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Exploring the Risks and Benefits of AI Tools in Developing Iranian Students' English Proficiency

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Abstract

Artificial intelligence (AI) has become a transformative force in higher education, particularly in language teaching and learning. Tools such as Grammarly and ChatGPT provide learners with personalized feedback, automated grammar and vocabulary correction, and interactive opportunities that enhance engagement and reduce anxiety. These innovations are acknowledged for supporting language proficiency and learner motivation. However, researchers also warn that excessive reliance on AI may lead to a reduction in critical thinking, weaken learner autonomy, and create ethical challenges related to data privacy, plagiarism, and algorithmic bias. A cross-sectional survey was conducted among 180 university and language institute students using the AI-LPAC-E questionnaire, which was designed to assess proficiency, autonomy, critical thinking, and ethical concerns. Findings showed that frequent AI users reported significantly higher proficiency scores than infrequent users (t = 3.21, p = 0.002). Speaking skills improved the most, while writing accuracy was lowest (M = 3.65). However, reliance on AI negatively correlated with critical thinking (r = –0.42, p < 0.01) and autonomy (r = –.37, p < 0.01), whereas autonomy and critical thinking were positively related (r = 0.58, p < 0.01), reflecting their mutual reinforcement. The sample included both university and language institute students as well as teachers, among whom educators expressed greater ethical concerns than learners (t = 4.02, p < 0.001). These results emphasize the need for balanced pedagogical strategies and clear institutional guidelines to ensure responsible AI integration in language education. The findings suggest that while AI tools can effectively enhance proficiency and engagement, educators and policymakers must promote critical thinking and learner autonomy through guided use and ethical training.

Keywords: artificial intelligence, AI-assisted tools, language proficiency, learner autonomy, critical thinking, ethical issues

1. Introduction

Artificial intelligence (AI) has rapidly evolved into one of the most powerful technological forces of the twenty-first century, reshaping industries as diverse as healthcare, finance, communication, and education. In applied linguistics, the integration of AI has been particularly

remarkable, offering innovative pathways for supporting English as a Foreign Language (EFL) learners. Tools such as Grammarly and ChatGPT exemplify this trend, as they provide immediate corrective feedback, vocabulary enhancement, and opportunities for spoken interaction that go far beyond traditional classroom boundaries (Holmes & Tuomi, 2022). Their rapid diffusion illustrates a fundamental transformation in the way languages are acquired and practiced. The appeal of AI-assisted learning lies in its promise to personalize education. By analyzing user input, adaptive platforms can identify linguistic weaknesses, tailor corrective suggestions, and create individualized learning trajectories. For instance, automated grammar checkers not only highlight errors but also explain rules, while AI chatbots simulate interactive dialogues that reduce speaking anxiety and encourage learners to engage in authentic practice (Li, 2017; Sharadagh & Sa'adi, 2022). These features explain why AI-based tools are frequently praised as revolutionary innovations capable of empowering learners, fostering motivation, and democratizing access to high-quality language support.

Despite these advantages, the integration of AI into education also raises pressing concerns. A growing number of scholars caution against the risks of overreliance, noting that constant dependence on AI-generated outputs may undermine learners' critical thinking skills and intellectual autonomy (Aiken & Epstein, 2000; Crompton, 2024). Students accustomed to automated correction may neglect to reflect on their own reasoning or problem-solving strategies, thereby cultivating a form of "intellectual laziness." Moreover, ethical issues have become increasingly salient. Worries include the possibility of plagiarism through unacknowledged use of AI-generated text, privacy violations from data collection, and algorithmic biases that privilege some learner groups over others (Wogu et al., 2018; Font de la Valle & Araya, 2023). These issues highlight the double-edged nature of AI: while it enhances access and engagement, it simultaneously introduces new educational vulnerabilities. While much of the global literature captures both the empowering and problematic aspects of AI in language education, contextualizing these insights within the Iranian setting is essential. A more focused look at local studies allows for examining how such global debates manifest in Iran's rapidly expanding EFL landscape.

The international literature reflects this ambivalence. On the one hand, research demonstrates that AI tools can enhance proficiency across grammar, vocabulary, writing, and speaking skills, often increasing motivation and reducing learner anxiety (Wei, 2023; Yang et al., 2020). On the other hand, critics argue that heavy reliance on AI may weaken social interaction, disrupt teacher–student relationships, and reduce the authenticity of learning experiences (Tao et al., 2019; Viktorivna et al., 2022). Ethical concerns extend further, with warnings about surveillance technologies, facial recognition, and cyberattacks on personal accounts linked to AI-based platforms (Tao et al., 2019). As a result, AI in education has come to be seen as both a driver of innovation and a source of risk, demanding careful evaluation. Within the Iranian context, research on AI in EFL education remains limited. A few recent studies have examined specific applications, such as ChatGPT for improving pronunciation (Xodabande et al., 2025) or AI-assisted speaking activities in secondary classrooms (Baharloo et al., 2024). These investigations provide valuable insights but fall short of offering a comprehensive picture. Most focus narrowly on a single skill or benefit, while overlooking broader aspects such as autonomy, critical thinking, or ethical implications. Furthermore, much of the existing literature tends to emphasize either the advantages or the risks of AI, rather than integrating both dimensions into a single framework.

Previous Iranian studies have primarily explored isolated dimensions of AI use, such as pronunciation (Xodabande et al., 2025) or speaking improvement (Baharloo et al., 2024), with limited attention to how AI influences higher-order cognitive and ethical dimensions. The present study advances this line of research by simultaneously examining learner autonomy, critical thinking, and ethical awareness, three interrelated but under-investigated constructs in the Iranian context. By integrating these variables within a single analytical framework, the study offers a novel, comprehensive perspective on the cognitive and ethical implications of AI use among Iranian EFL learners.

