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ORIGINAL ARTICLE

An Investigation into the Application of Artificial Intelligence for Language Teaching and Learning in Vietnam

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ABSTRACT
This study investigates teachers and students' usage of artificial intelligence (AI) in language teaching and learning in Vietnam. Descriptive, correlational, and linear regression analyses are utilised to explore and compare perspectives of about 200 teachers and 700 students from eight universities in Vietnam on the usefulness of using AI in their teaching and learning of foreign languages. The findings show that there are very few differences in the views of both groups on the issue and that AI tools' use for testing has the strongest impacts on language teaching and learning. However, teachers and learners' AI competencies do not have any impact on their perceived usefulness of AI-powered tools. The study results are significant in the country's discussion on how to use AI effectively for education in general and for language teaching and learning in particular.

1. INTRODUCTION

In recent years, the development of information technology in general and artificial intelligence (AI) in particular has exerted a significant impact on all aspects of the economic and social life of every country. Particularly, the emergence of ChatGPT, a large language processing tool developed by OpenAI in the United States, along with other AI tools, has been suggested by some scholars to have a profound influence on many aspects of life, including education in general and foreign language teaching and learning specifically (OpenAI, 2023). One of the reasons is that this tool can provide feedback in multiple languages, helping people draft emails, programs, and write essays with relatively sound language quality, especially in English. To date, besides ChatGPT, many other AI tools have been developed, along with courses that integrate AI tools in all aspects of life. It can be said that AI is the soul of scientific and technological development in this new era of the world and Vietnam.

One of the advantages of AI-powered tools is their usefulness in enhancing learners' language skills, motivating learners, and applying speech recognition technology to help them improve pronunciation, grammar, and content in both written and spoken responses (Ayotunde et al., 2023; Law, 2024; Yang & Kyun, 2022). Even in translation, one of the key subjects in most language bachelor's programs, many translation software tools such as Google Translate, Microsoft Translator have been developed to translate hundreds of different languages (both spoken and written), manage technical terminology, explain terms, etc. (Siu, 2023). Additionally, there are many free tools available that allow instructors to exploit AI in lesson planning, class management, and curriculum design. These applications have and continue to influence foreign language teaching methods in particular and the field of foreign language science worldwide and in Vietnam. However, the impacts of using AI-powered tools for language teaching and learning have been underexplored in Vietnamese contexts, which is one of the main objectives of the current study.

2. LITERATURE REVIEW

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The idea of using AI in language teaching and learning dates back to the 1950s (Ji et al., 2023). As early as 1950, Turing (1950) proposed the concept of integrating algorithms into language learning applications. Later, Minsky and Papert (1968) pioneered research on AI to simulate human actions, enabling computers to process algorithms and make decisions like humans. This included the development of intelligent tutoring and testing systems (ITS). Over time, as foreign language teaching methods evolved, many ITS systems were transformed into "teachable agents" capable of simulating instructors by providing feedback to learners during the language learning process (Silvervarg et al., 2021).

There have been many studies around the world and in Vietnam on the use of AI-powered tools in language teaching and learning (Chiu et al., 2023; Law, 2024; Nguyen, 2024). For language teachers, a review study by Chiu et al. (2023) indicates that teachers can use AI thanks to a great deal of benefits in analyzing student performance, improving teachers' capabilities, enhancing the efficiency of language assessment, and providing personalized services. For students, similar perceptions have been voiced by the students themselves that AI tools can help in language learning, especially in providing accurate and instant feedback and enhancement of language proficiency (Trang, 2023; Nguyen, 2024).

Studies on the teacher and student perspectives on AI-powered tools have revealed both excitement and doubt (Trang, 2023; Nguyen, 2024). While students overwhelmingly express positive reactions, teachers tend to adopt a more cautious stance, showcasing the differing experiences and expectations of these two groups. Students appreciate the tools for their ability to quickly generate educational materials, provide immediate answers, and foster creativity (Trang, 2023). However, concerns persist regarding the possible decline in critical thinking, the rise of academic dishonesty, and the potential unreliability of AI-generated content (Godwin-Jones, 2022; Nguyen, 2024).

More recently, with the development of generative AI tools (GenAI), studies have also been conducted on their use for language teaching, learning and assessment (Kohnke et al., 2023). These studies explore different aspects of using GenAI tools for language teaching and learning, for example, policy, guidance of use, impacts of use on different language skills and components (Ayotunde et al., 2023; Law, 2024). The literature underscores the importance of integrating GenAI into language classrooms to aid in language acquisition, enhance language skills, content creation, personalized learning, and assessment. These capabilities of GenAI tools have been made possible thanks to the use of large language models (LLMs) in the creation of text and multimodal content (e.g., video, audio, virtual reality). These tools are useful in supporting teachers in their lesson preparation, delivery and assessment, and learners in their search for personalized language learning materials (Law, 2024).

AI for language teaching

Research studies have revealed that AI tools play a pivotal role in lesson planning by enabling teachers to create personalized, engaging content, automate tasks, and to make their efforts easier (Law, 2024; Pokrivcakova, 2019). Applications such as Grammarly, ChatGPT, and educational resource platforms help educators generate lesson materials tailored to students' proficiency levels (Mananay, 2024). Adaptive AI tools analyze learners' previous performance data to recommend appropriate lesson plans and activities. Research indicates that teachers who use AI for planning report greater efficiency and the ability to cater to diverse student needs (Baker et al., 2019; Skrabut, 2023).

Moreover, AI-assisted language teaching resources, such as text generators and curriculum design tools, facilitate the integration of real-world language use scenarios into lesson plans, which motivate student language learning (Mananay, 2024). AI can significantly enhance the efficiency of material development in language education by assisting teachers in creating and modifying teaching resources. This technological support saves both time and effort, allowing educators to focus more on instructional delivery and student engagement. For instance, tools like ChatGPT offer valuable assistance in designing tasks and providing pedagogical suggestions, streamlining the process of material preparation (Xin, 2024). By leveraging AI, teachers can access a wealth of resources and ideas, ensuring that their teaching materials are both innovative and effective. This integration of AI in material development not only optimizes the use of educational resources but also enhances the overall quality of language instruction.

Teachers also employ AI to predict potential learning obstacles and provide pedagogical strategies to address them proactively (Law, 2024; Pokrivcakova, 2019). By integrating AI into the educational process, teachers can exploit AI's capabilities to enhance their instructional strategies and provide more personalised learning experiences for students. For instance, generative AI can assist in creating customized lesson plans, offering real-time feedback,

and identifying areas where students may need additional support. This symbiotic relationship between human and artificial intelligence not only augments the teacher's role but also promotes a more dynamic and interactive learning environment. Frøsig and Romero (2024) highlight that such a hybrid approach could lead to significant advancements in educational practices, enabling teachers to focus on more complex and creative aspects of teaching while AI handles routine and administrative tasks. This collaboration ultimately empowers teachers, enhances student engagement, and fosters a more effective and innovative educational experience.

