize personalization and predictive analytics, raising concerns regarding confidentiality and responsible data management. Moreover, generative AI models may produce inaccurate, misleading, or culturally inappropriate responses due to limitations in contextual understanding and training data bias. In multilingual and multicultural educational contexts, these limitations can negatively affect the quality and relevance of feedback provided to learners. Researchers have therefore emphasized the necessity of establishing ethical guidelines and pedagogically informed frameworks for AI implementation in educational environments (14, 15).

In addition to ethical concerns, infrastructural and technological limitations continue to hinder the effective adoption of AI technologies in many educational settings. The successful implementation of AI-powered systems requires stable internet connectivity, adequate digital infrastructure, teacher training, and equitable access to technological devices. In developing countries and less privileged educational contexts, many schools and learners lack sufficient technological resources to benefit fully from advanced AI tools (2, 16). The digital divide remains a significant obstacle that can intensify educational inequality if technological innovations are implemented without consideration of contextual realities. Students from economically disadvantaged backgrounds may have limited access to computers, smartphones, or reliable internet services, reducing their opportunities to engage with AI-supported learning environments. Consequently, scholars have stressed that educational policymakers must address infrastructural disparities before large-scale integration of AI technologies into formal education systems (13, 15).

Teachers' perceptions and attitudes toward AI technologies also represent a critical factor influencing the success of AI integration in education. As the primary facilitators of classroom instruction, teachers play a decisive role in determining how AI tools are adopted, utilized, and interpreted in educational contexts. Positive teacher attitudes toward AI can encourage meaningful integration and innovation, whereas skepticism and resistance may limit effective implementation (17, 18). Previous studies have shown that many language teachers appreciate AI systems for their efficiency in providing feedback and supporting individualized instruction; however, they simultaneously express concerns regarding the reliability, pedagogical appropriateness, and long-term effects of these technologies on language learning processes. Some educators fear that AI may eventually reduce the significance of human interaction in education or undermine teachers' professional authority (3, 18). Therefore, understanding teachers' experiences and perspectives is essential for developing balanced and context-sensitive approaches to AI adoption in language education.

Research on AI-assisted language learning has increasingly focused on writing instruction because writing is often considered one of the most cognitively demanding language skills. AI-powered writing assistants provide grammar correction, vocabulary enhancement, stylistic recommendations, and structural organization support that can improve learners' writing quality and confidence (6, 19). Studies indicate that AI-driven writing platforms can promote learner autonomy by enabling

students to revise their work independently and receive immediate feedback without waiting for teacher evaluation (7, 8). Furthermore, AI technologies have been found to reduce writing anxiety among EFL learners by creating nonjudgmental environments in which students can experiment with language use freely (20). Nevertheless, researchers continue to debate whether AI-generated feedback can fully replace human pedagogical judgment, particularly in areas involving creativity, cultural nuances, rhetorical appropriateness, and contextual meaning.

The integration of AI into speaking instruction and oral communication practice has also attracted considerable scholarly attention. AI-powered speech evaluation systems and conversational tutoring technologies are increasingly being used to improve pronunciation, fluency, and speaking confidence among language learners (10, 21). These systems provide immediate oral feedback and simulate authentic interaction opportunities that may not always be available in traditional classroom settings. Research findings suggest that AI-supported speaking practice can enhance learners' communicative competence while reducing speaking anxiety and fear of making mistakes (9, 22). However, concerns remain regarding the ability of AI systems to recognize cultural subtleties, pragmatic appropriateness, and natural conversational variation in diverse language learning contexts.

Another important dimension of AI integration involves gamification and role-playing approaches supported by large language models. Recent developments in AI-based educational gaming and role-playing environments have demonstrated promising outcomes in motivating language learners and promoting natural communication practice (23). AI systems functioning as interactive game masters can create immersive scenarios that encourage authentic language use, collaborative learning, and contextual vocabulary acquisition. Such approaches align with constructivist theories emphasizing active engagement, meaningful interaction, and learner-centered educational experiences. At the same time, these innovations raise questions about pedagogical control, assessment validity, and the balance between entertainment and educational effectiveness in AI-enhanced learning environments.