This creates a critical gap in knowledge, as a balanced understanding of opportunities and challenges is essential for policymakers, teachers, and learners alike, particularly in a country where the adoption of AI in education is expanding rapidly. The current study aims to address this gap by systematically analyzing both the benefits and risks of AI-assisted learning in Iranian EFL contexts. By employing a structured survey instrument (AI-LPAC-E) and collecting responses from 180 university and language institute students, the research seeks to generate empirical evidence that captures the complexity of AI's role in language education. Specifically, the study is designed to answer three central questions: (1) to what extent AI tools enhance students' language proficiency in grammar, vocabulary, writing, and speaking; (2) how frequently reliance on AI influences critical thinking and learner autonomy; and (3) whether perceptions of ethical challenges differ between students and teachers. By addressing these questions, the study contributes to both theoretical and practical debates. Theoretically, it situates the Iranian experience within the broader global discourse, demonstrating how international concerns around autonomy, ethics, and inequality manifest locally. Practically, it provides teachers and institutions with evidence-based recommendations for responsible AI adoption, emphasizing the importance of balancing technological affordances with pedagogical integrity. In this way, the study underscores the necessity of deliberate, ethical, and culturally sensitive approaches to integrating AI into language education. This focus not only bridges the gap between global and local evidence but also establishes the study's novelty in linking proficiency gains with the psychological and ethical dynamics of AI-assisted learning.

2. Literature Review

Artificial intelligence (AI) is generally defined as either the simulation of human learning processes by machines (Russell & Norvig, 2010) or as algorithmic systems that imitate cognition through interaction with their environment (Acemoglu & Restrepo, 2019). Recent advances in generative AI have highlighted its ability to generate new content from repetitive patterns, which has made it highly visible in higher education, where emerging technologies are rapidly integrated (Ray, 2023). Its practical applications range from automated grammar and vocabulary correction (Yong, 2020) to the use of chatbots as tutors or conversational partners that reduce anxiety and promote learner autonomy (Li, 2017; Sharadagh & Sa'adi, 2022). While these innovations are praised as transformative (Holmes & Tuomi, 2022), concerns remain about their limitations, particularly the risk of fostering intellectual laziness and diminishing critical thinking, as well as weakening students' independent learning skills due to habitual reliance on AI-based tools (Aiken & Epstein, 2000; Wogu et al., 2018).

The integration of artificial intelligence (AI) into education, particularly in language learning, has become one of the most debated issues in applied linguistics. Tools such as Grammarly and

ChatGPT are recognized for enhancing accuracy, engagement, and personalized learning experiences, yet scholars stress their dual nature as both opportunities and risks. While they support learner autonomy and language development, concerns persist regarding overreliance, ethical dilemmas, and unequal access, which may compromise critical thinking and academic integrity (Eke, 2023; Aiken & Epstein, 2000; Wogu et al., 2018). Moreover, excessive dependence on these technologies has been linked to weakened social interaction, reduced interpersonal skills, and even alienation from traditional learning practices, echoing broader critiques of technology's distancing effects (Tao et al., 2019; Viktorivna et al., 2022).

AI systems are also criticized for reinforcing inequalities in education by embedding algorithmic bias and privileging high-achieving students. While adaptive learning platforms aim to tailor instruction, they may unintentionally widen gaps by providing uneven levels of support, which can disadvantage lower-performing learners in terms of academic progress and labor market preparation (Font de la Valle & Araya, 2023; Wogu et al., 2018). At the same time, researchers predict a gradual displacement of human roles by machines in repetitive or error-prone tasks, including within education, where AI-driven teaching tools increasingly blur the boundary between human and machine instruction (Cabitza et al., 2021; Tao et al., 2019). Nonetheless, advancements such as chatbots, adaptive algorithms, and virtual reality are reshaping language learning, offering interactive practice, personalized pathways, and authentic communicative environments that enhance motivation and learner autonomy (Al-Abdullatif et al., 2023; Yang et al., 2020).

A major concern with AI in higher education is student overreliance, which threatens the development of critical and analytical thinking. Although chatbots can enhance authentic practice and support grammar and vocabulary learning, they often lack pragmatic flexibility and stylistic range (Wilkenfeld et al., 2022; Chaves et al., 2022). Studies show that while ChatGPT can correct grammar and restructure sentences effectively, it may overcorrect and remain less accurate than commercial tools like Grammarly (Zulfa, 2023; Wu et al., 2023). Faculty perspectives highlight its usefulness in providing personalized feedback and reducing teacher workload, but doubts remain about its ability to fully capture linguistic nuance, raising concerns about long-term pedagogical value (Sun & Hoelscher, 2023; Tlili et al., 2023).

AI is praised for enabling personalized learning through adaptive platforms that analyze learner data and provide real-time feedback. This process can increase motivation, engagement, and academic performance by tailoring content to individual needs (Luckin et al., 2016; Zawacki-Richter et al., 2019). Yet scholars caution that AI lacks human creativity and risks fostering misuse, such as dishonesty or overdependence on automated assessments, which can limit reflective thinking and higher-order reasoning (Qadir, 2023; Facione, 2020). Ethical issues related to surveillance, privacy, and bias also remain pressing (O'Neil, 2016; Williamson, 2017). Therefore, researchers emphasize that AI should complement student-centered pedagogy, support collaboration and critical interaction while avoiding a reduction of education to mechanized processes (Holmes & Tuomi, 2022; Starkey, 2019).

Studies exploring teachers' and students' perceptions of AI in language learning reveal both enthusiasm and caution. While many instructors acknowledge its benefits in improving feedback and reducing workload, they remain concerned about threats to academic integrity and the ethical use of AI (Mohammadkarimi, 2023). Learners also show excitement for AI-assisted writing tasks but stress

the importance of expert guidance and responsible integration (Nguyen Thi Thu, 2023). Broader findings suggest that although AI enhances peer collaboration, assessment, and curriculum design, its limitations in detecting pragmatic or structural errors highlight the irreplaceable role of human expertise (Algaraady & Mahyoob, 2023). Additionally, sociocultural contexts shape attitudes, making cultural adaptation essential for effective use across diverse learning environments (Kim & Lee, 2023; Guo & Wang, 2023).

A growing body of research warns that excessive reliance on AI dialogue systems can undermine independent thinking and promote plagiarism. Users often accept AI outputs uncritically, misinterpreting biased or fabricated results as reliable information (Gao et al., 2022; Grassini, 2023). Ethical concerns include privacy violations, non-transparent data usage, and risks of misconduct such as falsification (Hua et al., 2023; Xie et al., 2021). Although AI enables interactive and personalized learning, scholars caution that automation bias may erode creativity, decision-making skills, and problem-solving abilities (Iskender, 2023; Krullaars et al., 2023). Thus, balancing the benefits of personalization with strategies that maintain human cognitive development remains a critical challenge for education.