AI for language learning

AI tools can provide timely and automated feedback, which is crucial for language learning. This feedback helps students correct mistakes and improve their language skills in real-time (Taskiran & Yazic, 2021; Trang, 2023). By offering instant corrections and suggestions, AI tools enable learners to identify and rectify errors promptly, reinforcing correct usage and promoting language proficiency. This immediate feedback mechanism supports continuous learning and improvement, ensuring that students remain engaged and motivated (Ayotunde et al., 2023; Law, 2024). The real-time nature of this feedback is particularly beneficial in language acquisition, where timely intervention can significantly impact the learning curve. The integration of AI in language education thus represents a pivotal advancement, enabling more effective and efficient learning processes (Nguyen, 2024; Wang et al., 2022)

AI-powered tools, such as chatbots and educational games, create interactive and immersive learning environments. These tools can simulate real-life conversations and contexts, making learning more engaging and less intimidating for students (Gruzdeva et al., 2024; Li et al., 2024). By providing realistic scenarios and immediate feedback, these AI applications help learners practice language skills in a safe and supportive setting. This approach not only enhances student engagement but also builds confidence in using the language in real-world situations (Ayotunde et al., 2023). The use of AI in educational games further promotes active learning, encouraging students to participate and interact more dynamically with the content.

The use of AI in language learning can help reduce foreign language anxiety by allowing students to practice in a low-pressure environment before interacting with real people (Al-Raimi et al., 2024). AI tools provide a safe space for learners to experiment with language use, make mistakes, and receive corrective feedback without the fear of judgment. This supportive setting helps build confidence and reduces the stress associated with speaking a foreign language. By gradually increasing their comfort level, students can transition more smoothly to real-life interactions, ultimately improving their language proficiency and communication skills (Ayotunde et al., 2023; Nguyen, 2024; Wang et al., 2022)

Past studies have also suggested that using AI can support language learners in many other aspects, such as the cost and cultural understanding (Ayotunde et al., 2023; Trang, 2023). Concerning the cost of using AI tools, studies have indicated that while (free) AI tools can be of great benefit to users. Nonetheless, there are some concerns about commercial ones (e.g., AI-based robots), which can negatively affect students from low socio-economic backgrounds (Law, 2024; Yang & Kyun, 2022). Regarding the provision of information on target language culture, studies have revealed that AI-powered tools can assist students in exploring culture-related aspects of the target countries easily, especially through GenAI (De la Vall & Araya, 2023; Trang, 2023). However, AI tools frequently lack the necessary cultural adaptation to be effective in diverse linguistic environments.

AI for assessment

AI tools, especially AI-supported automatic assessment systems, streamline testing and assessment processes by offering automated scoring and detailed feedback (Amin, 2023; Mananay, 2024; Yang & Kyun, 2022). Students can assess their language proficiency in most language skills and components from automatic feedback and an adaptive assessment mechanism (Barot, 2023; Patty, 2024). Teachers benefit a great deal from innovative assessment techniques, hence, reduced grading time and in-depth analytics about student performance (Pokrivčáková, 2019; Zaim et al., 2024). Thanks to the advancement in AI-supported automatic assessment systems, most high-stake tests (TOEFL, IELTS) have been conducted completely in online modes (Read, 2022).

However, there are a few concerns about the use of AI-powered tools for assessment. These concerns include the tools' inaccurate assessment of some language skills (e.g., speaking); authenticity of the students' performance due to their copy-and-paste practices or cheating, and ethical concerns (Patty, 2024; Ulum, 2020; Zaim et al., 2024). Furthermore, for productive skills like writing, AI-supported automatic assessment systems tend to evaluate surface items (e.g., grammar and spelling) rather than contextual or cultural elements (Gayed et al., 2022). Similarly, for

speaking skills, the speech recognition engine (SRE) can only assess language learners' pronunciation but not other oral proficiencies, for example, contextualized utterance, proper responses in different conversational contexts, hence, human evaluation of learners' spoken utterances, especially at sentence and above sentence levels (Barot, 2023; Yoo & Ahn, 2024).

Digital competence

Digital competence is essential for teachers and students to effectively integrate AI tools into their teaching and learning practices. This competence encompasses AI tools understanding, usage and even design capabilities (Almatrafi et al., 2024). The 'core' competencies for both teachers and students, which have received attention from researchers, include: recognize, know and understand, use and apply, evaluate, navigate ethically, and create (Almatrafi et al., 2024, p. 9). The constructs to measure AI competency should be able to assess the knowledge level and usefulness of the intervention (of a particular tool) for different groups of stakeholders, including language teachers and students. In Vietnam, the results of Trang's (2024) study show that Vietnamese teachers and students still lack experience and understanding of AI-powered tools (e.g., ChatGPT or AI chatbots) for language teaching and learning purposes. The noted reasons include limited understanding of AI tools and unstable Internet connections.

For language teachers, past studies have noted that they generally support CALL (Computer-Assisted Language Learning), and are open, positive about intelligent technologies, or ICALL for short (Heift & Schulze, 2007). Hence, training programmes should be implemented with a focus on building their digital literacy, understanding the functionalities and applications of AI tools, and developing strategies for their pedagogical integration. By enhancing their digital competency and confidence, teachers can create more engaging and personalized learning experiences, ultimately improving student outcomes and preparing learners for a technology-rich future (Kohnke et al., 2023; Pokrivcakova, 2019).

For learners, there have been a few studies on the competencies necessary for using AI in education in general and language learning in particular. Sanusi et al. (2022) propose a framework of cognitive competencies that learners need in the AI era, which includes: competencies in learning skills, knowledge of AI tools, and understanding the interaction between humans and AI tools. Similarly, Vuorikari et al. (2024), in their study on the digital competency framework suggest three groups of competencies for digital citizens: knowledge, skills, and attitudes. A fundamental understanding of the functions and applications of AI tools falls under the knowledge domain mentioned above. The Vietnamese framework for learners' digital competencies also includes six domains: exploration of data and information, communication and collaboration in a digital environment, digital content creation, digital safety, problem-solving, and AI application (MOET, 2025).

3. MATERIALS AND METHODS

Research Questions

This research project investigates the following questions:

(1) Is there a difference between language lecturers and students in their use of AI for language teaching and learning?

The objectives of this research question are to investigate and compare the lecturers' and students' perspectives on issues including what AI-powered tools they use, and for which language skills and components.

(2) What are the impacts of using AI tools on language teaching and learning?

The objectives of this question are to find out how the use of AI-powered tools helps teachers in their lesson preparation, delivery, etc., and what students gain from using the tools for their language practice, assessment and others, if any.

Research Context and Participants

In this study, we conducted surveys (via questionnaire) with the lecturers and students from eight higher education institutions in Vietnam (see the list below). Most of these institutions offer undergraduate foreign language programs for students pursuing bachelor's degrees in languages such as English, French, and Chinese.

The study surveyed approximately 900 participants, including over 700 students and 200 lecturers involved in teaching and learning foreign languages (both language majors and non-majors). A purposive and convenience sampling method is employed.