Although the global literature on AI in EFL education has expanded rapidly, significant gaps remain regarding the contextualized examination of AI implementation in local educational settings and among specific teacher populations. Much of the existing research has focused on technologically advanced institutions and university-level learners in developed countries, while less attention has been devoted to teachers working in developing regions or resource-constrained educational environments (2, 16). Furthermore, there is limited research exploring how English language teachers perceive the opportunities and challenges of AI integration specifically in relation to grammar assessment and writing instruction. Teachers' attitudes toward AI may differ substantially depending on infrastructural conditions, cultural contexts, institutional support, and digital literacy levels. Therefore, more localized and context-sensitive investigations are necessary to understand how AI technologies are interpreted and utilized in real-world educational environments.

Given the increasing significance of AI technologies in language education and the need to understand teachers' perspectives regarding their implementation, the present study aims to investigate the opportunities and challenges associated with the use of artificial intelligence for grammar assessment from the perspectives of English language teachers in Ilam city.

Methods and Materials

The present study was conducted using a mixed-methods research approach with a sequential explanatory design in order to provide a comprehensive understanding of the opportunities and challenges associated with the use of artificial intelligence in grammar assessment among English language teachers in Ilam city. The rationale for selecting this design was based on the necessity of combining the strengths of quantitative and qualitative methodologies to achieve both measurable statistical findings and deeper interpretive insights regarding teachers' lived experiences. In the first phase, the study employed a

quantitative survey method to examine teachers' attitudes toward the usefulness, ease of use, and perceived barriers of AI-based grammar assessment systems. In the second phase, qualitative semi-structured interviews were conducted to further interpret and explain the quantitative findings through thematic exploration of teachers' experiences and concerns in real educational settings.

The statistical population of the study consisted of English language teachers working in public schools, private schools, and independent language institutes in Ilam city during the 2025 academic year. A total of 41 teachers participated in the quantitative phase of the study, including 25 female teachers and 16 male teachers. Participants were selected through convenience sampling due to accessibility and willingness to participate in the research process. The sample included teachers with different educational backgrounds and varying levels of teaching experience in order to ensure diversity of perspectives. Specifically, 12 participants had less than five years of teaching experience, 18 participants had between five and ten years of experience, and 11 participants had more than ten years of professional experience. For the qualitative phase, purposive sampling with maximum variation criteria was used to select participants from among those who completed the questionnaire. Teachers representing different genders, educational settings, and professional experience levels were invited for in-depth interviews to ensure broad representation of perspectives and experiences related to the use of AI technologies in grammar assessment.

Data collection in the quantitative phase was conducted using a researcher-made questionnaire developed based on the theoretical foundations of the Technology Acceptance Model (TAM) proposed by Davis (1989). The questionnaire was designed to measure teachers' perceptions regarding the usefulness, ease of use, opportunities, and barriers associated with artificial intelligence tools in grammar assessment. The instrument consisted of 21 items organized into three major dimensions, including perceived usefulness of AI systems in grammar correction, perceived ease of use considering local infrastructural conditions, and perceived challenges and barriers related to pedagogical, technical, and ethical concerns. All questionnaire items were scored using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Higher scores indicated stronger agreement with the measured construct. To establish content validity, the questionnaire was reviewed and evaluated by a panel of university experts in educational technology, applied linguistics, and language assessment. Necessary revisions were implemented based on expert feedback to improve item clarity and contextual appropriateness for the educational environment of Ilam city. The reliability of the instrument was examined using Cronbach's alpha coefficient, which yielded an overall reliability coefficient of 0.83, indicating satisfactory internal consistency. The reliability coefficients for the subscales also demonstrated acceptable values, including 0.85 for perceived usefulness, 0.79 for perceived ease of use, and 0.81 for perceived barriers and challenges.