Excessive use of AI dialogue systems raises additional issues for education, including reduced student autonomy and difficulty evaluating the credibility of AI-generated content. Fabricated references or misleading outputs further increase risks of misinformation (Hatem et al., 2023; Athaluri et al., 2023). Although generative tools like ChatGPT, DALL-E, and Gemini expand creative possibilities, they can also intensify inequities by limiting access for students in resource-poor contexts (GreeneSantos, 2024). Other risks involve weakened peer relationships, heightened surveillance, and the displacement of teachers through automation of assessment and lesson planning, which threatens the human-centered nature of pedagogy (Arntz et al., 2016; Selwyn, 2019). These challenges underline the need for sustainable, equitable approaches that protect critical thinking and preserve teacher roles.

Feng and Law (2021) introduced a three-level framework, micro, meso, and macro, to examine AI's educational role, highlighting its capacity to enhance deep learning and research. At the micro level, AI promotes active learning through personalized tasks and intelligent tutoring systems (Luckin et al., 2016). Analytics tools also allow students to track progress and build autonomy (Shum et al., 2019). At broader levels, AI fosters collaboration, cultural exchange, and experiential learning that strengthen both social adaptability and community engagement (Seo et al., 2021). Collectively, this framework underscores AI's potential not only for individualized instruction but also for promoting social and cultural participation in education.

Teachers, however, voice concerns over algorithmic bias, inconsistent feedback, and widening performance gaps between high- and low-proficiency learners. While AI tools like ChatGPT improve grammar and coherence, they often fail to enhance lexical richness or content quality (Rahmi et al., 2024). Scholars caution that such limitations may reinforce inequalities and diminish teacher roles, underscoring the importance of maintaining human intervention alongside AI use (Aldosemani et al., 2023). Ethical issues such as privacy and academic integrity demand stronger institutional policies, while cultural norms also influence how learners perceive AI-generated feedback (Zheng & Xu, 2022). These findings highlight the need for culturally sensitive approaches that balance technology with pedagogy.

International research has extensively examined AI's role in language education, revealing both benefits and risks. Studies on platforms like Duolingo, Rosetta Stone, and Grammarly show that AI enhances linguistic accuracy, autonomy, and motivation while raising concerns about privacy, equity, and critical thinking (Fountoulakis, 2024). Systematic reviews further demonstrate mixed outcomes, with most highlighting positive effects on engagement and learning, yet a significant portion warns against overdependence and ethical dilemmas (Krishnan & Zaini, 2025). In the Iranian context, scholars emphasize democratization and localized adoption, noting improvements in skills such as pronunciation and speaking but stressing the need for infrastructure and teacher training (Tafazoli, 2024; Xodabande et al., 2025; Baharloo et al., 2023, et al.).

Recent studies reinforce the dual nature of AI in education, showing both its capacity to improve learner outcomes and its inherent challenges. Evidence suggests that AI enhances grammar, vocabulary, and learner autonomy, while also boosting motivation and self-regulation (Wei, 2023). However, reviews caution that reliance on automated feedback may reduce critical thinking and raise ethical concerns, requiring teacher mediation for balanced use (Crompton, 2024). Synthesizing international and Iranian literature reveals converging themes: AI consistently enhances accuracy, motivation, and engagement but poses risks of overreliance, diminished critical thinking, and unequal access (Wei, 2023). Iranian research highlights additional barriers such as limited localization and teacher preparedness (Baharloo et al., 2024). Overall, AI in language education is framed as a double-edged sword, offering transformative potential when responsibly integrated but creating significant risks if adopted uncritically.

3. Research Questions

Based on the above-mentioned review, the researcher formulated the following research questions and hypotheses:

RQ1. What is the impact of using AI tools on students' language proficiency, particularly in grammar, vocabulary, speaking skills, and writing accuracy?

RQ2. How does frequent reliance on AI tools affect students' critical thinking skills and learner autonomy?

RQ3. To what extent are students and teachers concerned about ethical issues, privacy, and algorithmic bias in the use of AI tools in language education?

H1. Students who use AI tools show significantly higher levels of language proficiency (in grammar, vocabulary, speaking skills, and writing accuracy) compared to those who do not use AI tools.

H2. Frequent reliance on AI tools is negatively associated with students' critical thinking skills and learner autonomy.

H3. Teachers express significantly higher levels of concern than students regarding ethical issues, privacy, and algorithmic bias in the use of AI tools in language education.

4. Methodology

4.1. Research Design

This study employed a quantitative, cross-sectional survey design to investigate the opportunities and risks of artificial intelligence (AI) in language education. The cross-sectional approach was chosen because it allows researchers to capture a snapshot of relationships between AI use and educational outcomes across a relatively large population within a limited timeframe (Creswell & Creswell, 2018). This design is particularly appropriate for exploring perceptions of emerging technologies, as it enables comparisons across learner and teacher groups without the time and resource constraints of longitudinal research.

4.2. Participants

As displayed in Table 1, The participants consisted of 180 individuals, including 140 students and 40 teachers from Iranian universities and private language institutes. All participants had prior experience using AI-assisted tools such as Grammarly or ChatGPT. Among the students, 108 (60%) were undergraduates and 32 (18%) were graduate students. The teachers represented 22% of the sample. Participants ranged in age from 18 to 35 years (M = 24.3, SD = 4.1), with a balanced gender distribution. English proficiency ranged from A2 to C1 on the CEFR scale.

Table 1

Demographic Table Characteristics of the Sample

Variable	Category	N	%
Group	Students	140	77.8
	Teachers	40	22.2
Gender	Female	92	51.1
	Male	88	48.9
Education level (students)	Undergraduate	108	60.0
	Graduate	32	17.8
CEFR proficiency (self-rated)	A2	28	15.6
	B1	46	25.6
	B2	64	35.6
	C1	42	23.3
Age range	18–35 years (M = 24.3, SD = 4.1)		

Note. The sample consisted of 180 participants, including 140 students and 40 teachers from universities and private language institutes in Iran. Percentages are rounded to one decimal place. CEFR = Common European Framework of Reference for Languages.

4.3. Instrumentation

Data were collected through the AI-LPAC-E questionnaire (Artificial Intelligence Tools: Language Proficiency, Autonomy, Critical Thinking, and Ethics), which was specifically developed and adapted for this study. The instrument contained six sections with both closed- and open-ended items:

Section A: Demographics and AI usage: Included items on age, gender, educational background, years of English study, frequency, and purpose of AI use.

Section B: Language Proficiency: Comprised 12 Likert-scale items adapted from prior studies (Zawacki-Richter et al., 2019), measuring perceived improvement in grammar, vocabulary, writing, and speaking. Example: "AI tools help me organize my writing more clearly."