Research Design

This study employs a quantitative research design to investigate the use of artificial intelligence (AI) in foreign language teaching and learning, with the addition of written comments in the open-ended questions of the questionnaire (qualitative). Specifically, it explores participants' experiences and perspectives on the use of AI tools. A structured questionnaire was designed and revised based on previous studies (e.g., Crompton et al., 2023; Nguyen, 2024) to collect data from the respondents. The questionnaire consists of two main sections:

(1) Demographic Information: Age, gender, role (student or lecturer), institution, and the foreign language being taught/learned.

(2) AI Tool Use: Types of tools, their usefulness, experiences, knowledge, proficiency, and perspectives on using AI.

The questions regarding perspectives on AI use were designed using a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). Additionally, the questionnaire includes several open-ended questions to allow the respondents to provide supplementary opinions on the topics addressed.

Data Collection and Analysis

Before the official survey, the research team piloted the questionnaire via Google Forms with 44 students and 25 lecturers, who were then excluded from the main survey. After collecting pilot data, preliminary analyses, including reliability testing (Cronbach's alpha), were conducted for Section 2 of the questionnaire. The overall reliability of Section 2 met the requirements for both lecturer ($\alpha = 0.91$) and student groups ($\alpha = 0.94$) (Hair et al., 2021). The detailed reliability result of the official survey is presented in Table 1.

Table 1. Reliability of the scales for lecturers and students

For lecturers			
No.	Variable	No of item	Cronbach
1	Before lesson	08	0.91
2	During lesson	07	0.90
3	Testing	06	0.89
4	Background competency	03	0.61
5	Overall effectiveness	03	0.71
For students			
1	Group 1: Instant support for learning	07	0.92
2	Group 2: Enhanced motivation	05	0.88
3	Testing	04	0.85
4	Composite competency	03	0.54
5	Overall effectiveness	03	0.77

Following the analysis of the pilot survey results, the research team proceeded with the official data collection via Google Forms. The survey link and QR code were distributed to the participants via email and social media platforms (e.g., Zalo). The purpose of the study, voluntary participation, and confidentiality of collected data were clearly stated at the beginning of the questionnaire. During the survey process, the research team adhered to best ethical practices, including obtaining approval from the leadership of participating institutions and ensuring secure data storage accessible only to the research team to maintain confidentiality.

The data were analyzed using both frequency analysis and inferential statistics via the Statistical Package for Social Sciences (SPSS), version 29. Descriptive and one-way ANOVA tests investigated the differences between the students and faculties in their use of AI tools for language teaching and learning. Correlation analysis was performed

to understand the relationship between the independent and dependent variables. Multiple regression analyses investigated whether the predictor variables significantly predicted the overall usefulness of using AI for language teaching and learning.

The study's theoretical framework stems from past studies about using AI-powered tools for language teaching and learning (Ayotunde et al., 2023; Trang, 2023; Xin, 2024; Nguyen, 2024). In general, the framework includes key factors that influence teachers' and students' decisions to use the tools in their lesson preparation, delivery, assessment (for teachers) and language practice, learning motivation (for students), both inside and outside the classroom context.

4. RESULTS AND DISCUSSIONS

4.1. Results

Descriptive Analyses of Variables

Table 2. Demographic statistics

Information	Lecturer	Student
Age	From 23 to 56	From 17 to 25
Gender (%)	Female: 90.0 Male: 9.5 Other: 0.5	Female: 83.0 Male: 16.4 Other: 0.6
Teaching experience/ studying year (%)	Under 5 years = 25.4 5 - under 10 = 17.7 10 - under 15 = 27.8 15 - under 20 = 16.3 Above 20 = 12.9	Year 1: 40.2 Year 2: 11.0 Year 3: 15.0 Year 4: 32.9 Others: 1.0
Language teaching/studying (%)	English: 39.2 Russian: 5.7 French: 7.2 German: 5.7 Chinese: 9.1 Japanese: 12.0 Korean: 1.9 Spanish: 4.3 Italian: 6.7 Portuguese: 4.8 Others: 3.3	English: 43.2 Russian: 15.9 French: 10.1 German: 4.5 Chinese: 7.8 Japanese: 6.2 Korean: 5.5 Spanish: 4.6 Italian: 0.6 Portuguese: 1.4 Others: 0.3 (Arabic)

Table 2 data indicates that the survey participants ranged in age from 17 to 25 for students and from 23 to 56 for lecturers. Students from all academic years participated in the survey, with the highest representation from first-year students (40.2%) and the lowest from second-year students (11.0%). Additionally, 1% of participants were students in other programs (e.g., postgraduate studies). Among lecturers, the largest proportion of respondents (27.8%) had 10 to 15 years of teaching experience, followed by those with less than five years of experience (25.4%). Teaching staff with over 20 years of teaching experience made up the smallest group (12.9%). The remaining two groups, those with 5-10 years and 15-20 years of experience, were relatively evenly distributed at around 16-17%. Lecturers and students from nearly all major language programs participated in the survey. English-language participants had the highest representation: 39.2% of lecturers and 43.2% of students, respectively. Arabic students had the lowest participation rate (0.3%), while Korean lecturers had the lowest participation rate among teaching staff (1.9%). Italian

students also had a very low participation rate (0.6%), though that for Italian lecturers (6.7%) was relatively high compared to other "less common" languages such as Spanish or Portuguese.

The questionnaire includes a question regarding the effectiveness of using AI tools for language skills (e.g., listening, speaking, and translation) and language components (e.g., phonetics and vocabulary). Table 3 presents the results of descriptive statistical analysis comparing the participants' responses.

Table 3. Usefulness of AI on language skills and components: Lecturer vs student

Skills/components	No.		Respondents		Responses	
	Student (1)	Lecturer (2)	Student (3)	Lecturer (4)	Student (5)	Lecturer (6)
Listening	321	118	8.5%	10.7%	43.5%	56.5%
Speaking	343	117	9.0%	10.6%	46.5%	56.0%
Reading	370	185	9.8%	16.7%	50.1%	88.5%
Writing	471	139	12.5%	12.6%	63.8%	66.5%
Pronunciation	301	88	8.0%	8.0%	40.8%	42.1%
Vocabulary	487	126	12.9%	11.4%	66.0%	60.3%
Grammar	418	111	11.1%	10.0%	56.6%	53.1%
Literature	188	30	5.0%	2.7%	25.5%	14.4%
Translation (written)	323	87	8.5%	7.9%	43.8%	41.6%
Interpreting (spoken)	306	51	8.1%	4.6%	41.5%	24.4%
Language theory	216	45	5.6%	4.0%	29.3%	21.5%
Others	38	9	1.0%	0.8%	5.1%	4.3%
Total participants	738	209				
Total answers	3782	1106				

Table 3 categorises the survey participants (students and lecturers) by number of respondents (738 students, 209 lecturers) and responses (1,379 for students, 401 for lecturers) regarding the use of AI tools for language teaching and learning. Data in Table 4.2 indicates a similarity between the percentage of respondents and the number of responses for AI tools used: a higher percentage of respondents corresponds to a higher percentage of responses (comparing columns 5 with 6 and columns 3 with 4). For instance, in listening skills, the percentage of responses for students and lecturers is 8.5% (column 3) and 10.7% (column 4), respectively while the percentage of respondents is 43.5% for students (column 5) and 65.5% for lecturers (column 6).

