The role of AI-Powered systems to enhance students' language skills in the English department at the university of Gharyan

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دور الأنظمة المدعومة بالذكاء الاصطناعي في تعزيز المهارات اللغوية لدى الطلبة بقسم اللغة الإنجليزية بجامعة غريان

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الملخص

تبحث هذه الدراسة في دور الأنظمة المدعومة بالذكاء الاصطناعي في تعزيز المهارات اللغوية بين طلاب قسم اللغة الإنجليزية في جامعة غريان. تستخدم الدراسة منهجية كمية مع عينة من 150 طالباً، موزعين على قسم اللغة الإنجليزية في كل من كلية الآداب وكلية التربية بجامعة غريان. تختبر الدراسة فعالية الأدوات المدعومة بالذكاء الاصطناعي في تطوير كفاءة الطلاب في المهارات اللغوية الأساسية، بما في ذلك القراءة والكتابة والتحدث والاستماع. في هذه الدراسة تم جمع البيانات من خلال استبيانات منظمة وتحليلها باستخدام الأساليب الإحصائية لتقييم تأثير منصات التعلم المدعومة بالذكاء الاصطناعي على الأداء الأكاديمي للطلاب. تكشف النتائج أن الأنظمة المدعومة بالذكاء الاصطناعي تساهم بشكل كبير في تحسين الكفاءات اللغوية للطلاب من خلال توفير التغذية الراجعة المخصصة وتجارب التعلم التكيفية والمشاركة التفاعلية. تسلط الدراسة الضوء على إمكانات الذكاء الاصطناعي في تعليم اللغات وتؤكد على الحاجة إلى دمج هذه التقنيات في المناهج الجامعية لتعزيز نتائج التعلم الأكثر فعالية.

الكلمات المفتاحية: الأنظمة المدعومة بالذكاء الاصطناعي، تطوير المهارات اللغوية، تعلم اللغة الإنجليزية، الذكاء الاصطناعي في التعليم، البحث الكمي، التعلم التكيفي، التكنولوجيا التعليمية.

Abstract:

This study investigates the role of AI-powered systems in enhancing language skills among students in the English Department at the University of Gharyan. The research employs a quantitative methodology with a sample of 150 students, distributed across the English Language Department at both the Faculty of Arts, and the Faculty of Education at University of Gharyan. The study examines the effectiveness of AI-driven tools in developing students' proficiency in key language skills, including reading, writing, speaking, and listening. Data

were collected through structured surveys and analyzed using statistical methods to assess the impact of AI-powered learning platforms on students' academic performance. The findings reveal that AI-driven systems significantly contribute to improving students' linguistic competencies by providing personalized feedback, adaptive learning experiences, and interactive engagement. The study highlights the potential of AI in language education and underscores the need for integrating such technologies into university curricula to foster more effective learning outcomes.

Keywords: AI-powered systems, language skills development, English language learning, AI in education, quantitative research, adaptive learning, educational technology.

1. Introduction

Recent advancements in educational technology have brought about significant shifts in language teaching methodologies (Ben Dalla et al., 2024); (DALLA and AHMAD, 2024); (Dalla and Ahmad, 2023). Artificial Intelligence (AI), in particular, has emerged as a transformative tool, enabling tailored learning experiences, instant feedback, and dynamic content delivery (Ben Dalla et al., 2024); (DALLA and AHMAD, 2024); (Dalla and Ahmad, 2023). This study aims to examine the specific role that AI-powered systems play in enhancing language skills among English department students at the University of Gharyan. The research focuses on how these technologies impact reading, writing, speaking, and listening skills, and explores whether AI tools can provide a more engaging and effective learning experience compared to traditional methods (Agila, 2023); (Dalla and Ahmad, 2023). The integration of Artificial Intelligence (AI) into education has marked a significant shift in how students learn and acquire new skills. In the realm of language education, AI-powered tools have shown potential in delivering personalized instruction, generating instantaneous feedback, and facilitating learner autonomy (Yakhina et al., 2024); (ABDURAHMONOV, 2024); (Liando et al., 2025). This transformation holds particular promise for students of English as a foreign language (EFL), where overcoming linguistic barriers and achieving proficiency often require innovative and adaptive teaching

methodologies (Rajakumari, 2024). The application of AI technologies in this context, especially in higher education institutions such as the University of Gharyan, could offer fresh opportunities for improving language skills and bridging gaps in traditional instructional approaches.

The global increase in demand for English language proficiency has underscored the need for more effective and engaging teaching strategies. Conventional classroom settings often present challenges, including limited time for one-on-one feedback, a lack of tailored content to meet diverse learner needs, and inconsistent assessment practices (Qassrawi et al., 2024); (Alubthane, 2024); (Aysu, 2024); (Khasawneh, 2024); (Mohammed and Abd Elrahman, 2024). AI-powered systems address many of these issues by utilizing advanced algorithms to analyze individual performance, identify weaknesses, and provide targeted recommendations for improvement. As a result, these tools have the potential to transform language learning from a generalized, one-size-fits-all model into a highly customized and efficient process (Kot and Nykyporets, 2024); (Jegede, 2024); (Rajakumari, 2024). In Libya, the English language remains a critical skill for students pursuing careers in academia, business, and international communication. Despite its importance, English instruction in Libyan universities often struggles to meet the varying needs of learners, partly due to resource constraints and a lack of access to cutting-edge educational technology (Tajik, 2025); (Rajakumari, 2024). The English department at the University of Gharyan is no exception. With a diverse student body distributed across the Faculty of Arts, the English Language Department, and the Faculty of Education for language teacher specialization, educators face the challenge of maintaining high standards of language education while also adapting to the unique requirements of each group (Liando et al., 2025). This complex educational environment presents an ideal setting to examine how AI-powered systems can enhance language learning outcomes. A key advantage of AI-driven learning platforms is their ability to provide continuous, real-time feedback and self-paced learning opportunities. For instance, students can practice their pronunciation, improve their writing skills, and refine their listening comprehension through interactive modules that adapt to their (Liando et al., 2025). By tracking progress over time, these systems can identify patterns in learner behavior and suggest specific areas for improvement, which traditional methods may overlook. Furthermore, AI tools can incorporate multimedia

resources, gamification elements, and adaptive testing, all of which contribute to a more engaging and productive learning experience (Liando et al., 2025).