Section C: Learner Autonomy: Contained 8 items from the Learner Autonomy Scale (Orakci & Gelisli, 2017), evaluating self-regulation, independent strategies, and goal-setting.

Section D: Critical Thinking: Included 8 items based on the Critical Thinking Self-Assessment Scale (Facione,1990), slightly adapted to reflect students' evaluation of AI outputs. Example: "When I get an AI answer, I check other sources to confirm it."

Section E: Ethical Concerns: Comprised 8 items drawn from scales on plagiarism, privacy, and bias (Mavrinac et al., 2010). Example: "AI-based learning may undermine fairness in academic work."

Section F: Attitudes toward AI in learning: Contained 6 items adapted from the Technology Acceptance Model (Davis, 1989; Teo, 2010), measuring usefulness, enjoyment, and motivation.

Open-ended items: Two questions invited participants to describe the greatest benefit and the greatest risk of using AI in their language learning.

4.4. Validity and Reliability

A pilot study with 30 EFL students was conducted to test the reliability and clarity of the questionnaire. Cronbach's alpha values indicated excellent internal consistency across all subscales: Language Proficiency ($\alpha = 0.97$), Autonomy ($\alpha = 0.93$), Critical Thinking ($\alpha = 0.93$), Ethical Concerns ($\alpha = 0.94$), and Attitudes ($\alpha = 0.91$). The overall reliability was $\alpha = 0.91$, well above the accepted threshold of 0.70 (Taber, 2018). Exploratory factor analysis further confirmed the structural validity of the instrument, with items loading strongly (> 0.40) on their intended constructs. The five-factor model jointly explained over 80% of the variance, supporting the psychometric robustness of the tool.

4.5. Data Collection Procedure

The survey was administered electronically via Google Forms, distributed through university mailing lists, academic forums, and social media groups frequented by Iranian EFL learners. Participation was voluntary, and informed consent was obtained before completing the survey. To comply with ethical standards, anonymity and confidentiality were strictly maintained (American Psychological Association [APA], 2020). Participants were assured that their responses would be used solely for research purposes and that they could withdraw at any stage without penalty.

4.6. Statistical Analysis

The data were analyzed using SPSS (version 23). Descriptive statistics, including means, standard deviations, and frequencies, were used to summarize responses. Reliability analysis was conducted to ensure internal consistency of the subscales. To test the hypotheses, several inferential methods were employed: Independent-samples t-tests compared students and teachers regarding ethical concerns. Pearson correlations assessed the relationships between AI reliance, autonomy, and

critical thinking. Regression analysis evaluated the predictive effects of AI reliance on proficiency and higher-order thinking skills. These methods are consistent with standard practices in educational technology research (Facione, 2020; Holmes & Tuomi, 2022) and allowed for both group comparisons and correlation-based inferences. The analytical framework ensured that findings would be both statistically rigorous and practically meaningful, offering insights into the nuanced role of AI in language education. Participants were categorized as frequent or infrequent users of AI tools based on their self-reported usage frequency in Section A of the questionnaire. Those who indicated using AI tools daily or several times per week were classified as frequent users (n = 95), whereas participants who reported monthly or rare use were classified as infrequent users (n = 85). This operational distinction was used consistently across all analyses to test Hypotheses 1 and 2.

5. Results

The purpose of this section is to present the findings obtained from the survey responses of Iranian EFL students regarding the risks and benefits of AI tools in language learning. A total of N = 180 valid responses were analyzed using SPSS. Descriptive statistics were first calculated to summarize the data, followed by inferential statistics to test the three hypotheses (H1–H3) and answer the corresponding research questions (RQ1–RQ3). Table 2 summarizes the descriptive statistics for the four proficiency variables: grammar, vocabulary, writing, and speaking. Scores were reported on a five-point Likert scale, where higher values indicated greater perceived improvement.

Table 2

Descriptive Statistics for Language Proficiency Variables

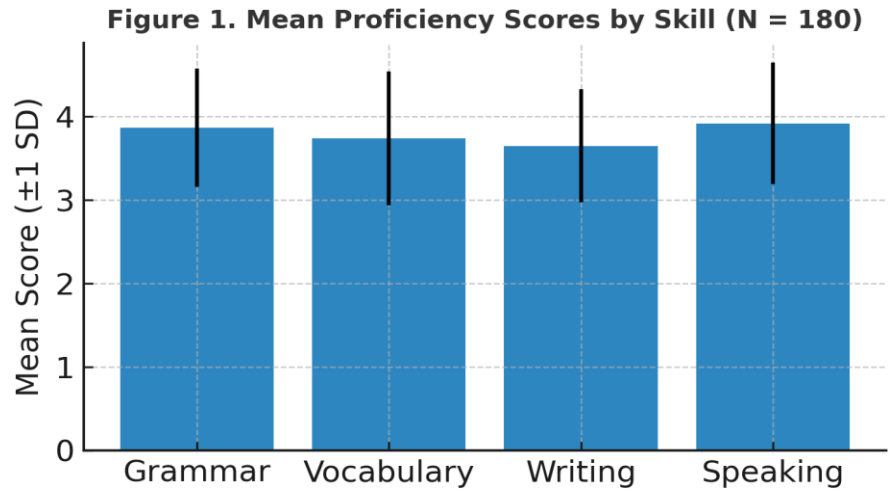
Variable	N	Minimum	Maximum	Mean / SD
Grammar Proficiency	180	2.00	5.00	3.87 (0.71)
Vocabulary Proficiency	180	1.00	5.00	3.74 (0.80)
Writing Accuracy	180	2.00	5.00	3.65 (0.68)
Speaking Skill	180	1.00	5.00	3.92 (0.73)

The results demonstrate that participants perceived AI tools as most effective in enhancing speaking skills (M = 3.92), suggesting that chatbots and conversational platforms significantly reduced speaking anxiety and increased oral confidence. By contrast, the lowest reported gains were in writing accuracy (M = 3.65), indicating that although AI tools support grammar and vocabulary, they may not fully substitute for teacher guidance in developing complex writing skills. Grammar and vocabulary improvements were consistently reported, confirming the potential of AI-assisted platforms to provide targeted feedback on linguistic accuracy. Let's go through the first hypothesis.

Figure 1 illustrates participants' mean self-reported improvement in grammar (M = 3.87, SD = 0.71), vocabulary (M = 3.74, SD = 0.80), writing (M = 3.65, SD = 0.68), and speaking (M = 3.92, SD = 0.73). Error bars represent ±1 standard deviation. Speaking showed the highest perceived gain, while writing demonstrated the lowest.