However, there are some differences in opinions between lecturers and students regarding specific skills. For example, in terms of respondent percentages, the majority of lecturers (88.5% - column 6) believe that AI is most effective in supporting the teaching of reading skills - this represents the highest percentage among lecturers. In contrast, the percentage for students is 50.1% (column 5), ranking lower than writing, vocabulary, and grammar skills. This discrepancy is also reflected in the response percentages (16.7% for lecturers and 9.8% for students in columns 4 and 3, respectively).

Table 3 also highlights other interesting findings. For example, regarding Literature, while only 14.4% (column 6) of lecturers think AI can effectively support learning this subject, the percentage among students is 25.5% (column 5). Similarly, for interpreting, only 4.6% (column 4) of lecturer responses selected this subject (AI support for teaching), whereas the student response percentage is significantly higher at 8.1% (column 3).

Figure 1 presents the ranking of skills/language components based on the percentage of respondents, ordered from highest to lowest (AI supporting the most to the least), according to lecturers and students.

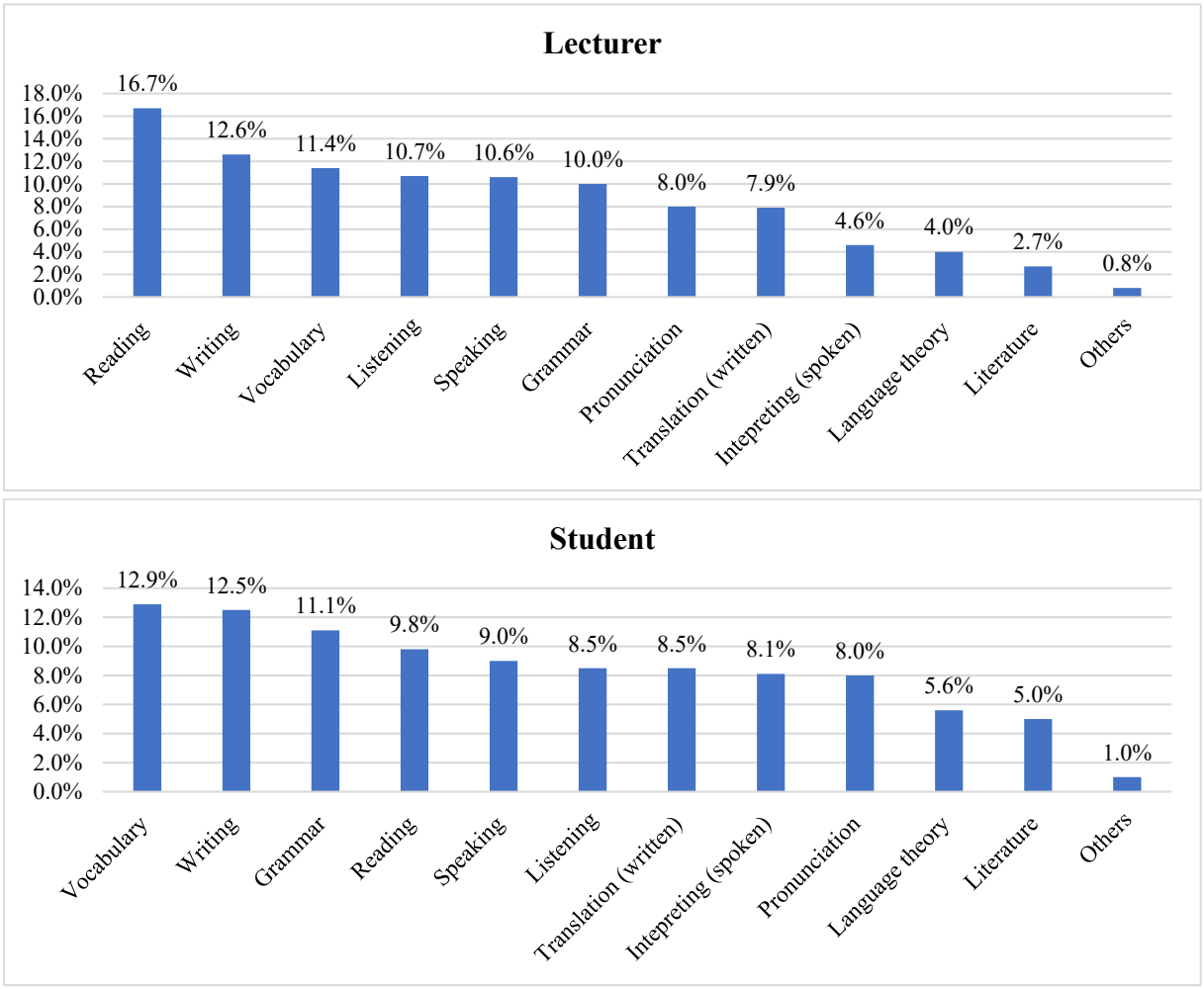


Figure 1. Usefulness of AI for language skills and components: lecturer vs student

Data in Figure 1 reveals a relatively large difference in evaluations between teachers and students. Among teachers, the highest percentage of AI use is for reading skills (88.5%), while the lowest is for literature (14.4%). However, for students, the differences are less pronounced, with the highest percentage for vocabulary (66%) and the lowest for literature (25.5%). The questionnaire also includes a question for both teachers and students about the types of AI tools they commonly use for teaching and learning foreign languages. Table 4 presents the descriptive statistical analysis of their responses.

Table 4. AI tools used by lecturers and students

AI tools	No.		Respondents		Responses	
	Student (1)	Lecturer (2)	Student (3)	Lecturer (4)	Student (5)	Lecturer (6)
ChatGPT-3.5	356	131	25.8%	32.7%	48.2%	62.7%
ChatGPT-4.0	376	124	27.3%	30.9%	50.9%	59.3%
Bard	57	10	4.1%	2.5%	7.7%	4.8%

Copilot	119	34	8.6%	8.5%	16.1%	16.3%
Laude	16	0	1.2%	0.0%	2.2%	0.0%
Mid-journey	34	7	2.5%	1.7%	4.6%	3.3%
Claude	341	8	24.7%	2.0%	46.2%	3.8%
Craft	4	0	0.3%	0.0%	0.5%	0.0%
Others	76	87	5.5%	21.7%	10.3%	41.6%
Total responses	1379	401				
Total respondents	738	209				

Table 4 categorises the survey participants by the number of respondents (738 students, 209 lecturers) and their responses (1,379 for students, 401 for lecturers) regarding the AI tools they use for teaching and learning foreign languages. Data in Table 2 indicates a similarity between the percentage of respondents and the number of responses for AI tools used: a higher percentage of respondents corresponds to a higher percentage of responses (comparing columns 5 with 6 and columns 3 with 4). For instance, with ChatGPT-3.5, the response rates for students and lecturers indicate it as the most frequently used tool, with 25.8% (column 3) and 32.7% (column 4), respectively. Similarly, the percentage of respondents shows 48.2% for students (column 5) and 62.7% for lecturers (column 6).