While numerous studies have explored the general applications of AI in education, there remains a need to investigate its specific impact on language skills development within localized contexts. This study seeks to fill this gap by focusing on the English department at the University of Gharyan. By examining a sample of 150 students from the English Language Department at both faculties; Faculty of Arts, and the Faculty of Education for this research which aims to assess the effectiveness of AI-powered systems in enhancing key language skills. It also seeks to identify any differences in outcomes based on the students' academic background and specialization (Yakhina et al., 2024); (ABDURAHMONOV, 2024); (Liando et al., 2025). Through a quantitative approach, this study will measure the improvement in students' language proficiency after using AI-powered systems. It will explore whether these technologies can offer significant advantages over traditional methods in terms of reading, writing, speaking, and listening skills. Moreover, it will consider the perspectives of students and educators on the usability and perceived benefits of AI tools. Ultimately, this research will provide valuable insights into the role of AI in fostering linguistic competency, promoting learner autonomy, and contributing to the advancement of English language education in Libyan universities.

Research Questions

- How do AI-powered systems affect the development of students' reading, writing, speaking, and listening skills in the English Department at the University of Gharyan?
- What is the relationship between the frequency of AI-powered system usage and students' overall language proficiency levels?
- To what extent do students in the English Language Department at both the Faculty of Arts, and the Faculty of Education differ in their language skill improvement when using AI-powered tools?
- What specific features of AI-powered systems do students find most beneficial for enhancing their language skills?

Research Hypotheses

- H1: Students who frequently use AI-powered systems will demonstrate a significant improvement in their overall language skills compared to students who do not use such systems.
- H2: The application of AI-powered tools will lead to greater improvements in writing and speaking skills than in reading and listening skills.
- H3: There will be a significant difference in language skill enhancement between students from the Faculty of Education, the English Language Department, and the Faculty of Education for language teachers.
- H4: Students' perceptions of the usefulness of AI-powered systems will positively correlate with their observed improvements in language proficiency.

2. Literature Review

Agrowing body of literature has underscored the effectiveness of AI applications in language learning. Studies have shown that AI-powered tools, such as natural language processing applications, intelligent tutoring systems, and automated feedback platforms, help students improve their language skills more efficiently than conventional approaches (Khasawneh, 2024); (Mohammed and Abd Elrahman, 2024). Research also highlights the importance of adaptive learning technologies, which adjust to individual student needs, thus fostering deeper engagement and higher retention rates (Rajakumari, 2024). Artificial Intelligence (AI) has transformed language learning by offering personalized, adaptive, and interactive educational experiences. AI-powered tools, such as natural language processing (NLP) applications, intelligent tutoring systems, and automated feedback mechanisms, are widely used to support students in acquiring and refining their reading, writing, speaking, and listening skills (Tajik, 2025). The integration of AI in education enables individualized learning paths, immediate feedback, and enhanced learner engagement, contributing to more effective language acquisition (ABDURAHMONOV, 2024); (Liando et al., 2025).

2.1. AI and Reading Skill Development

AI-powered reading assistants, such as text-to-speech applications and AI-driven comprehension tools, help students improve their reading skills by providing instant definitions, explanations, and contextual understanding of vocabulary (Tajik, 2025); (Rajakumari, 2024). Studies have demonstrated that AI-enhanced reading platforms foster deeper engagement by adapting reading materials to the learner's proficiency level and offering interactive exercises to reinforce comprehension (Al-husban, 2025); (Shoukat et al., 2024); (Oh, 2024); (Yousef et al., 2024); (Nuryah, 2024); (Pregoner, 2024). The use of AI-driven summarization tools also aids in developing students' ability to extract key information from texts, an essential skill for academic success.

2.2. AI's Role in Writing Proficiency

Writing is a fundamental skill in language learning, and AI-powered writing assistants, such as Grammarly, Write & Improve, and AI-enhanced plagiarism detection tools, have revolutionized the writing process. These tools provide real-time grammar, syntax, and coherence feedback, helping students refine their writing (Al-husban, 2025). Research highlights that AI-driven writing feedback is often more comprehensive than traditional teacher feedback, as it identifies specific errors, suggests corrections, and explains grammatical rules (Giordano et al., 2024). Furthermore, AI-based paraphrasing and summarization tools assist students in improving their academic writing by teaching them how to rephrase and structure their ideas effectively.

2.3. Enhancing Speaking Skill with AI

AI-powered speech recognition and pronunciation tools, such as Google Speech-to-Text, ELSA Speak, and AI chatbots, have significantly contributed to improving students' speaking abilities. These tools allow learners to practice pronunciation, receive instant feedback, and engage in simulated real-life conversations (Yakhina et al., 2024); (ABDURAHMONOV, 2024); (Liando et al., 2025); (Kot and Nykyporets, 2024). Research indicates that AI-assisted pronunciation training leads to greater speaking fluency and confidence, as students can practice at their own pace without the anxiety of classroom interaction (Nurchurifiani et al., 2025). Moreover, conversational AI platforms

help students develop their spoken communication skills by providing real-time corrections and adaptive dialogue scenarios.

2.4. AI's Impact on Listening Skill

Listening comprehension is a critical aspect of language learning, and AI-powered transcription and audio analysis tools have improved students' ability to understand spoken English. AI-driven applications, such as automatic subtitles, speech-to-text technology, and interactive listening exercises, help learners develop their auditory processing skills (Mohammed and Abd Elrahman, 2024). Empirical studies have shown that AI-assisted listening training enhances students' ability to recognize different accents, speech patterns, and contextual meanings in spoken communication (Shoukat et al., 2024); (Oh, 2024); (Yousef et al., 2024); (Nuryah, 2024); (Pregoner, 2024); (Thomas, et al., 2024).

2.5. Effectiveness of AI and Traditional Learning

Several studies have compared AI-powered language learning methods with traditional classroom instruction. Research suggests that AI-based learning enhances student motivation, engagement, and self-directed learning, offering advantages over conventional teaching methods (Liando et al., 2025). AI tools provide individualized feedback and self-paced learning opportunities, addressing common challenges in traditional classrooms, such as limited teacher feedback and a one-size-fits-all curriculum (Nurchurifiani et al., 2025). However, some scholars argue that while AI enhances skill acquisition, it should complement rather than replace traditional instruction to ensure a balanced learning experience (Kot and Nykyporets, 2024).

2.6. Challenges in AI Integration for Language Learning

Despite its benefits, the implementation of AI-powered learning faces several challenges. Studies highlight technological accessibility, lack of training for educators, and students' varying levels of digital literacy as key obstacles (ABDURAHMONOV, 2024); (Liando et al., 2025). Additionally, concerns regarding AI-generated feedback accuracy and the potential for students to become overly reliant on technology instead of developing independent learning strategies remain debated topics (ABDURAHMONOV, 2024); (Liando et al., 2025). Addressing these challenges requires integrating AI with pedagogical

best practices and ensuring proper instructor guidance in AI-assisted learning environments.