Figure 1

Mean proficiency scores by skill (N = 180)



To test H1, independent-samples t-tests (Table 3) compared frequent and infrequent AI users. As demonstrated in Table 3 and Figure 2, frequent users (N = 95) reported significantly higher overall proficiency (M = 3.92, SD = 0.62) compared with infrequent users (N = 85; M = 3.61, SD = 0.70). This finding is consistent with H1 and highlights that regular exposure to AI tools is associated with measurable gains in language proficiency, particularly in speaking and grammar. The effect was not limited to a single skill but extended across multiple dimensions of language learning, underscoring the value of sustained AI integration in educational contexts. Correlational analyses were conducted to explore H2. Table 4 presents the correlation matrix.

The results of Table 4 show strong negative correlations between AI reliance and both critical thinking (r = –0.42) and autonomy (r = –0.37), supporting H2. This indicates that students who depended heavily on AI for feedback and answers were less likely to engage in independent reasoning or regulate their own learning strategies

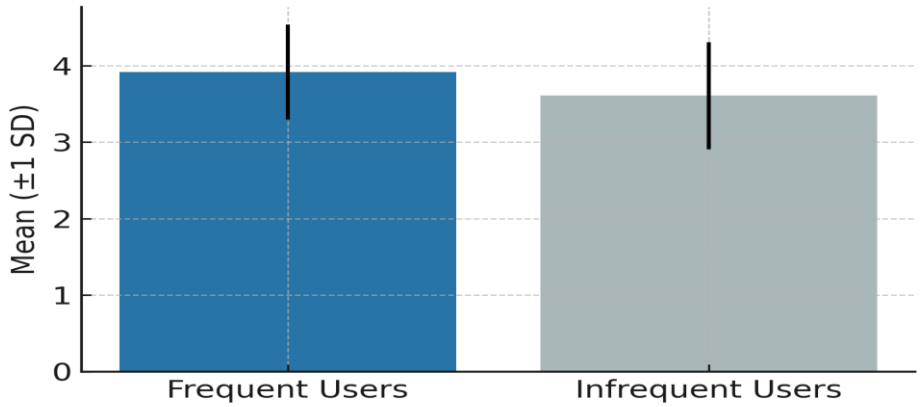
Table 3

AI Use and Language Proficiency

Group	N	Mean	SD	t	Sig. (2-tailed)
Frequent Users	95	3.92	0.62	3.21	0.002 **
Infrequent Users	85	3.61	0.70		

Figure 2

Overall Proficiency by AI-Use Group



Conversely, the positive correlation between critical thinking and autonomy (r = 0.58) suggests that these two constructs reinforce each other: students with higher levels of independent learning also tended to think more critically about AI outputs. Overall, the findings emphasize the double-edged nature of AI integration: while frequent use supports proficiency, overreliance undermines essential higher-order cognitive skills. The third hypothesis (Table 4) was tested through independent-samples t-tests comparing teachers (N = 40) and students (N = 140) on their reported ethical concerns.

Table 4

AI Reliance, Critical Thinking, And Autonomy

Variables	AI Reliance	Critical Thinking	Autonomy
AI Reliance	1	-0.42**	-0.37**
Critical Thinking	-0.42**	1	0.58**
Autonomy	-0.37**	0.58**	1

The results of Table 5 revealed a statistically significant difference, with teachers reporting higher levels of concern about issues such as plagiarism, data privacy, and algorithmic bias. These findings confirm H3 and suggest that teachers are more cautious about the broader ethical consequences of AI, likely because of their responsibility for maintaining academic standards and integrity. In contrast, students appeared more focused on immediate learning benefits and were less likely to perceive long-term ethical risks. Taken together, the results confirm all three hypotheses. AI tools were shown to improve language proficiency, particularly in speaking and grammar, supporting RQ1 and H1. However, frequent reliance on AI was associated with decreased autonomy and critical thinking, answering RQ2 and confirming H2. Finally, teachers expressed significantly greater ethical concerns than students, supporting RQ3 and H3. These findings provide a nuanced picture of AI integration in language education. The evidence suggests that while AI tools serve as valuable supplements for enhancing proficiency, they also carry risks of cognitive dependency and ethical challenges that cannot be ignored.

As evident from Table 5 and Figure 3, comparison of mean ethical concern scores between teachers (n = 40, M = 4.31, SD = 0.55) and students (n = 140, M = 3.89, SD = 0.63). Independent-

samples t-test showed a significant difference, $t(178) = 4.02$, $p < 0.001$, 95% CI [0.21, 0.63]. Error bars represent 95% confidence intervals.

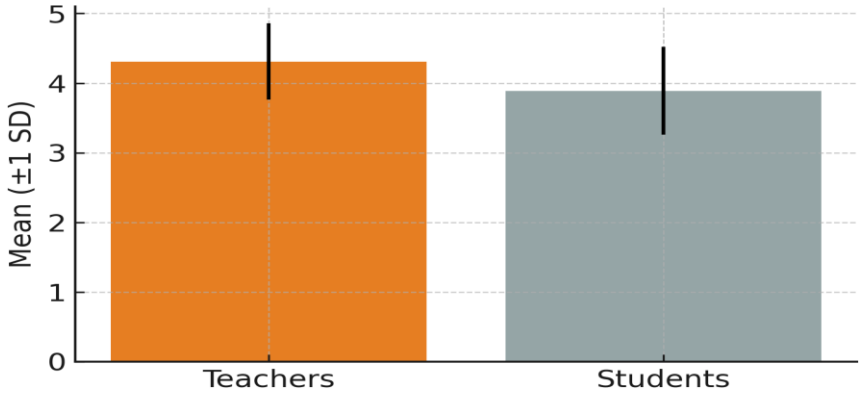
Table 5

Teachers vs. Students on Ethical Concerns

Group	N	Mean	SD	t	Sig. (2-tailed)
Teachers	40	4.31	0.55	4.02	0.000 **
Students	140	3.89	0.63		

Figure 3

Ethical Concerns: Teachers vs. Students



In addition to the quantitative patterns, the open-ended responses provided valuable context that reflects participants' real-world experiences with AI-assisted learning. Many students described AI tools as empowering and supportive resources. Typical comments included statements such as "AI helps me speak more naturally and correct my mistakes instantly" and "It reduces my stress because I can check my grammar anytime without waiting for feedback." These perspectives illustrate how AI promotes confidence, convenience, and continuous practice opportunities. However, several teachers expressed caution, noting that "students rely too much on AI and stop thinking for themselves" and "AI sometimes blurs the boundary between learning and copying." Concerns about data privacy and fairness in evaluation also appeared in both groups. Collectively, these representative quotes humanize the statistical findings by showing how enthusiasm for AI's efficiency coexists with apprehension about autonomy, creativity, and ethical boundaries. This qualitative layer reinforces the study's portrayal of AI as both a facilitator of progress and a potential source of cognitive dependency within Iran's evolving EFL landscape.