There is notable agreement between lecturers and students regarding the most frequently used tool: ChatGPT. However, while students tended to use ChatGPT-4.0 more than ChatGPT-3.5, lecturers exhibited the opposite trend, favoring ChatGPT-3.5, though the difference is marginal (about 3%). Some tools, such as Laude and Craft, were used very infrequently by both groups, with usage rates below 2.2%. Interestingly, the usage rate for Copilot (based on both responses and respondents) is relatively consistent between lecturers and students, at approximately 8.5% and 16.2%, respectively.

However, there are notable disparities between the participants in their use of certain tools. For example, with Claude, while 46.2% (column 5) of students reported using this tool, only 3.8% (column 6) of lecturers indicated the same. Similarly, a significant 21.7% of lecturers reported using tools outside those listed in the survey (column 4), compared to only 5.5% of students. Examples of additional tools used by the lecturers: TTSMaker, Twee.com, Diffit, Flexclip, Videozen, Quizizz, Grammarly, Aistudio, QuillBot, SlidesGo, Canva, Pop AI, DeepL, Poe; and by the students: Anki, Bing, CallAnnie, Elsa Speak, Grammarly, Perplexity, Hanzii Dict, Natural Reader.

Information on AI competency

The next section of this article presents statistical analysis results regarding AI use experience (whether participants have used AI tools or not), understanding, proficiency, and the extent of AI use in teaching and learning foreign languages for the two groups: lecturers and students.

Table 5. The use of AI for teaching and learning foreign languages

Indicator	Teacher		Student	
	No.	%	No.	%
No	28	13.4	61	8.8
Yes	181	86.6	633	91.2
Total	209	100.0	694	100.0

Data in Table 5 indicates that 86% of lecturers reported having used AI to teach foreign languages, while an even higher percentage of students (91.2%) reported using AI to learn foreign languages. Fourteen percent of lecturers, who have not used AI for teaching foreign languages, cited various reasons, including perceived lack of necessity (they did not feel a need to use AI), insufficient knowledge and practice opportunities (lack of skills or time to explore AI, and even negative perceptions of AI). For instance, one lecturer expressed concerns about AI enabling students to bypass effort: "AI does too much for the students" (ID 30).

Regarding students, the main reasons for not using AI in learning foreign languages include: AI's necessity for language learning, unfamiliarity with AI tools, and doubt in AI's effectiveness. Some believed AI could not adequately support language learning, as illustrated by a student's comment: "I feel AI does not provide information as reliable as traditional textbooks" (ID 111).

Table 6. Mean and SD for AI understanding, level of usage and competencies

Indicator	Lecturer		Student	
	Mean	SD	Mean	SD
Understanding	3.05	0.530	3.10	0.669
Frequency of use	3.11	0.898	3.25	0.799
Competency	3.13	0.701	3.37	0.730

Data in Table 6, presenting the mean and standard deviation values for the three criteria, partially supports the descriptive statistical findings mentioned earlier. Regarding lecturers, the highest mean value pertains to AI competency, followed by frequency of AI use, and finally, understanding of AI. The students exhibited a similar pattern, with the mean values following the same ranking as lecturers. The standard deviation values being below 1.0 for both groups indicate a convergence of responses, suggesting consistency in their evaluations.

To gain deeper insights into the values of the aforementioned variables, we conducted several tests, including correlation analysis, multivariate regression, and ANOVA tests, for two survey groups: students and lecturers.

Correlation Testing

To delve deeper into the relationships among the three variables about the effectiveness of using AI for language teaching (before, during lessons, and testing), we conducted correlation tests. Additionally, we included a composite variable representing overall AI competency for teaching foreign languages, encompassing understanding, competency, and frequency of AI use by lecturers. The results of these correlation tests are presented in Table 7, which provides detailed insights into the interrelationships between these variables.

Table 7. Correlation results for teachers

	Composite competency	Before lesson	During lesson	Testing	Overall effectiveness
Composite competency	1	.112	.099	.065	.006
Sig.		.107	.152	.350	.936
Before lesson		1	-.114	.042	-.061
Sig.			.100	.545	.377
During lesson			1	.625**	.721**
Sig.				<.001	<.001
Testing				1	.759**
Sig.					<.001
Overall effectiveness					1

Data in Table 7 reveals significant correlations among most variables ($p < 0.05$). However, the composite variable of AI competency (understanding, frequency, and proficiency of use) does not show a significant correlation with the other variables. Similarly, the use of AI before lessons also does not correlate significantly with other variables ($p > 0.05$) with the exception of testing ($p = 0.042$). Data in Table 7 shows a very strong correlation between using AI for assessment and overall effectiveness (correlation coefficient = 0.759), as per Hair et al. (2021), followed by a strong correlation between using AI during lessons and overall effectiveness ($r = 0.721$), and also a strong correlation between using AI during lessons and for assessments ($r = 0.625$).

Regression

Next, we used multivariate regression analysis (Enter method) to determine the predictive impact of independent variables (composite competency, use of AI before teaching, during teaching, and in assessments) on the dependent variable (overall effectiveness). Before running the model, we conducted checks for the baseline conditions. All dependent variables interacted with independent variables, and the interaction coefficients between dependent variables were mostly below 0.7, except for the correlation between the effectiveness of AI use in assessments and overall effectiveness. The data from normalized residual frequency charts (Histogram) and normalized residuals (Normal P-P Plot) confirmed that the requirements for running multivariate regression were met. Additionally, the model results showed no multi-collinearity (VIF values were less than 2.0) (Hair, 2021). In summary, the variables met the requirements for conducting linear regression analysis.

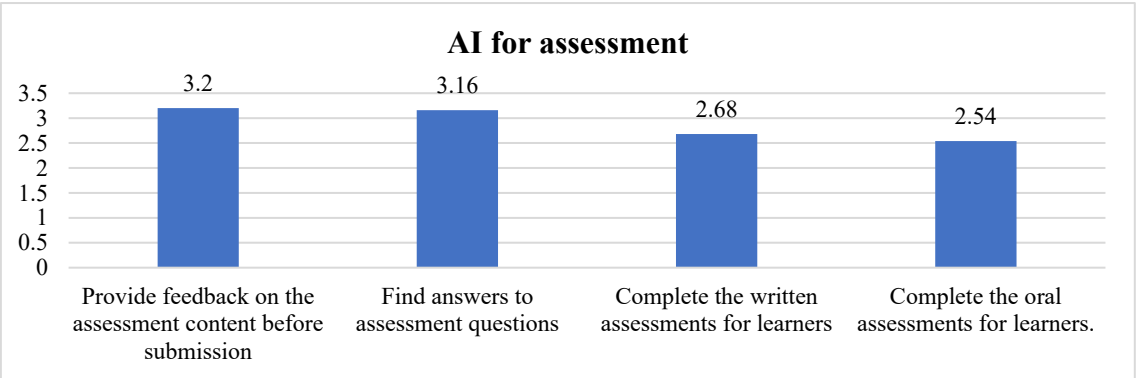
Table 8. Predictive impact of independent variables on dependent variable

	Beta	t	Sig	Tolerance	VIF
Constant		2.889	.004	.975	1.026
1. Composite competency	-.064	-1.611	.109	.951	1.052
2. Before lesson	-.030	-.735	.463	.584	1.713
3. During lesson	.404	7.808	<.001	.596	1.678
4. Test	.512	10.006	<.001	.975	1.026
R^2: 0.682; F (4,204) = 109.13, p < 0.001.					