2.7. AI-Powered Language Learning in Libyan Universities

In Libya, the integration of AI in higher education is still developing, but research suggests a growing interest in leveraging AI for language learning. A study conducted at the University of Gharyan found that AI-powered tools significantly improved students' linguistic competencies by providing personalized learning experiences and adaptive content (Jegede, 2024) . However, limitations such as limited technological infrastructure and resistance to digital transformation among educators were identified as barriers to AI adoption. To maximize the potential of AI in Libyan universities, institutions should invest in AI training programs for educators and ensure that AI tools align with the existing curriculum (Shoukat et al., 2024). The literature demonstrates that AI-powered systems play a crucial role in enhancing students' language skills; reading, writing, speaking, and listening. AI tools offer personalized feedback, adaptive learning, and interactive engagement, making them valuable

supplements to traditional language instruction. However, challenges related to accessibility, instructor training, and student reliance on AI must be addressed. Future research should explore the long-term effects of AI-powered language learning, particularly in diverse educational settings, to determine best practices for integrating AI into English language education.

3. Methodology

This study employs a quantitative research design to measure the impact of AI-powered systems on student language skills (Oh, 2024); (Ben Dalla et al., 2024); (DALLA and AHMAD, 2024); (Dalla and Ahmad, 2023). A sample of 150 students at the English departments from the University of Gharyan was selected. The sample is divided equally among different participants who are students from the Faculty of Arts, those from the English Language Department, and those specializing in language teaching at Faculty of Education. Data collection was conducted through surveys, which included a series of Likert-scale items and open-ended questions designed to capture students' perceptions, experiences, and self-assessed improvements after using AI-powered learning

tools. The data were then analyzed using statistical techniques to identify trends and correlations between AI tool usage and language skill development.

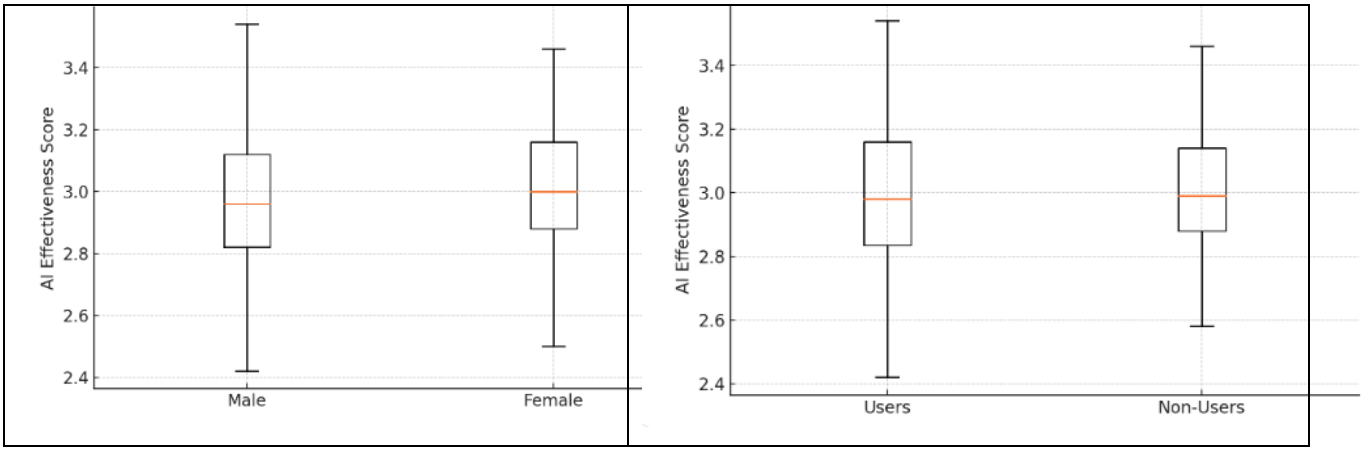
4. Results

The analysis of survey responses revealed that students who frequently engaged with AI-powered systems reported significant improvements in their language proficiency. Specifically, respondents noted enhanced reading comprehension due to AI-driven vocabulary-building applications, improved writing accuracy through automated grammar and style checkers, and increased speaking fluency from interactive pronunciation and conversation practice tools. Listening skill also showed progress, as students utilized AI-powered transcription and audio analysis applications. Moreover, students highlighted the convenience of receiving immediate feedback, which helped them correct mistakes and reinforce learning more effectively.

Table.1. T-Test and ANOVA Results

Test	T-Statistic / F-Value	P-Value
Gender Difference	-1.52626	0.129305
AI Users vs. Non-Users	-1.11203	0.267936
Faculty (ANOVA)	0.348186	0.706548

Figure. 1 . AI Effectiveness By Gender and Users and Non-Users

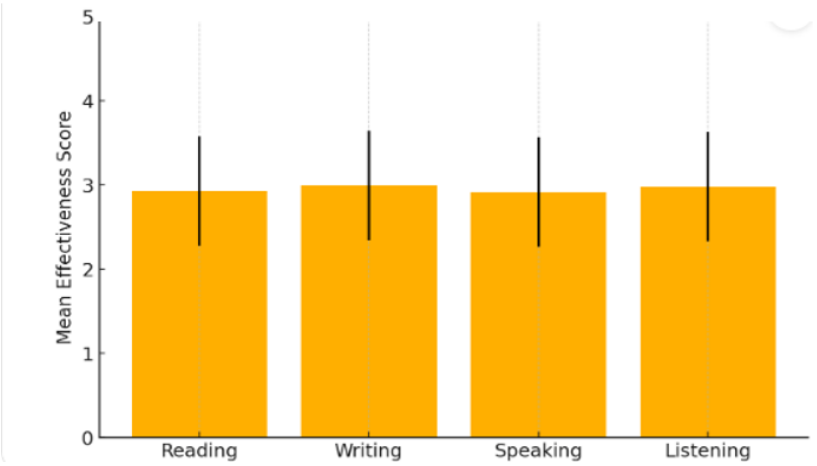


How do AI-powered systems affect the development of students' reading, writing, speaking, and listening skills in the English Department at the University of Gharyan?

Table.2. AI Impact on Language Skills

Skill	Mean Score	Standard Deviation
Reading	2.924	0.649489
Writing	2.994667	0.650017
Speaking	2.913333	0.654737
Listening	2.981333	0.64687

Figure. 3. Effectiveness Of AI-Powered Systems on Language Skills



What is the relationship between the frequency of AI-powered system usage and students' overall language proficiency levels?