3. Discussion

The findings of this study provide compelling evidence for the dual role of artificial intelligence (AI) in English as a Foreign Language (EFL) education in Iran, confirming the "double-edged sword" characterization repeatedly highlighted in the literature. On the one hand, AI tools significantly enhanced students' grammar, vocabulary, writing, and especially speaking proficiency. On the other hand, excessive reliance on these technologies correlated negatively with critical thinking and autonomy, while teachers reported stronger ethical concerns than students. These results align

with, extend, and in some cases challenge previous studies, thereby contributing both local and global insights into AI-assisted learning.

The first major finding was the positive impact of AI use on language proficiency, particularly in speaking skills. This aligns with Wei (2023), who demonstrated that AI-mediated instruction improved grammar, vocabulary, reading, and writing outcomes. Similarly, Xodabande et al. (2025) reported that Iranian learners using ChatGPT achieved measurable improvements in pronunciation, consistent with the speaking gains reported by participants in this study. International research has likewise emphasized the motivational and engagement benefits of AI platforms (Krishnan & Zaini, 2025; Liu, 2025). Together, these findings reinforce the conclusion that AI can meaningfully supplement traditional instruction by providing learners with immediate, adaptive, and personalized feedback. However, the relatively lower mean scores for writing accuracy observed in this study (M = 3.65) highlight a limitation also noted in prior research. While grammar and vocabulary improvements are frequently reported (Yong, 2020), more complex writing skills, such as coherence, idea development, and lexical diversity, remain less effectively addressed by AI tools. This finding suggests that while AI can facilitate surface-level accuracy, it is not yet capable of fully replicating the nuanced feedback provided by experienced human instructors, echoing concerns raised by Algaraady and Mahyoob (2023).

The higher gains in speaking proficiency compared to writing accuracy may reflect the differing affordances of AI tools commonly used by participants. Chat-based platforms such as ChatGPT provide interactive, low-anxiety environments that facilitate spontaneous expression and real-time conversational feedback, which may directly support oral confidence and fluency. In contrast, writing improvement requires sustained practice with higher-order processes such as idea organization and lexical sophistication, which AI tools can only partially support through grammar correction. This discrepancy aligns with prior evidence suggesting that AI more effectively enhances surface-level accuracy than deep compositional skills (Algaraady & Mahyoob, 2023; Yong, 2020). Regarding tool-specific effects, the questionnaire recorded the AI tools participants used (e.g., Grammarly, ChatGPT, others). However, the present study did not aim to conduct a comparative analysis across platforms, as usage patterns were uneven and the focus was on the general impact of AI-assisted learning rather than tool performance. Future research could employ experimental or mixed-method designs to compare the pedagogical outcomes of different AI applications. This direction would provide valuable insights into whether distinct AI systems differentially influence language skills, motivation, or ethical perceptions.

A second key result was the negative correlation between AI reliance and both autonomy and critical thinking. This finding provides empirical support for warnings in the literature that habitual dependence on automated tools may erode learners' independent reasoning and reflective engagement (Crompton, 2024; Wogu et al., 2018). The strong negative relationship with critical thinking ($r = –.42$) underscores Iskender's (2023) argument that automation bias can discourage analytical reasoning and promote uncritical acceptance of AI outputs. Similarly, the decline in autonomy among heavy users resonates with concerns expressed by Aiken and Epstein (2000), who warned of "intellectual laziness" resulting from technological overdependence.

Beyond statistical significance, the observed correlations carry meaningful implications for classroom behavior and learning outcomes. The negative correlation between AI reliance and critical

thinking (r = –0.42) suggests that students who depend heavily on AI feedback may engage less in independent reasoning, questioning, or source verification. In classroom terms, such learners might accept AI-generated answers at face value, revise their work mechanically, or struggle to justify linguistic choices without automated assistance. Similarly, the negative association between AI reliance and autonomy (r = –0.37) indicates that frequent AI users may find it harder to plan learning goals, monitor progress, or evaluate their own performance without technological mediation. Conversely, the strong positive link between autonomy and critical thinking (r = 0.58) implies that students who take initiative in managing their learning are also more likely to reflect critically on AI outputs, questioning accuracy, comparing alternatives, and applying feedback selectively. These patterns highlight how overreliance on automation may gradually shift learning from self-regulated exploration toward passive dependence, a dynamic teacher must consciously address in AI-integrated instruction.

At the same time, the strong positive correlation between autonomy and critical thinking (r = 0.58) adds an important nuance to the literature. While many prior studies treat these constructs separately, the current findings suggest that they reinforce one another: learners who remain autonomous are also more likely to evaluate AI critically, thereby mitigating some of the risks of overreliance. This insight highlights the pedagogical importance of fostering both autonomy and critical thinking simultaneously, a perspective less emphasized in earlier research. The third finding revealed that teachers expressed significantly higher ethical concerns than students. This mirrors the results of Mohammadkarimi (2023), who reported that Iranian instructors were particularly worried about threats to academic integrity posed by AI. It also supports international scholarship that highlights systemic risks such as algorithmic bias, surveillance, and data exploitation (O'Neil, 2016; Williamson, 2017).

Teachers' heightened concerns may reflect their dual responsibility as both educators and guardians of ethical standards. Students, by contrast, appeared more focused on the immediate benefits of AI for language learning, echoing the tendency reported by Nguyen Thi Thu (2023), where learners welcomed ChatGPT's usefulness in writing classes but required explicit guidance to avoid misuse. This teacher–student discrepancy carries important implications for policy and practice. It suggests that institutional frameworks and training programs must bridge the gap between students' enthusiasm and teachers' caution by equipping both groups with the knowledge and ethical guidelines needed for responsible use.