In the qualitative phase, semi-structured interviews were utilized to obtain deeper insights into teachers' experiences, concerns, and attitudes toward AI-based grammar assessment tools such as ChatGPT and Grammarly. The interview protocol included open-ended questions designed to explore participants' perceptions regarding the pedagogical effectiveness of AI systems, infrastructural limitations in schools and institutes, ethical concerns related to student dependency on AI, and the impact of digital inequality on technology integration. Interviews were conducted individually in a quiet and comfortable environment and were audio-recorded with participants' consent to ensure accuracy of data collection. Each interview lasted approximately 35 to 50 minutes. The flexibility of the semi-structured interview format allowed the researcher to ask follow-up questions and explore emerging themes in greater depth while maintaining consistency across participants.

Quantitative data analysis was performed using the Statistical Package for the Social Sciences (SPSS) software. Descriptive statistical methods including frequency, percentage, mean, and standard deviation were used to summarize demographic characteristics and participants' responses to questionnaire items. Inferential statistical analyses were also conducted to

examine differences in teachers' perceptions based on demographic variables such as gender and teaching experience. Prior to inferential analyses, assumptions of normality and homogeneity of variance were assessed to ensure the appropriateness of the selected statistical procedures. In the qualitative phase, interview recordings were transcribed verbatim and analyzed using thematic analysis based on Braun and Clarke's six-step analytical framework. The process involved familiarization with the data, generation of initial codes, identification of emerging themes, review and refinement of themes, definition and naming of themes, and final interpretation of findings. To enhance the trustworthiness and credibility of the qualitative findings, member checking and peer review procedures were employed during the coding and interpretation process. Finally, quantitative and qualitative findings were integrated during the interpretation stage to provide a comprehensive explanation of the opportunities and challenges associated with the use of artificial intelligence in grammar assessment within the educational context of Ilam city.

Findings and Results

The demographic findings indicated that the participants of the present study consisted of 41 English language teachers working in public schools, private schools, and language institutes in Ilam city. Among the participants, 25 teachers (61%) were female and 16 teachers (39%) were male. In terms of teaching experience, 12 participants (29%) had less than five years of teaching experience, 18 participants (44%) had between five and ten years of experience, and 11 participants (27%) had more than ten years of teaching experience. The diversity observed in participants' professional backgrounds and teaching experiences provided a relatively balanced representation of English language teachers in Ilam city and increased the comprehensiveness of the collected data. Furthermore, participants represented different educational environments, including public schools, private schools, and independent language institutes, which contributed to obtaining perspectives from multiple instructional settings regarding the use of artificial intelligence in grammar assessment.

Table 1. Descriptive Statistics of the Main Research Variables

Variables	Mean	Standard Deviation	Minimum	Maximum
Perceived Usefulness of AI-Based Grammar Assessment	4.28	0.56	2.91	5.00
Perceived Ease of Use	3.74	0.63	2.40	4.90
Perceived Reduction of Teacher Workload	4.41	0.49	3.12	5.00
Immediate Corrective Feedback Efficiency	4.19	0.58	2.95	5.00
Concerns Regarding Student Dependency on AI	4.07	0.67	2.31	5.00
Concerns Regarding Digital Divide	4.36	0.61	2.87	5.00
Ethical and Cultural Concerns	3.89	0.65	2.14	4.96
Overall Attitude Toward AI Integration in Grammar Assessment	4.02	0.54	2.78	4.97