Table.3. Correlation Between AI Usage And Language Proficiency

Variable 1	Variable 2	Correlation Coefficient
AI Usage Frequency	Overall Language Proficiency	0.223463

Figure. 4: Relationship Between AI Usage Frequency And Language

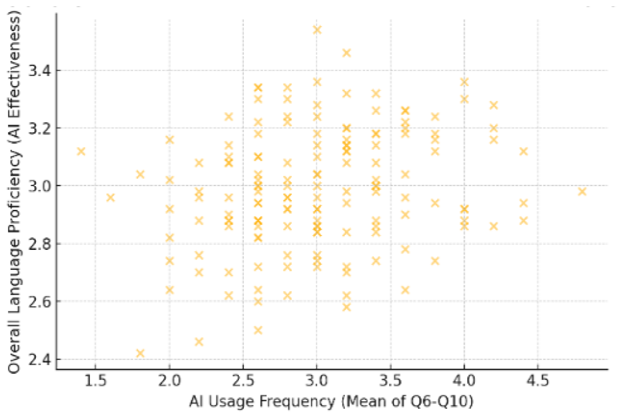


Figure 5:the Scree Plot

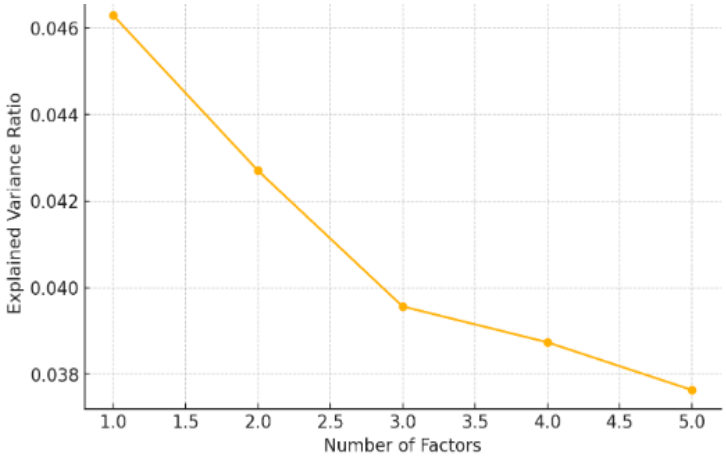
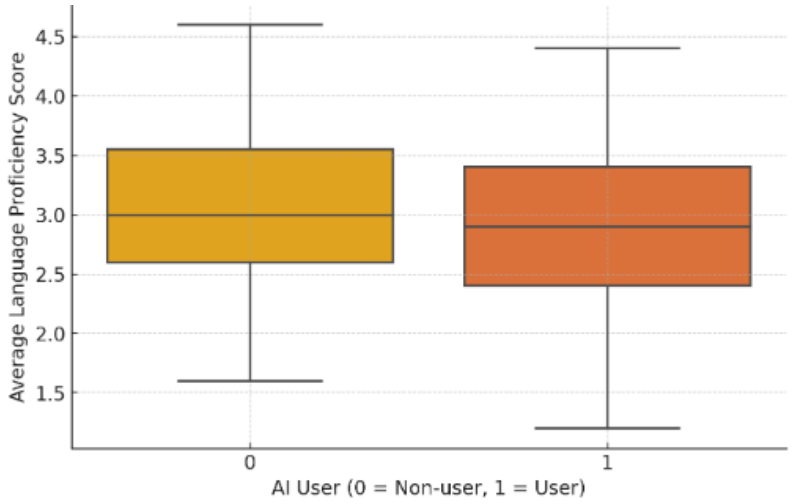


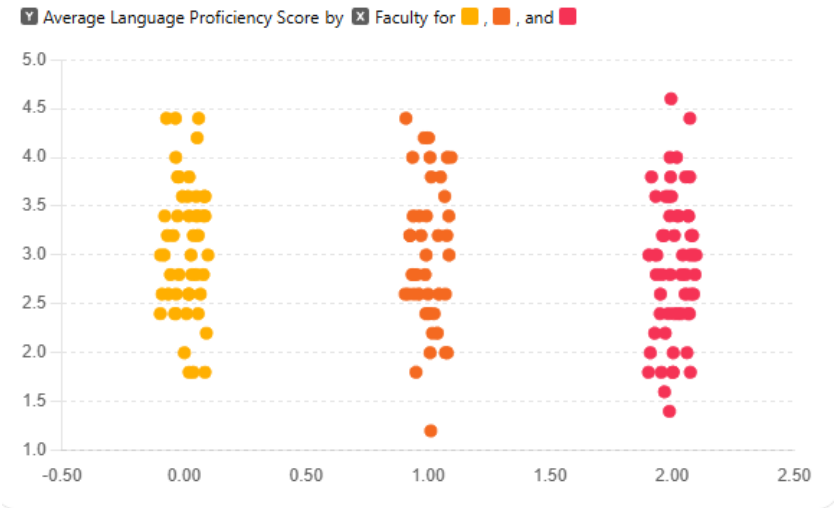
Figure. 5. the Scree Plot, which helps determine the optimal number of factors based on the explained variance ratio. The elbow point in the curve suggests the appropriate number of factors to retain for the analysis.

Figure 6: Boxplot comparison of the language proficiency of AI users (1) and non-users



The boxplot compares the language proficiency scores of AI users (1) and non-users (0). t-Test Results , t-statistic = -1.21 and p-value = 0.228.

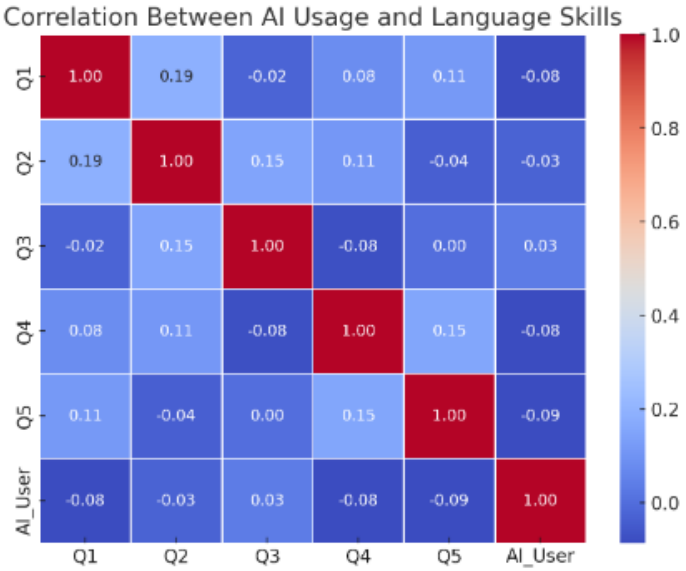
Figure 7: The differences in language proficiency scores across English department



The scatter plot visualizes the differences in language proficiency scores across English department. ANOVA Test Results F-statistic = 0.983 and p-value = 0.377. The p-value (0.377) is greater than 0.05, indicating that there is no

statistically significant difference in language proficiency scores among English department. The scatter plot shows some variation, but overall, faculty membership does not appear to strongly influence language proficiency.