From a pedagogical standpoint, these behavioral patterns underline the need for explicit teacher mediation in AI-integrated classrooms. Teachers can counteract the potential decline in autonomy and critical reasoning by incorporating guided reflection into AI-based tasks, such as asking students to explain why they accept or modify AI feedback, or to compare AI suggestions with human sources. Similarly, structured peer-review sessions where learners critique one another's AI-assisted work can transform passive use into active analysis. Periodic AI-free assignments, where students perform writing or speaking tasks without digital tools, can also help sustain independent cognitive effort and prevent overdependence. By framing AI as a supportive instrument rather than a decision-maker, teachers help students maintain control over their reasoning processes and preserve a sense of authorship in their learning. This alignment between pedagogical scaffolding and technological innovation is essential for balancing efficiency with intellectual growth in Iranian EFL settings.

Another dimension highlighted in this study was the uneven distribution of AI's benefits. Although not the primary focus of the analysis, the results hinted at disparities consistent with those described by Font de la Valle and Araya (2023) and Wogu et al. (2018). These scholars argue that algorithmic biases and unequal access to technology may inadvertently widen gaps between high- and low-achieving students. While some adaptive platforms aim to support weaker learners, in practice, they often reinforce inequality by tailoring content more effectively to already high-performing students. The findings of this study, particularly the weaker improvements in writing compared with speaking, indirectly support this concern by suggesting that students with limited proficiency may not benefit equally from AI-assisted learning.

The present study contributes to international debates by situating Iranian learners' experiences within the broader discourse on AI in education. Similar to studies conducted in other contexts (Krishnan & Zaini, 2025; Liu, 2025), Iranian students reported gains in proficiency but also demonstrated vulnerabilities related to autonomy and ethics. However, the local evidence of significant negative correlations between AI reliance and higher-order skills extends the literature by providing robust quantitative data from a non-Western context. This localized evidence is critical because much of the global literature on AI in education is dominated by Western perspectives, which may not fully capture sociocultural and infrastructural challenges in countries like Iran. The findings collectively suggest that AI integration in language education should be pursued with caution. Teachers and policymakers must recognize AI as a supplementary tool, not a replacement for human instruction.

Beyond statistical associations, these findings must be interpreted within Iran's distinct socio-educational context. English instruction in Iran remains largely exam-oriented and teacher-centered, with limited opportunities for communicative practice and learner autonomy. In such settings, AI tools like ChatGPT and Grammarly may serve as compensatory mechanisms that offer learners individualized feedback and a sense of agency absent in traditional classrooms. This contextual factor may explain why Iranian students reported strong gains in speaking and grammar but weaker development in writing autonomy, AI fills immediate linguistic gaps but does not fully transform pedagogical norms. Moreover, cultural attitudes toward authority and assessment may reinforce students' dependence on technology rather than independent critical evaluation, contributing to the negative correlations observed between AI reliance, autonomy, and critical thinking. Teachers heightened ethical concerns similarly reflect Iran's strong emphasis on academic integrity and religious-ethical codes governing educational conduct. Taken together, these cultural and institutional dynamics contextualize the "double-edged" role of AI in Iran, showing that technological innovation interacts with deeply rooted educational traditions rather than replacing them.

The evidence underscores the importance of explicitly training students to critically evaluate AI outputs and maintain independent learning strategies. Professional development for teachers is equally essential, ensuring they possess both technical competence and ethical awareness when integrating AI into classrooms. Moreover, institutions should establish clear policies governing AI use, with guidelines that address plagiarism, data privacy, and equitable access. By systematically examining both the benefits and risks of AI in an Iranian EFL context, this study makes several contributions to the literature. First, it empirically confirms concerns about autonomy and critical thinking that were previously emphasized primarily in theoretical terms. Second, it demonstrates the practical importance of teacher–student discrepancies in ethical awareness, highlighting a neglected

dimension in prior work. Third, it extends international scholarship by providing localized evidence that reinforces the global narrative of AI as a double-edged sword while also offering unique insights into the Iranian educational context.

7. Conclusion, and Implications, and Limitations

This study examined the opportunities and risks of integrating artificial intelligence (AI) tools into English as a Foreign Language (EFL) education in Iran. The findings confirmed that AI tools can significantly enhance learners' grammar, vocabulary, writing, and especially speaking proficiency. These results reinforce the growing body of research that positions AI as a valuable supplement to traditional instruction. At the same time, the study revealed that frequent reliance on AI negatively correlates with critical thinking and learner autonomy, highlighting the cognitive risks of overdependence on automated support. Furthermore, teachers reported significantly higher ethical concerns than students, particularly regarding issues of plagiarism, algorithmic bias, and data privacy. Collectively, these results underscore the double-edged nature of AI in education: while it offers new opportunities for personalization and engagement, it simultaneously introduces risks that must be carefully managed. The study contributes to the literature in three ways. First, it provides localized evidence from the Iranian context, which has been underrepresented in international debates on AI in education. Second, it empirically links AI reliance to reduced autonomy and critical thinking, offering quantitative confirmation of concerns often discussed only at the theoretical level. Third, it highlights the discrepancy between teachers' and students' perceptions of ethics, pointing to a critical gap that institutions need to address.

From a practical perspective, the findings suggest several implications. Teachers should explicitly train learners to evaluate AI outputs critically, encouraging them to see these tools as supports rather than replacements for independent reasoning. Institutions need to establish clear guidelines that regulate ethical AI use, with particular attention to academic integrity and the protection of learners' data. Professional development programs should prepare teachers to integrate AI in ways that enhance pedagogy while safeguarding ethical standards. Policymakers in Iran should also consider infrastructural and cultural barriers, ensuring equitable access to AI technologies across diverse educational settings. Future research should move beyond cross-sectional surveys to include longitudinal and experimental designs that capture the long-term effects of AI use on learner development. Comparative studies across different cultural and linguistic contexts could clarify how sociocultural factors shape the effectiveness and risks of AI integration. Finally, interdisciplinary collaboration between linguists, educators, and computer scientists will be essential for designing localized, culturally sensitive AI tools that serve the needs of Iranian learners while addressing global ethical concerns. In conclusion, AI tools have the potential to transform language learning in Iran, but their integration must be balanced, ethical, and pedagogically grounded. By recognizing both the benefits and the risks, stakeholders can harness AI to enrich education without compromising critical thinking, autonomy, or academic integrity.