Data in Table 8 shows that only two independent variables (AI use during teaching and in assessments) have a statistically significant impact on the dependent variable ($p < 0.05$). The effectiveness is most influenced by AI use in assessments (regression coefficient ß3 = 0.512), followed by AI use during teaching (regression coefficient ß2 = 0.404). Interestingly, Composite competency (understanding, competency, level of AI usage) and AI use before teaching (lesson preparation) do not have predictive significance for the overall effectiveness of using AI in foreign language teaching. The regression analysis results accurately reflect the correlation between the variables (see Table 7).

Effectiveness of AI Usage in Foreign Language Learning

Before conducting inferential analysis on questions about the effectiveness of using AI in foreign language learning, we performed descriptive statistical analysis on the variables in this section. Unlike the questionnaire for lecturers, the questionnaire for students is divided into only two groups of items related to the effectiveness of AI use: during lessons and in assessments. This distinction arises because the use of AI before foreign language lessons heavily depends on lecturers teaching different subjects, such as language practice, translation, literature, etc. Consequently, students often cannot anticipate what content they should prepare for upcoming lessons. In other words, while lecturers can take the initiative in preparing lessons, students are generally unable to do so. Additionally, findings from previous studies indicate that Vietnamese students tend to be relatively passive in their studies overall, particularly in preparing for lessons. The descriptive statistics results are presented in Figure 2.



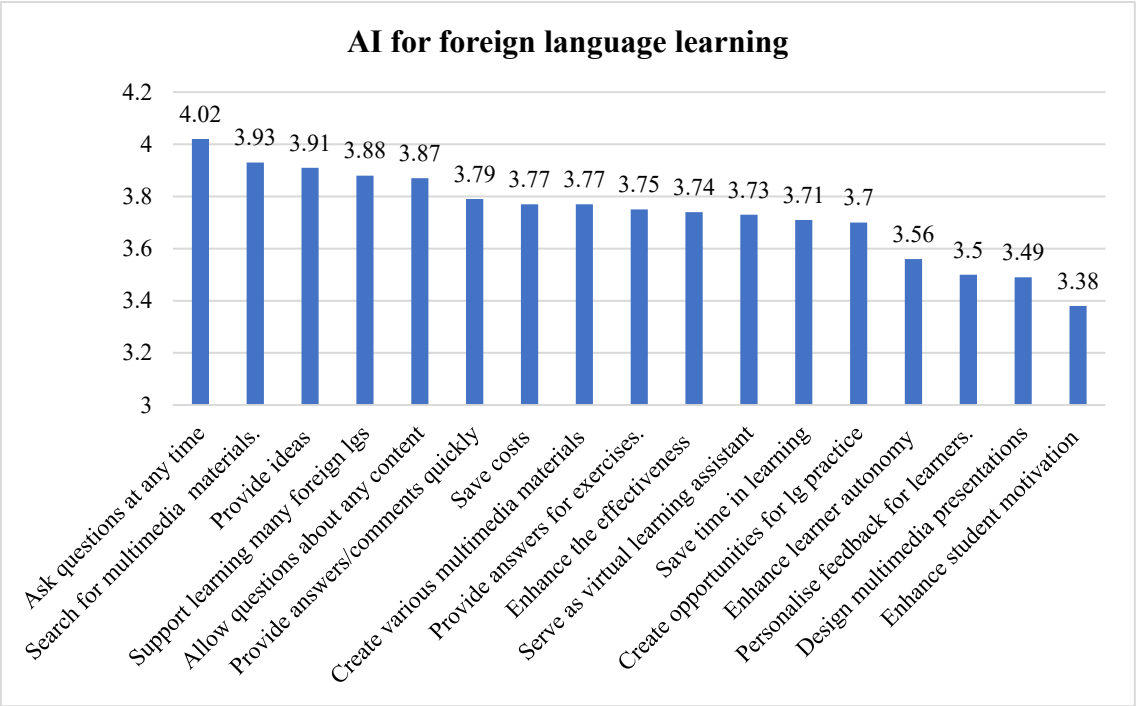


Figure 2. Using AI for language learning and assessment

Regarding foreign language learning, the participants believed that AI can provide substantial support for learners (reflected in average scores ranging from a minimum of 3.38/5.0 to a maximum of 4.02/5.0). AI is seen as particularly useful for enabling learners to ask questions at any time (M = 4.02), followed by assisting in finding multimedia resources (M = 3.93). Some notable "keywords" frequently appearing in high-scoring responses include "quickly," "anytime," and "multimedia." The average scores for AI support in assessments were lower but still relatively high (ranging from 2.45 to 3.16). AI provides less support for oral exams (M = 2.45) but is perceived as more capable of assisting with written tests (M = 2.68).

Exploratory factor analysis

To explore more deeply and categorize the 17 opinions of students regarding the effectiveness of using AI for foreign language learning, we conducted an Exploratory Factor Analysis (EFA). Specifically, in this section, we used the 17 variables related to the effectiveness of AI in foreign language learning for EFA testing. The results of this analysis are presented in the following section.

Before conducting the factor analysis, we assessed the suitability of the variables. The Kaiser-Meyer-Olkin (KMO) value for the variables was 0.937, exceeding the recommended threshold of 0.6. Bartlett's Test of Sphericity indicates statistical significance (Sig. < 0.05). After confirming the suitability of the observed variables, we proceeded to run a rotated component matrix to select high-quality observed variables (those with loading coefficients greater than 0.5). We used an iterative elimination technique for poor variables (those with a difference in values across two columns of less than 0.3). From the initial 17 observed variables in the first EFA run, the elimination of poor variables through successive runs resulted in a final set of 12 variables. The results of the factor analysis for these 12 variables showed that the KMO value, Bartlett's test, and eigenvalues met the required standards. The total variance explained was 67.78%, indicating that the EFA model was appropriate. The initial factor analysis results are presented in Table 9.

Table 9. Total variance explained

Components	Initial Eigenvalues	Extraction Sums of Squared Loadings	Rotation Sums of Squared Loadings

	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.978	58.148	58.148	6.978	58.148	58.148	6.333
2	1.156	9.633	67.780	1.156	9.633	67.780	5.628
3	.658	5.482	73.262				
4	.568	4.730	77.992				
5	.479	3.992	81.984				
6	.423	3.529	85.513				
7	.361	3.008	88.521				
8	.337	2.805	91.326				
9	.308	2.565	93.892				
10	.284	2.371	96.262				
11	.240	2.004	98.266				
12	.208	1.734	100.000				

Data in Table 9 shows that two factors have eigenvalues greater than 1.0, meeting the model requirements (Hair et al., 2021). These two factors summarize the information from the 12 observed variables included in the EFA most effectively. The total variance explained by these two factors is 67.78%, which exceeds the 50% threshold. In other words, the two extracted factors account for 67.78% of the variance in the data from the 12 observed variables representing the participants' responses. Before confirming the two factors mentioned above, we employed two additional tools: scree plot analysis and parallel analysis. The scree plot visually represents the grouping of factors. The scree plot data in this study shows a distinct "elbow" after the second factor group. This result aligns with the total variance explained by the factor groups presented in Table 9.