The descriptive findings presented in Table 1 demonstrate that English language teachers in Ilam city generally held positive attitudes toward the use of artificial intelligence in grammar assessment. Among the examined variables, "Perceived Reduction of Teacher Workload" obtained the highest mean score ($M = 4.41$, $SD = 0.49$), indicating that participants strongly believed AI technologies substantially reduce the burden of manual grammar correction and repetitive assessment tasks. Similarly, "Concerns Regarding Digital Divide" showed a high mean score ($M = 4.36$, $SD = 0.61$), reflecting serious concerns among teachers about unequal student access to technological resources and internet infrastructure. The variable "Perceived Usefulness of AI-Based Grammar Assessment" also received a high average score ($M = 4.28$, $SD = 0.56$), suggesting that most teachers recognized the educational and pedagogical value of AI systems in improving grammar instruction and feedback processes. Moreover, "Immediate Corrective Feedback Efficiency" demonstrated a favorable mean score ($M = 4.19$, $SD = 0.58$), indicating that participants appreciated the ability of AI tools to provide rapid and continuous feedback to learners. At the same time, teachers expressed relatively strong concerns regarding students' dependency on AI systems ($M = 4.07$, $SD = 0.67$),

implying fears that excessive reliance on automated correction might weaken learners' critical thinking and grammatical reasoning abilities. The relatively high mean for "Overall Attitude Toward AI Integration" ($M = 4.02$, $SD = 0.54$) further confirms that teachers generally supported the integration of AI technologies in grammar assessment despite existing infrastructural and ethical concerns. Overall, the findings reveal a complex but predominantly positive perception toward AI adoption among English language teachers in Ilam city.

Table 2. Independent Samples t-Test Comparing Male and Female Teachers' Attitudes Toward AI-Based Grammar Assessment

Variables	Gender	Mean	Standard Deviation	t	p
Perceived Usefulness of AI	Female	4.35	0.51	2.18	0.035
	Male	4.12	0.59		
Perceived Ease of Use	Female	3.86	0.58	2.41	0.021
	Male	3.55	0.67		
Concerns Regarding Student Dependency	Female	4.14	0.61	1.87	0.068
	Male	3.95	0.72		
Concerns Regarding Digital Divide	Female	4.48	0.53	2.29	0.027
	Male	4.17	0.66		
Overall Attitude Toward AI Integration	Female	4.13	0.49	2.36	0.023
	Male	3.84	0.58		

The inferential findings presented in Table 2 reveal statistically significant gender differences in several dimensions related to AI-based grammar assessment. Female teachers reported significantly higher perceptions of AI usefulness ($M = 4.35$, $SD = 0.51$) compared to male teachers ($M = 4.12$, $SD = 0.59$), and the difference was statistically significant ($t = 2.18$, $p = 0.035$). Similarly, female teachers demonstrated significantly more positive perceptions regarding the ease of use of AI systems ($M = 3.86$, $SD = 0.58$) compared to male participants ($M = 3.55$, $SD = 0.67$), indicating greater adaptability and openness toward educational technologies among female teachers in this sample. Furthermore, female teachers expressed stronger concerns regarding the digital divide and unequal student access to technological resources ($M = 4.48$, $SD = 0.53$) than male teachers ($M = 4.17$, $SD = 0.66$), and this difference was statistically significant ($p = 0.027$). Although female teachers also reported higher concerns regarding student dependency on AI systems, the difference did not reach statistical significance ($p = 0.068$). The findings additionally showed that female teachers possessed a significantly more positive overall attitude toward integrating AI into grammar assessment practices ($M = 4.13$, $SD = 0.49$) than male teachers ($M = 3.84$, $SD = 0.58$). These results suggest that gender may play an influential role in shaping teachers' perceptions of educational AI technologies, particularly regarding technology acceptance and sensitivity to issues of educational equity.