Beyond general recommendations, the findings point to several specific and actionable implications for teachers, institutions, and policymakers. First, teachers should integrate guided critical reflection tasks in AI-supported lessons. For instance, when using ChatGPT or Grammarly, students can be asked to explain why they accept or reject AI suggestions, transforming feedback into critical reasoning practice. Second, language programs can introduce AI literacy workshops that train learners

to use these tools ethically, focusing on plagiarism awareness, data privacy, and distinguishing between assistance and dependency. Third, curriculum designers should embed dual-skill modules that target both autonomy and critical thinking, such as reflective journals where students evaluate AI outputs or peer discussions analyzing AI-generated feedback. Finally, institutions and policymakers should establish transparent AI-use policies that specify acceptable academic uses, citation requirements, and data-protection standards. These measures, grounded in the study's quantitative and qualitative evidence, can help Iranian EFL contexts harness AI's advantages while maintaining ethical integrity and learner independence.

The strong positive correlation between learner autonomy and critical thinking underscores the need for instructional practices that cultivate both capacities simultaneously, especially in AI-enhanced classrooms. Teachers can encourage this dual development by designing AI-mediated reflective tasks, where students must justify or critique AI-generated feedback before accepting it. Such activities transform passive tool use into active cognitive engagement. Additionally, guided self-regulation frameworks, for instance, having learners set personal learning goals, evaluate AI suggestions against their reasoning, and maintain learning journals, can strengthen metacognitive awareness. Collaborative problem-solving projects that require students to compare AI outputs, debate ethical use, or co-construct responses can further promote critical dialogue and decision-making. These strategies enable AI to function as a cognitive partner rather than a substitute for thinking, supporting balanced, autonomy-driven learning in technologically rich environments.

While the study offers valuable insights into the use of AI tools in language learning, several limitations should be acknowledged. First, the use of convenience sampling limits the generalizability of the findings, as participants were drawn from accessible university and institute networks rather than selected randomly. This sampling strategy may have introduced self-selection bias, since individuals who chose to participate were likely more technologically inclined and positive toward AI-assisted learning. Second, the study relied on self-reported data, which can be affected by social desirability bias and subjective perception rather than objective performance measures. Future research could triangulate self-reports with direct assessments of language proficiency or classroom observations to validate learners' claims. Third, the cross-sectional and correlational design precludes causal inference. The relationships observed between AI reliance, autonomy, and critical thinking should therefore be interpreted as associations rather than direct effects. Longitudinal or experimental designs would provide stronger evidence of causal mechanisms. Recognizing these limitations provides a more accurate frame for interpreting the results and highlights important directions for future investigation. Despite these potential sources of bias, the diversity of the sample helped to mitigate their effects to some extent. The inclusion of both students and teachers from multiple universities and private language institutes increased the representativeness of the responses and reduced the risk of homogeneity bias. Variation across gender, educational level, and proficiency range (A2–C1) further ensured that the data reflected a wide spectrum of perspectives and experiences rather than a single subgroup's attitudes. While self-selection and self-report biases remain possible, this diversity enhances the robustness and ecological validity of the findings within the Iranian EFL context.

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Authors' Contributions

All authors have conducted the study, collected data, analyzed and interpreted the data, and written up the manuscript.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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Appendix: Questionnaire on AI Tools, Language Proficiency, Autonomy, Critical Thinking, and Ethics (AI-LPAC-E)

Section A: Demographics & AI Usage

1. Age
2. Gender: Male / Female / Other
3. Education level: BA / MA / PhD
4. Years of English study
5. Self-rated proficiency (CEFR): A1–C2
6. AI tools used: ChatGPT / Grammarly / Other
7. Frequency of use: Daily / Weekly / Monthly / Rarely
8. Main purpose: Writing / Speaking / Vocabulary / Grammar / Translation

Section B: Perceived Impact on Language Proficiency (12 items): (Adapted from Zawacki-Richter et al., 2019; Johnson & Smith, 2019)

9. AI tools help me identify and correct grammatical mistakes in my writing.
10. Using AI has improved my awareness of English grammar rules.
11. I rely on AI suggestions to check the grammatical accuracy of my work.
12. AI tools expand my vocabulary knowledge.
13. AI helps me choose more accurate or academic words.
14. AI feedback increases my ability to use collocations correctly.
15. AI tools help me organize my writing more clearly.
16. AI feedback improves my sentence structure.
17. I feel more confident in writing assignments with AI support.
18. Chatbots improve my confidence in speaking English.
19. AI speaking tasks help me practice pronunciation.
20. Using AI tools reduces my speaking anxiety.

Section C: Learner Autonomy (8 items): (Orakci, 2017; Van Nguyen & Habók, 2021)

21. I set personal goals for my English learning.
22. I choose my own strategies when learning English.
23. I monitor my progress without relying solely on teachers.
24. I decide which resources to use for practice.
25. I take responsibility for correcting my mistakes.
26. I am able to study English independently without constant teacher support.
27. I manage my learning time effectively.
28. I adapt my learning strategies when I face difficulties.

Section D: Critical Thinking (8 items): (Tsui et al., 2021)

29. When I get an AI answer, I check other sources to confirm it.
30. I analyze AI feedback critically before accepting it.
31. I usually accept AI suggestions without much questioning. (Reverse-scored)
32. AI tools encourage me to reflect on different perspectives.
33. I can detect when AI feedback is inconsistent.
34. I question the reliability of AI-generated references.
35. I evaluate whether AI-generated information is logical.
36. I compare AI outputs with my own reasoning.

Section E: Ethical Concerns & Academic Integrity (8 items): (Mavrinac et al., 2010; Williamson, 2017; O'Neil, 2016)

37. Using AI for assignments without acknowledgment is a form of plagiarism.
38. I worry about the privacy of my personal data when using AI tools.
39. AI systems may show cultural or linguistic bias.
40. I am concerned that overreliance on AI may reduce my originality.
41. Teachers should provide clear guidelines for ethical AI use.
42. It is acceptable to use AI-generated texts without citation. (Reverse-scored)
43. AI-based learning may undermine fairness in academic work.
44. AI feedback may sometimes mislead students into plagiarism unintentionally.

Section F: Attitudes Toward Technology in Learning (6 items): (Davis, 1989; Teo, 2010)

45. Using AI makes learning English easier for me.
46. AI tools make learning more enjoyable.
47. AI is a valuable supplement to traditional instruction.
48. Relying on AI may weaken human interaction in the classroom. (Reverse-scored)
49. I believe AI will play an important role in the future of education.
50. AI saves me time and effort in language learning tasks.

Open-Ended Questions

51. What is the biggest benefit you experienced when using AI for English learning?
52. What is the biggest risk or problem you see with AI in your learning?