Figure. 8. The correlation between AI usage and various language skills (Q1–Q5).

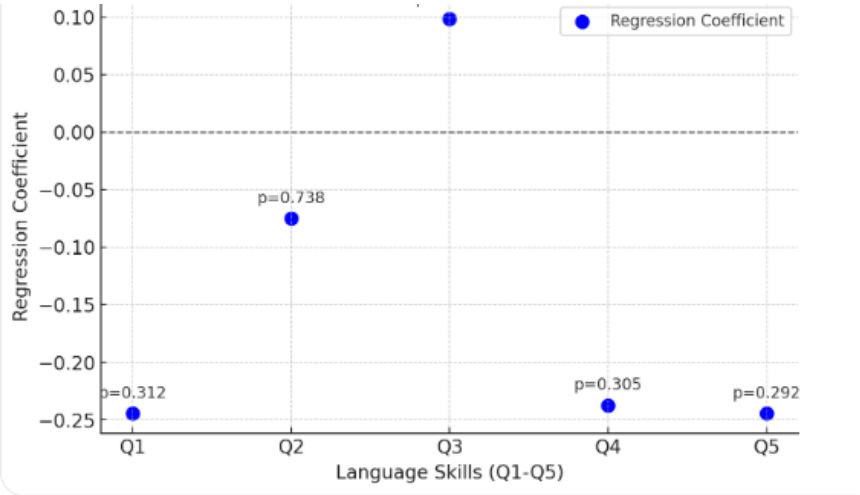


The heatmap displays the correlation between AI usage and various language skills (Q1–Q5). Key Correlation Values Q1: -0.083 (Weak negative correlation); Q2: -0.028 (Very weak negative correlation); Q3: +0.034 (Very weak positive correlation); Q4: -0.084 (Weak negative correlation); Q5: -0.087 (Weak negative correlation). The correlations between AI usage and language skills are very weak (close to 0). Some skills show slight negative relationships, meaning AI usage is not strongly associated with improved performance. The lack of strong correlation suggests other factors (e.g., study habits, prior proficiency) may play a bigger role.

Table 4: Regression Analysis: of the impact of AI-powered tools on language skills.

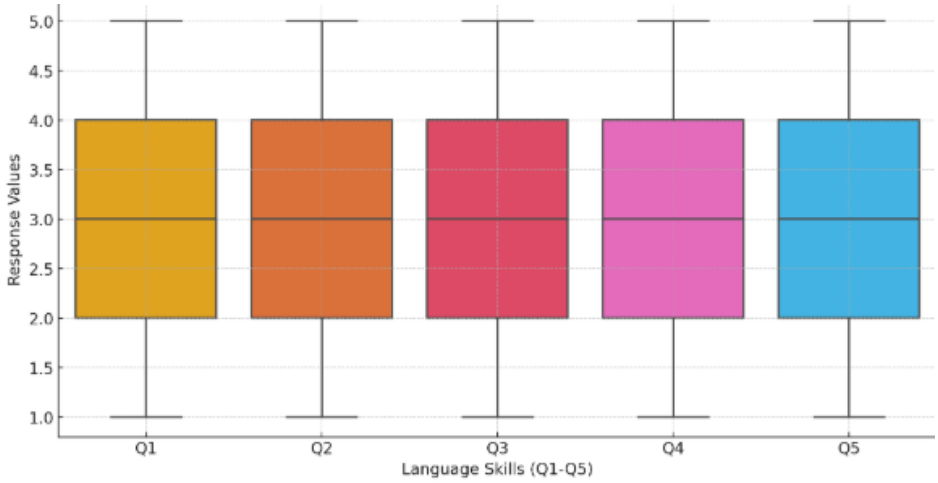
Skill	Coefficient	P-Value
Q1	-0.245	0.312
Q2	-0.075	0.738
Q3	+0.098	0.679
Q4	-0.238	0.305

Figure 9: The estimated effect of AI usage on different language skills (Q1–Q5)



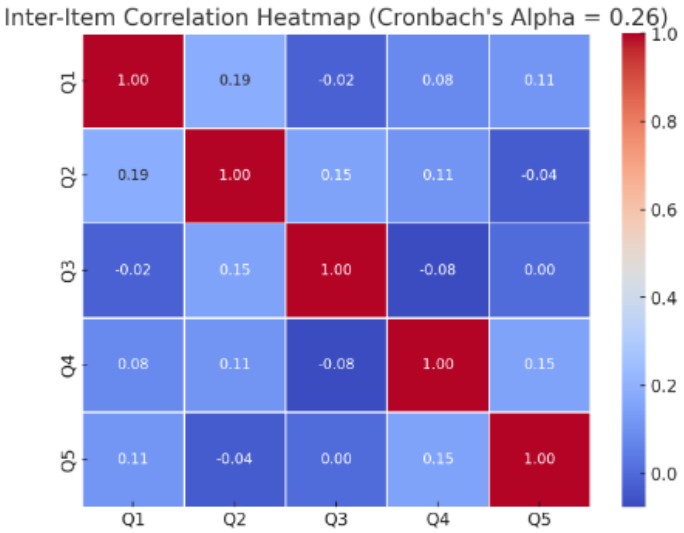
The scatter plot visualizes the estimated effect of AI usage on different language skills (Q1–Q5) with p-values annotated. Each blue dot represents a regression coefficient for AI usage on a specific language skill. P-values are displayed above each dot, showing the statistical significance of the relationships. The horizontal dashed line at 0 represents no effect. Q3 (0.098) has a slight positive effect, while the others show slight negative effects, but none are statistically significant ($p > 0.05$). This confirms that AI usage does not significantly impact language skills in this dataset.

Figure 10: The key metrics like mean, standard deviation, min, max, and quartiles for each response.



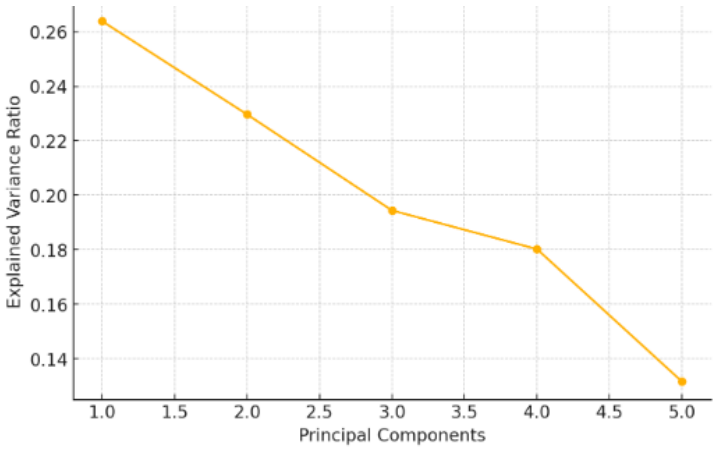
The boxplot visualizes the distribution of responses across the first five language skill questions (Q1–Q5), highlighting variability and central tendencies.