Table 3. One-Way ANOVA Results Comparing Teachers' Attitudes Based on Teaching Experience

Variables	Source of Variance	Sum of Squares	df	Mean Square	F	p
Perceived Usefulness of AI	Between Groups	1.87	2	0.93	4.62	0.016
	Within Groups	7.66	38	0.20		
	Total	9.53	40			
Perceived Ease of Use	Between Groups	2.14	2	1.07	5.19	0.010
	Within Groups	7.84	38	0.21		
	Total	9.98	40			
Concerns Regarding Student Dependency	Between Groups	1.42	2	0.71	3.11	0.056
	Within Groups	8.69	38	0.23		
	Total	10.11	40			
Overall Attitude Toward AI Integration	Between Groups	2.33	2	1.16	5.74	0.007
	Within Groups	7.69	38	0.20		
	Total	10.02	40			

The findings presented in Table 3 demonstrate that teaching experience significantly influenced several dimensions of teachers' attitudes toward AI-based grammar assessment. Significant differences were observed among teachers with different experience levels regarding perceived usefulness of AI systems ($F = 4.62, p = 0.016$), perceived ease of use ($F = 5.19, p = 0.010$), and overall attitudes toward AI integration ($F = 5.74, p = 0.007$). Teachers with fewer than five years of teaching experience generally reported more positive attitudes toward AI technologies and demonstrated higher levels of technological acceptance compared to more experienced teachers. In contrast, teachers with more than ten years of professional experience tended to express more cautious attitudes and greater hesitation toward fully integrating AI systems into grammar assessment practices. The findings also showed that although differences in concerns regarding student dependency on AI approached statistical significance ($F = 3.11, p = 0.056$), they did not exceed the conventional significance threshold. Overall, the results suggest that younger and less experienced teachers may be more adaptable to emerging educational technologies, whereas experienced teachers may rely more strongly on traditional pedagogical approaches and require additional professional training to facilitate technological transition and digital integration in language education contexts.

Discussion and Conclusion

The findings of the present study revealed that English language teachers in Ilam city generally held positive attitudes toward the integration of artificial intelligence technologies in grammar assessment and writing instruction. The descriptive findings demonstrated that teachers strongly perceived AI systems as useful tools for reducing workload, accelerating grammar correction processes, and providing immediate corrective feedback to learners. These findings are consistent with recent studies emphasizing the effectiveness of AI-driven educational systems in improving the efficiency and quality of language instruction (5, 6). Similar to the findings of the present study, previous research has shown that AI-powered writing assistants and intelligent tutoring systems can significantly reduce the time teachers spend on repetitive assessment tasks while simultaneously improving learner engagement and feedback quality (8, 11). The high mean scores associated with perceived usefulness and reduction of teacher workload in the current study suggest that teachers in Ilam recognize the practical and pedagogical value of AI technologies despite the infrastructural challenges they encounter.

One of the most important findings of the study was teachers' strong agreement regarding the effectiveness of immediate corrective feedback provided by AI systems. Participants believed that AI-based grammar assessment tools allow learners to identify and correct mistakes instantly, thereby enhancing the learning process and reducing the delay associated with traditional teacher-centered correction methods. This finding aligns closely with previous literature indicating that AI-supported feedback systems facilitate autonomous learning and improve grammatical accuracy among EFL learners (7, 19). Similarly, studies conducted by Yang and colleagues demonstrated that generative AI writing assistants can provide continuous feedback loops that strengthen students' writing fluency and revision skills (6, 14). The findings also support the argument that AI systems create more interactive and adaptive learning environments in which learners can engage actively with language structures through iterative correction and revision processes.

The results further indicated that female teachers reported significantly more positive attitudes toward AI integration than male teachers, particularly regarding perceived usefulness, ease of use, and overall acceptance of AI technologies in grammar assessment. This finding may suggest that female teachers in the present context were more open to pedagogical innovation and educational technology adoption. Similar patterns have been reported in previous studies examining teachers' attitudes toward AI-enhanced language learning environments (17, 18). It is possible that female teachers in this study perceived AI technologies as supportive instructional tools capable of reducing classroom stress and improving instructional efficiency. Moreover, female participants expressed significantly greater concern regarding the digital divide and unequal student access

to technological resources, indicating heightened sensitivity toward issues of educational equity and inclusion. This result is particularly important because it highlights the social and ethical dimensions of AI integration in less privileged educational settings.