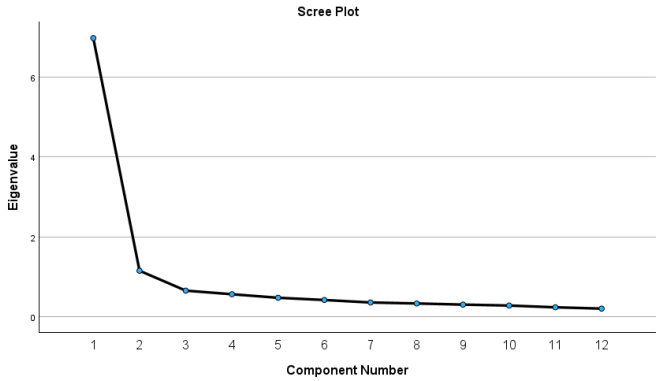


Figure 3. Scree Plot

The additional analysis results using Figure 3 Scree Plot were further verified through parallel analysis. This analysis confirmed that both factor groups meet the model's conditions. The parallel analysis results (12 variables × 697 responses) are presented in Table 10.

Table 10. Results of parallel analysis

Components	EFA eigenvalue values	Parallel analysis values	Decision
1	6.978	1.228	Accepted
2	1.156	1.147	Accepted

The results of Rotated Pattern Matrix are presented in Table 11.

Table 11. Rotated Pattern Matrix

Component groups	Items	Loadings	
		1	2
Group 1: Support instant language learning	Allow learners to ask questions at any time	.964	-.125
	Allow learners to ask questions about any content	.875	-.068
	Provide ideas for language exercises	.809	.052
	Provide answers/comments instantly	.778	.046
	Provide answers for language exercises	.756	.060
	Search for multimedia learning materials	.715	.116
	Save costs in learning a foreign language	.611	.257
Group 2: Enhance motivation and opportunities for language learning	Enhance student motivation for learning	-.185	.909
	Enhance learner autonomy in the learning process	.031	.817
	Create opportunities for language practice for learners	.086	.780
	Create multimedia learning materials	.114	.675
	Personalize feedback for learners	.196	.633

Data from the rotated component matrix results, as shown in Table 11, indicate that the participants' responses can be categorized into two main groups. The first group can be labeled as "support for instant foreign language practice," excluding responses related to cost. The second group primarily pertains to AI's ability to enhance students' autonomy and opportunities for foreign language learning. The results of the rotated factor analysis are also relatively consistent with the descriptive statistical analysis of the observed variables presented earlier (Figure 3).

Correlation testing

To conduct correlation and regression tests for variable groups related to competency and the effectiveness of AI usage in foreign language learning, we performed the necessary preparatory steps, including aggregating the values of smaller variables into the following five groups:

Group 1: Composite competency in using AI (understanding, competency, and usage level) (3 variables).

Group 2: Effectiveness of AI in supporting immediate foreign language practice (7 variables).

Group 3: Effectiveness of AI in enhancing autonomy and learning opportunities for foreign languages (5 variables).

Group 4: Effectiveness of AI for foreign language assessments (5 variables).

Group 5: Overall effectiveness of AI usage (2 variables).

Table 12. Correlation among variables on using AI for language learning

Variable	Composite competency	Instant support	Autonomy enhancement	Support for testing	Overall effectiveness
Composite competency	1	.161**	.164**	.123**	.164**
Sig.		<.001	<.001	.001	<.001
Instant support		1	.721**	.305**	.643**
Sig.			<.001	<.001	<.001
Autonomy enhancement			1	.307**	.648**
Sig.				<.001	<.001
Support for testing				1	.681**

Sig.		<.001
Overall effectiveness		1

Data in Table 12 indicates correlations among all variables in the model. Regarding the correlation between variable groups and the overall effectiveness of AI in foreign language learning, AI support for assessments shows the strongest correlation (r = 0.681). This is followed by AI's support in enhancing learner proactiveness (r = 0.648). Next is AI's support for immediate foreign language practice (e.g., providing answers, generating ideas, etc.), with r = 0.643. Finally, the learners' comprehensive competency in using AI (e.g., knowledge and skills in using AI) has the weakest correlation (r = 0.164). Regarding the correlations between variables, the strongest correlation is observed between AI's support for immediate foreign language practice and enhancing learner proactiveness (r = 0.721). The remaining correlations among variables are either low or moderate, with r-values ranging from 0.123 to 0.307.

Regression

Next, we conducted multivariate regression analysis (Enter method) to determine the predictive impact of four independent variables (comprehensive competency, AI support for immediate foreign language practice, AI support for enhancing proactiveness, and AI support in assessments) on the dependent variable (overall effectiveness). Before running the model, we conducted checks for basic conditions. All dependent variables were found to interact with the independent variables. The interaction coefficients among dependent variables were mostly below 0.7, except for the correlation between AI support for immediate foreign language practice and enhancing learner proactiveness (Table 13). The data from standardized residual frequency charts (Histogram) and standardized residuals (Normal P-P Plot) confirmed that the requirements for multivariate regression were met. Additionally, the model results indicated no multi-collinearity, with VIF values below 2.0 (Hair et al., 2021). In summary, the variables satisfied the requirements for linear regression analysis.

Table 13. Predictive impact of independent variables on dependent variable

	Beta	**t**	**Sig**	**Tolerance**	**VIF**
Constant		.085	.932	.965	1.037
Composite competency	.009	.442	.658	.471	2.125
Instant support for LL	.278	9.332	<.001	.470	2.129
Autonomy enhancement	.291	9.750	<.001	.887	1.128
Support for test	.505	23.302	<.001		
R^2: 0.713; F (4,689) = 426,9, p < 0.001.					

Data in Table 13 reveals that three independent variables (AI support for immediate foreign language practice, enhancing learner proactiveness, and assessments) have statistically significant effects on the dependent variable (overall effectiveness) with p<0.05. AI support in assessments has the strongest impact on overall effectiveness (β3=0.505). This finding closely aligns with the regression analysis results for teachers. Next is the impact of AI support in enhancing learner autonomy (β2=0.291). This is followed by AI support for instant foreign language practice (β2=0.278). Interestingly, the variable composite competency (understanding, competency, and usage level) does not significantly predict the overall effectiveness of using AI for foreign language learning. This observation is consistent with the regression analysis results for teachers. Furthermore, the regression analysis results accurately reflect the correlations between variables, as shown in Table 12.