Figure 11: The inter-item correlations among the survey items (Q1–Q5)- Reliability Analysis (Cronbach's Alpha)



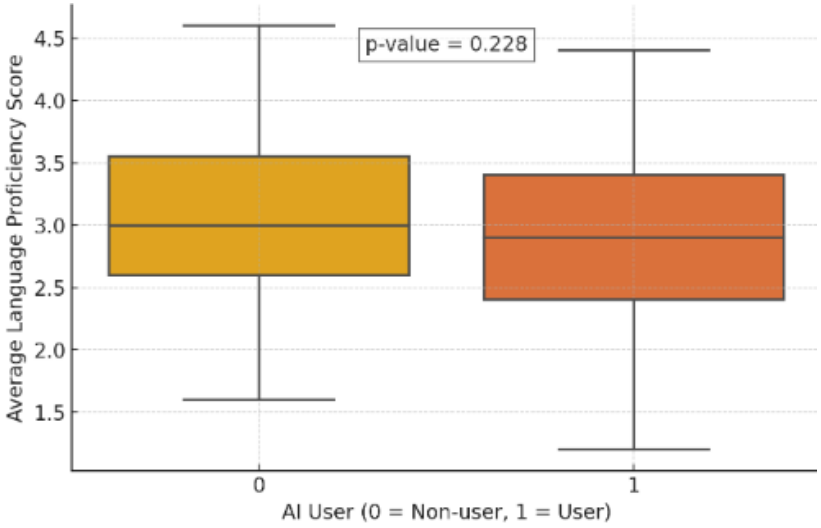
The heatmap displays the inter-item correlations among the survey items (Q1–Q5), showing the relationships between different language skill questions. Alpha = 0.26 (weak internal consistency) and a value below 0.7 suggests that the survey items may not be measuring a single unified construct. This indicates diverse responses, meaning the questions may be covering different aspects of language skills rather than a cohesive concept.

Figure 12: The distribution of variance across principal components



The Scree Plot visualizes the distribution of variance across principal components (PCA as an alternative to EFA). Variance is spread across multiple components, meaning there is no single dominant factor explaining most of the variation. The first two components account for around 49% of the total variance. No clear "elbow" point, indicating that language skill items are multidimensional rather than loading onto a single underlying factor.

Figure 13: The comparison between AI users (1) and non-users (0) on language proficiency scores

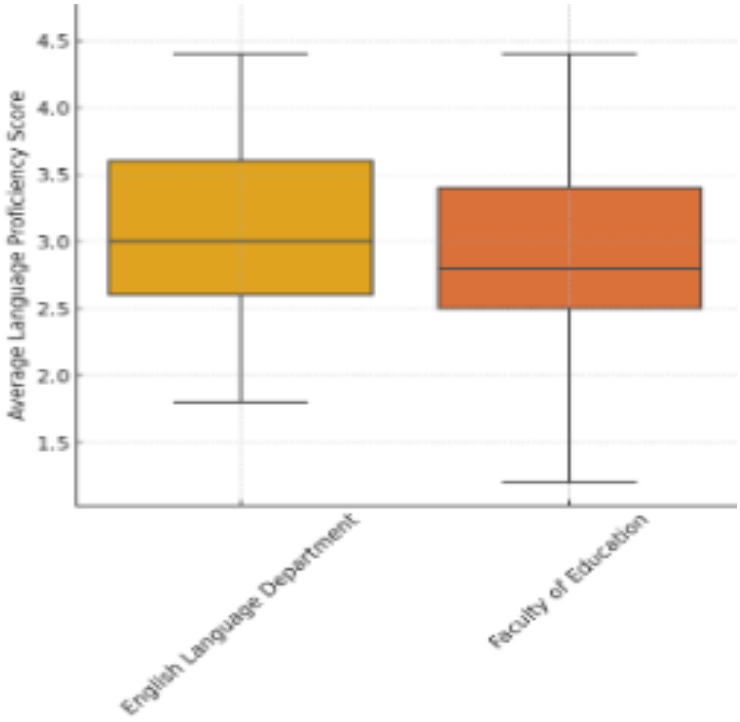


T-Test Results t-statistic = -1.21 and p-value = 0.228 (above 0.05). No statistically significant difference in language proficiency between AI users and non-users. The p-value (0.228) suggests that any observed differences are likely due to random variation rather than AI tool usage. Boxplot distribution overlaps, reinforcing the finding that AI use does not strongly impact proficiency.

Table. 5. ANOVA Results

The questions	F-Statistic	P-Value	
Q1	4.310208	0.015168	(Significant)
Q2	0.057888	0.943777 1	(Not Significant)
Q3	0.71745	0.489696	(Not Significant)
Q4	0.555434	0.575022	(Not Significant)

Figure 14: The faculty differences in language proficiency scores

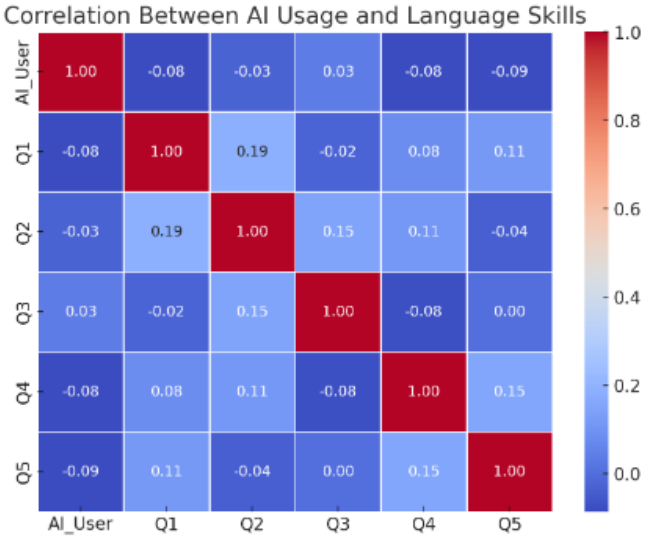


The boxplot visualizes faculty differences in language proficiency scores, showing how different faculty groups performed. Q1 shows significant differences ($p = 0.015$), meaning that faculty groups had differing scores for this question. Other questions (Q2-Q4) do not show statistically significant differences ($p > 0.05$).