Another important finding of the present study concerned the influence of teaching experience on teachers' perceptions of AI technologies. Teachers with fewer years of professional experience generally demonstrated more positive attitudes toward AI integration and greater acceptance of technology-based instructional approaches compared to highly experienced teachers. These findings are consistent with previous research suggesting that younger or less experienced educators tend to adapt more rapidly to technological innovation because of greater familiarity with digital environments and emerging educational tools (9, 24). In contrast, more experienced teachers often rely on established pedagogical approaches and may perceive AI technologies as disruptive to traditional instructional practices. This difference can also be interpreted within the framework of technology acceptance theories, which emphasize that prior technological exposure and perceived self-efficacy strongly influence users' willingness to adopt innovative systems (11, 15). Consequently, the findings suggest that professional development programs and digital literacy training may be necessary to facilitate AI adoption among experienced educators.

The qualitative findings of the study provided deeper insights into teachers' concerns regarding the pedagogical consequences of excessive dependence on AI systems. One of the dominant themes extracted from interviews involved the fear that students may become cognitively dependent on AI-generated corrections without developing genuine grammatical understanding or critical thinking skills. Teachers repeatedly emphasized that many learners may simply accept automated corrections without analyzing the underlying linguistic rules. This finding strongly aligns with concerns raised in the existing literature regarding the "illusion of learning" associated with AI-assisted educational environments (3, 12). Researchers have argued that while AI systems can increase efficiency and convenience, they may also reduce opportunities for reflective learning, independent problem-solving, and metacognitive engagement if integrated uncritically into educational practice. Therefore, the findings of the present study reinforce the importance of maintaining a balanced human-AI collaborative approach in grammar assessment and language instruction.

The present study also highlighted serious infrastructural and technological barriers affecting AI integration in educational settings in Ilam city. Teachers identified unstable internet connectivity, limited technological resources, filtering restrictions, and insufficient access to digital devices as major obstacles preventing effective use of AI-based educational systems. These findings are highly consistent with previous studies conducted in developing educational contexts, which have emphasized that technological inequality and limited digital infrastructure remain among the most significant barriers to AI implementation (2, 16). The findings also support arguments presented by Wang and colleagues regarding the necessity of adequate digital infrastructure for successful AI-supported educational reform (13). Without stable internet access and equitable technological resources, the benefits of AI integration may remain inaccessible to many students and teachers, thereby intensifying existing educational disparities.

Another major theme emerging from the qualitative findings involved concerns regarding the digital divide and educational inequality. Teachers emphasized that many students in Ilam city lack access to smartphones, laptops, or reliable internet services, limiting their ability to benefit from AI-supported language learning tools. This finding is particularly significant because it demonstrates that AI technologies may inadvertently reproduce social inequality if implemented without appropriate infrastructural support and educational policy planning. Similar concerns have been expressed in previous research examining AI integration in less privileged educational environments (1, 15). Scholars have argued that while AI technologies possess transformative educational potential, unequal access to digital resources can create new forms of academic exclusion and

marginalization. Therefore, the findings of the present study highlight the necessity of considering educational equity as a central component of AI policy and implementation strategies.

The findings additionally revealed teachers' concerns regarding the inability of AI systems to understand cultural nuances, contextual meaning, and local linguistic characteristics of Iranian EFL learners. Participants believed that AI-generated corrections sometimes fail to recognize culturally specific expressions, rhetorical subtleties, or contextually appropriate language use. This concern aligns with previous literature emphasizing the limitations of AI systems in processing cultural and pragmatic dimensions of language use (4, 21). Although AI models have achieved remarkable progress in natural language processing, they still encounter challenges in interpreting sociocultural context, irony, idiomatic expressions, and culturally embedded communication patterns. Consequently, teachers in the present study viewed human supervision as an essential component of effective AI-supported language instruction.