4.2. Discussion

Our study investigates the use of AI for language teaching and learning. Specifically, we explored and compared perspectives from language teachers and students from eight universities in Vietnam on their use of AI (tools, experiences, competency, usefulness, etc.). The results of this study will now be compared to the findings of previous studies.

The study results reveal that there is an agreement between the lecturer and student participants in their perception of the usefulness of AI tools for language teaching, learning and assessment in general. These results match those observed in earlier studies (e.g., Mananay, 2024; Trang, 2023). More specifically, AI tools can help teachers in language materials selection, lesson preparation and personalized teaching strategies to suit their students' needs.

Regarding students, instant feedback, individualized learning guidance and a supportive learning environment are some of the benefits of language acquisition (Al-Raimi et al., 2024; Li et al., 2024). In the same vein, lecturer and student participants of this study concurred on the usefulness as well as concerns of AI-based assessments, which result in more instant feedback, reduced marking workload and more in-depth analytics of student's performance as observed in previous studies (Mananay, 2024; Zaim et al., 2024).

In terms of the AI tool's effectiveness for different language skills and components, there are some discrepancies in the perspectives of the lecturer and student participants. Although both groups viewed that AI tools can be effective in the promotion of all language skills and components, there were still differences in their opinions on the levels of effectiveness. A possible explanation for these results may be the imbalance between the number of participants (about 200 lecturers versus 700 students) and their experience of using AI for teaching and learning purposes (86,6% vs 91.2% have used AI tools, respectively). Nonetheless, the findings observed in this study mirror those of the previous studies that have examined the effect of AI on language skills and components (Albadarin et al., 2024; Levis, 2020; Pandarova et al., 2019; Wijekumar et al., 2017).

Regarding AI competency and usage for language teaching and learning, this study's results indicate that both groups had a somewhat similar (high) level of understanding and frequency of use, although the student participants had a slightly higher mean score than the lecturers. They tended to possess 'core' competencies in and be familiar with using AI tools for language teaching and learning, as suggested in past research (Kohnke et al., 2023; Pokrivcakova, 2019; Vuorikari et al., 2024). The participants indicated a high level of AI understanding, usage frequencies and competency, which differ from Trang's (2024) study that revealed a limited experience and understanding of AI tools for language teaching and learning purposes. However, these results need to be interpreted with caution because more in-depth questions on their competencies in using one or a few specific AI-based tools are needed to investigate the issue deeper based on a certain digital competence framework.

This study is one of the few exploring the specific impacts of AI on language teaching, learning, and assessment. The current study results (for both groups) show that the AI-powered tools have the highest impact on language assessment. These results are consistent with those of other studies and suggest that advancements in AI-supported automatic marking enhance both the accuracy level of and administration workloads for high-stakes tests (Read, 2022; Mananay, 2024; Zaim et al., 2024). Nonetheless, these results must be interpreted with caution because in Vietnam's language teaching and learning context, online tests (formative and end-of-term) are yet popular due to fear of cheating and ethical issues (Patty, 2024; Zaim et al., 2024).

Interestingly, in this study, teachers' and students' AI competency is found to have no impact on the overall effectiveness of language teaching ($p>0.05$). Studies on the correlation between teachers' and students' AI competency and its impact on their language teaching and learning have been limited in numbers, however, it is suggested in a study by Ng et al. (2023) that teachers may face many technological challenges in lesson delivery, design and assessment. Likewise, there have been few studies on the impacts of student AI competencies on learning; however, it is forecasted that students' key competencies are crucial for understanding and application of AI-powered tools for learning in the digitalized era (Sanusi et al., 2022). The lack of AI competencies on the overall effectiveness of language teaching and learning contradicts the descriptive results of this study itself, which indicates that both groups have relatively high levels of understanding and usage frequencies in using AI tools. Hence, the issue should be further explored.

The current study results also reveal that, for teachers, the use of AI tools before lesson delivery does not have an impact on the overall effectiveness of language teaching. This result does not support the previous research, which indicates that AI-powered tools help teachers select learning materials to suit students' diverse proficiency levels and enhance lesson efficiency (Baker et al., 2019; Mananay, 2024). In the same line of argument, Skrabut (2023) noted that GenAI (e.g., ChatGPT) can help teachers a lot in developing a lesson plan, designing language practice items in different media (text, voice, video) to make their lessons more interesting and effective. Hence, the absence of AI's before-lesson-delivery impacts on the overall lesson effectiveness should be further investigated.

It was shown in the correlation and regression results of this study that AI tools are supportive for language learning through the provision of instant feedback and the enhancement of learning autonomy. These results are in agreement with the literature on the benefits of AI on education in general and language learning in particular (Al-Raimi et al., 2024; Taskiran & Yazic, 2021; Trang, 2023; Nguyen, 2024; Wang et al., 2022), which suggests that AI tools are useful in creating a friendly, low-pressure environment for students to learn languages effectively.

Especially since the birth of GenAI, many tools have been developed to help language learners develop all language skills and knowledge, thanks to the utilization of LLM (Law, 2024).

5. CONCLUSIONS

Our study investigates the perceived usefulness of AI in language teaching and learning in Vietnam. The study utilizes descriptive, correlational, and regression analytical techniques to explore the perspectives of about 200 teachers and 700 students. First of all, we found that the teacher and student participants had somewhat similar perceptions on the usefulness of AI for teaching and learning of language macro skills (e.g. reading, listening) and components (grammar, vocabulary) as well as other subjects (e.g., translation, literature). Secondly, AI-for-test had the strongest impacts on both language teaching and learning thanks to AI-powered tools' abilities to provide more accurate and instant feedback on learners' language proficiency. Interestingly, both teacher and student's AI competencies did not have impacts on their perceived usage and perceived usefulness of AI tools for language teaching and learning.

This study contributes to the knowledge of using AI for language teaching and learning. In fact, it extends a growing body of research in understanding the effectiveness of AI-powered tools. Our study confirms previous findings and contributes evidence to explore and enhance the use of AI for language testing, teacher's lesson delivery, student's motivation, and AI competencies even though this study did not confirm the correlation and impact of both teacher and student's AI competencies on overall effectiveness of language teaching and learning. It is suggested in the literature that AI literacy plays a vital role in helping teachers and students in boosting their recognition, understanding, usage and evaluation of AI tools (Almatrafi et al., 2024; Vuorikari et al., 2024).

Our findings are subject to three limitations. First, the study results were based on the teachers' and learners' reported perceptions about the use of AI for language teaching and learning. To understand their actual use in actual performance, future studies should include actual data on understanding and use of specific tools for lesson preparation, delivery, and self-learning, as well as evidence of their higher performance (for teachers) and progress (for students). Second, the study was conducted in an online language learning environment; hence, the findings may not transfer to the teaching and learning of other disciplines. Third, the research did not include any qualitative data for in-depth use of AI tools for language teaching and learning. Hence, future research should consider interviewing or observing teachers and students' use of one or more AI tools in their lesson delivery and learning in order to confirm quantitative data.

Conflict of Interest: No potential conflict of interest relevant to this article was reported.

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