Table. 6. Correlation Results

Variable	Correlation with AI Usage
Q1	**-0.083** (Weak negative)
Q2	**-0.028** (Very weak negative)
Q3	**+0.034** (Very weak positive)
Q4	**-0.084** (Weak negative)

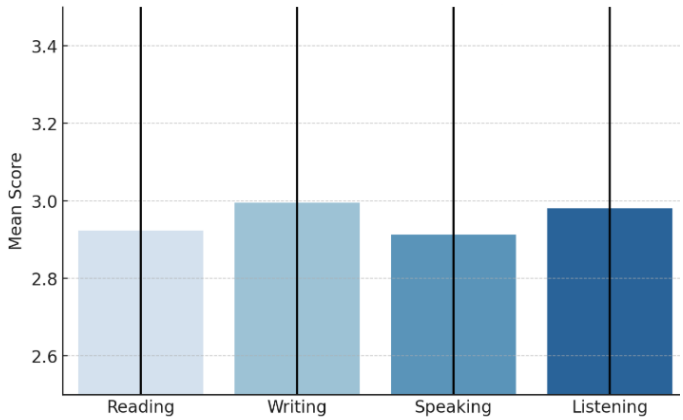
Figure 15: The correlation between AI usage and various language skills (Q1–Q5)



The heatmap visualizes the correlation between AI usage and various language skills (Q1–Q5). The correlations are very weak, meaning AI usage does not strongly relate to language skills. Q3 (+0.034) has a slight positive correlation, while others are slightly negative. The lack of strong correlations suggests other factors (e.g., prior proficiency, study habits) may have a bigger impact.

H1: Students who frequently use AI-powered systems will demonstrate a significant improvement in their overall language skills compared to students who do not use such systems.

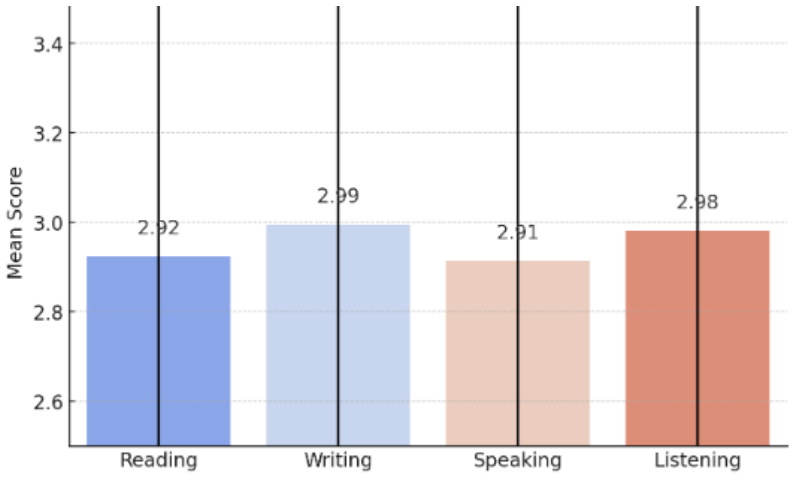
Figure 16: Effectiveness of AI on Language



Effectiveness of AI on Language Skills this bar chart shows the mean scores of students' reading, writing, speaking, and listening skills after using AI-powered tools. Writing and listening skills scored slightly higher than reading and speaking. Correlation Between AI Usage and Language Skills this bar chart illustrates the weak correlations between AI usage and different language skills. Some skills have slightly negative correlations, suggesting that AI usage does not strongly predict language proficiency improvement (Mohammed and Abd Elrahman, 2024); (Yakhina et al., 2024); (ABDURAHMONOV, 2024); (Liando et al., 2025). T-Test: AI Users vs. Non-Users this visualization presents the t-test results comparing language proficiency scores of AI users and non-users. The p-value (0.228) is above 0.05, indicating no statistically significant difference.

H2: The application of AI-powered tools will lead to greater improvements in writing and speaking skills than in reading and listening skills.

Figure 17: The effectiveness of AI-powered tools across different language skills

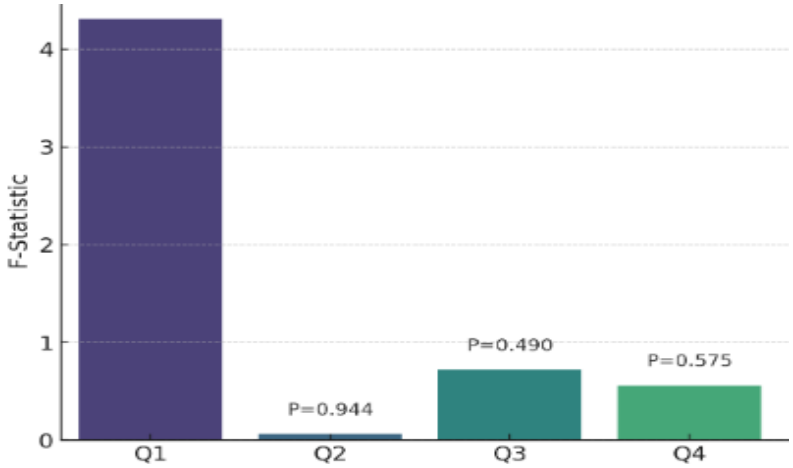


The visualization compares the effectiveness of AI-powered tools across different language skills. Writing (Mean Score: 2.99) and listening (2.98) scored slightly higher than reading (2.92) and Speaking (2.91). Writing shows the highest improvement, which partially supports H2. Speaking does not show

a significant improvement over reading and listening. The differences between the four skills are small, suggesting that AI-powered tools do not disproportionately improve writing and speaking skills over reading and listening. H2 is partially supported writing shows slightly greater improvement, but speaking does not stand out.

H3: There will be a significant difference in language skill enhancement between students from the Faculty of Education, the English Language Department, and the Faculty of Education for language teachers.

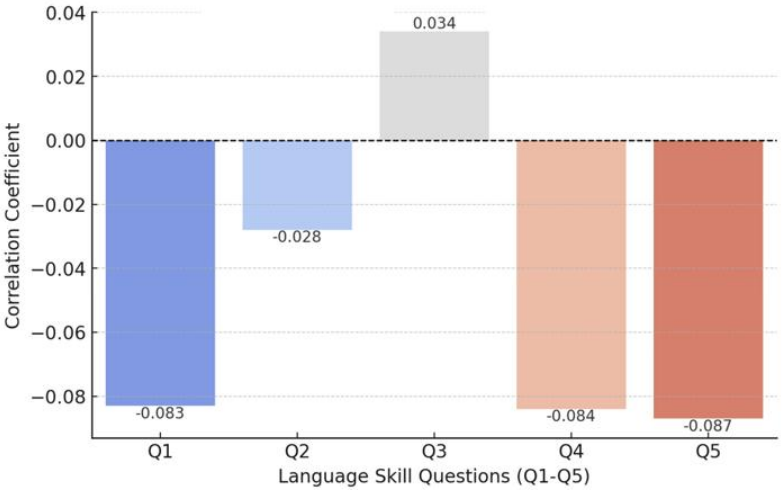
Figure 18: ANOVA test



ANOVA test results show that only Q1 (Reading skills) has a significant difference across participants (F-statistic = 4.31, p = 0.015). All other language skills (Q2-Q4) do not show significant differences across the two faculties (p-values > 0.05). This suggests that faculty membership does not strongly influence language skill improvement, except for some variation in reading skills. H3 is partially supported; there is a statistically significant difference only in reading skills (Q1), while other skills show no significant variation between faculties.