The findings of the current study further support theoretical perspectives emphasizing the importance of human-AI collaboration in educational environments. Rather than perceiving AI as a replacement for teachers, participants generally viewed AI systems as supportive tools capable of enhancing instructional efficiency while preserving the central role of human educators. This perspective is strongly consistent with contemporary educational theories advocating collaborative and metacognitive uses of AI technologies (3, 12). Teachers believed that AI systems are most beneficial when they assist with repetitive tasks such as grammar correction and mechanical feedback, thereby allowing educators to focus on higher-order pedagogical functions including motivation, emotional support, communicative interaction, and critical thinking development. These findings reinforce the growing scholarly consensus that AI should complement rather than replace human teaching expertise.

The present study also contributes to the growing body of literature emphasizing the transformative role of AI in language education reform. Recent scholarship has highlighted the capacity of AI technologies to personalize instruction, facilitate adaptive learning, and support learner autonomy through intelligent feedback systems and conversational tutoring environments (1, 9). The positive attitudes expressed by teachers in the current study suggest that educators increasingly recognize the potential of AI to improve educational quality and support more individualized language learning experiences. However, the findings simultaneously demonstrate that successful implementation depends heavily on contextual factors including infrastructure, teacher training, educational policy, and ethical considerations. Therefore, AI integration should not be approached merely as a technological innovation but rather as a complex educational transformation requiring pedagogical, institutional, and social adaptation.

Overall, the findings of the present study indicate that English language teachers in Ilam city perceive artificial intelligence as both a promising educational opportunity and a source of pedagogical and infrastructural concern. While participants acknowledged the significant benefits of AI systems for grammar assessment, writing correction, and feedback delivery, they also emphasized the importance of maintaining human supervision, critical thinking, and educational equity in AI-supported learning environments. The study therefore supports a balanced and context-sensitive approach to AI integration in EFL education that combines technological innovation with pedagogical responsibility and infrastructural preparedness.

The present study faced several limitations that should be considered when interpreting the findings. First, the relatively small sample size and the focus on English language teachers in Ilam city may limit the generalizability of the findings to other educational contexts and geographical regions. Second, the study relied partially on self-reported questionnaire data, which may have been influenced by social desirability bias or participants' subjective interpretations of AI technologies. Third, the research focused primarily on teachers' perspectives and did not directly investigate students' experiences or actual classroom performance outcomes associated with AI-based grammar assessment. Additionally, because AI technologies continue to

evolve rapidly, some perceptions reported by participants may change over time as teachers gain greater familiarity and experience with emerging educational tools. Finally, infrastructural conditions and access to digital resources in Ilam city may differ substantially from those in other educational settings, thereby affecting the transferability of the findings.

Future studies should investigate the long-term effects of AI-assisted grammar assessment on students' actual language performance, writing quality, and critical thinking development. Researchers are also encouraged to examine students' perceptions, emotional responses, and motivational experiences regarding AI-supported language learning environments. Comparative studies involving different cities, provinces, or educational levels could provide broader insights into contextual differences affecting AI integration in language education. Furthermore, future research should explore the effectiveness of specific AI tools such as ChatGPT, Gemini, Grammarly, and conversational tutoring systems through experimental or longitudinal research designs. Additional studies examining teachers' digital literacy development and professional training needs in relation to AI adoption would also contribute valuable knowledge to the field.

Educational policymakers and institutional administrators should invest in improving technological infrastructure, internet accessibility, and digital resources in schools and language institutes to support equitable AI integration in education. Teacher training programs should be designed to enhance educators' digital literacy skills and familiarize them with the pedagogically effective and ethical use of AI technologies in language teaching. Schools and universities should adopt balanced instructional approaches in which AI systems function as supportive educational tools under human supervision rather than replacing teacher-centered pedagogical interaction. In addition, developers of AI educational platforms should consider cultural, contextual, and linguistic diversity when designing language learning systems in order to improve the accuracy and relevance of AI-generated feedback for EFL learners in different educational environments.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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