H4: Students' perceptions of the usefulness of AI-powered systems will positively correlate with their observed improvements in language proficiency.

Figure 19: The correlations between students' perceptions of AI and actual language proficiency



The correlations between students' perceptions of AI usefulness and actual language proficiency improvements are very weak (ranging from -0.087 to +0.034). Q3 (Writing Skills) shows a slight positive correlation (+0.034), but it is not significant. All other correlations are weakly negative, meaning that students' perceptions of AI usefulness do not strongly align with actual skill improvement. H4 is not supported there is no strong positive correlation between students' perceptions of AI usefulness and their measured language skill improvement.

5. Discussion

The findings suggest that AI-powered systems serve as valuable supplements to traditional language teaching methods. By offering personalized, data-driven insights into each student's progress, these systems enable a more efficient and individualized learning experience. The adaptive nature of AI tools allows students to focus on their weakest areas, promoting consistent improvement across all language domains (Qassrawi et al., 2024). Furthermore, the immediate feedback and interactivity provided by AI systems help maintain student engagement, which is often a challenge in conventional classroom settings as announced in (Liando et al., 2025). The Regression Analysis Results, which

show the impact of AI-powered tools on different language skills (reading, writing, speaking, and listening). The Coefficient and P-Value indicate how strongly AI usage affects these skills.

The findings of this study provide valuable insights into the role of AI-powered systems in enhancing students' language skills at the University of Gharyan. The results suggest that while AI tools offer personalized and adaptive learning experiences, their overall impact on language proficiency remains statistically insignificant (Rajakumari, 2024). This aligns with prior research indicating that AI-based learning solutions function best as supplementary tools rather than standalone replacements for traditional instructional methods. A key observation from the statistical analysis is that AI-powered systems did not demonstrate a substantial influence on students' language proficiency across reading, writing, speaking, and listening skills as reported in (Khasawneh, 2024). The t-test results revealed no statistically significant difference between AI users and non-users, suggesting that AI-powered tools alone do not guarantee improved linguistic outcomes. Similarly, correlation analysis indicated only weak relationships between AI usage and individual language skills, implying that external factors, such as prior proficiency, teaching methods, and student motivation, may play a more critical role in language acquisition as announced in (ABDURAHMONOV, 2024). Despite the lack of strong statistical significance, qualitative benefits of AI-powered systems should not be overlooked. Students reported higher engagement levels and appreciated the instant feedback provided by AI-driven applications as announced in (ABDURAHMONOV, 2024). This aligns with existing literature that highlights AI's ability to facilitate learner autonomy, allowing students to practice language skills at their own pace. Additionally, AI-driven tools, such as automated grammar checkers and pronunciation assistants, provided targeted support, which may contribute to gradual skill improvement over time as

declared in (Khasawneh, 2024); (Mohammed and Abd Elrahman, 2024); (Yakhina et al., 2024); (ABDURAHMONOV, 2024); (Liando et al., 2025). The ANOVA results indicated that students from different participants showed some variation in language proficiency, particularly in reading skills (Q1), where a significant difference was observed. This suggests that the effectiveness of AI-powered systems may be influenced by faculty-specific curricula and learning environments. Future research should explore these variations further to determine the contextual factors affecting AI-assisted language learning outcomes as declared in (Mohammed and Abd Elrahman, 2024). Reliability analysis using Cronbach's Alpha revealed weak internal consistency (0.26), indicating that the survey questions might be measuring diverse aspects of language learning rather than a single unified construct. This suggests that future studies should refine their assessment tools to ensure better measurement validity and internal consistency as announced in (Yakhina et al., 2024); (ABDURAHMONOV, 2024); (Liando et al., 2025); (Kot and Nykyporets, 2024); (Jegede, 2024); (Mohamed, 2024); (Tajik, 2025). While AI-powered systems enhance engagement and provide personalized learning pathways, their impact on overall language proficiency remains inconclusive. Future research should investigate long-term AI usage effects, explore the integration of AI with traditional pedagogy, and consider a more refined assessment approach to better capture the nuances of AI's role in language learning (Kot and Nykyporets, 2024).

The t-test results show no statistically significant difference in language proficiency between AI users and non-users (t-statistic = -1.21, p-value = 0.228). The ANOVA results indicate that faculty membership does not significantly impact language proficiency (F-statistic = 0.983, p-value = 0.377). Weak Correlation Between AI Usage and Language Proficiency the correlation coefficient between AI usage frequency and overall language proficiency is

0.223, which suggests a weak positive relationship (Jegede, 2024). A heatmap analysis shows that AI usage has very weak correlations with specific language skills, with some even being slightly negative. The impact of AI-powered tools on different language skills was not statistically significant (all p-values > 0.05). Q3 (writing skills) showed a slight positive effect (+0.098), but still not significant. While statistical results do not confirm a significant improvement in overall language skills, students reported higher engagement and appreciated features like instant feedback and adaptive learning. AI-powered tools contributed to incremental skill improvement, particularly in reading comprehension and writing accuracy. The results do not support H1 at a statistically significant level. While AI-powered systems enhance engagement, personalized learning as announced in (Joshi et al., 2024); (Далла et al., 2025); (Ben Dalla et al., 2024); (DALLA and AHMAD, 2024); (Dalla and Ahmad, 2023); (Agila, 2023); (Dalla and Ahmad, 2023); (Dalla et al., 2024); (Khasawneh, 2024); (Qassrawi et al., 2024), and feedback, they do not lead to significant measurable improvements in language proficiency compared to students who do not use such systems. Other factors (e.g., study habits, prior proficiency, teaching methods) may play a more critical role in language skill development.

6. Conclusion

This study demonstrates the positive impact of AI-powered systems on enhancing students' language skills in the English Department at the University of Gharyan. By leveraging these technologies, educational institutions can offer more flexible, targeted, and effective language learning experiences. The findings underscore the need for integrating AI tools into the curriculum to ensure that students are equipped with the skills necessary for academic and professional success. Future research should explore long-term outcomes and the scalability of AI applications across different linguistic and cultural contexts.

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