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Learning Outcomes of Saudi Students using Artificial Intelligence (AI) for Foreign Language (FL) Proficiency Development

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Abstract

This study explores the impact of Artificial Intelligence (AI)-powered tools on the development of foreign language (FL) proficiency among students in Saudi Arabia. It examines the effectiveness of these technologies in enhancing vocabulary acquisition, speech fluency, and listening comprehension. Employing a mixed-methods design that integrates both quantitative and qualitative analyses, the research provides a comprehensive evaluation of AI-assisted language learning practices. Findings indicate that AI tools significantly improve vocabulary retention and listening skills, however, challenges persist in fostering speaking proficiency and cultural interpretation. The results highlight that while AI can effectively support language learning, optimal outcomes require the integration of technological tools with traditional pedagogical methods to bridge cultural gaps and enhance oral communication skills. The study concludes by emphasizing the potential of AI to accommodate diverse linguistic inputs, while underscoring the enduring importance of active human collaboration in effective language education.

Keywords: Artificial Intelligence (AI)-Powered Tools, Foreign Language (FL) Proficiency, Language Learning Tools, Classroom Technology Integration

1. Introduction

Integration of Artificial Intelligence in language education research has gained major scientific attention as researchers seek to maximize educational effectiveness of innovative tools. AI applications including machine learning, natural language processing and speech recognition technology offers personalized adaptive learning experiences that supposedly advance student language abilities (Yamijala et al., 2025). Several countries have been seriously exploring the potential of technological tools to transform their learning environments.

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Many AI-powered language learning applications including Duolingo and Babbel present individualized instruction through their advanced tracking systems that adapt lessons specifically for student requirements (Bernard et al., 2019).Despite these achievements, challenges for universal effectiveness of AI tools for foreign language acquisition persist. Literature analysis of AI applications in language education focuses primarily on Western educational models while leaving major gaps in comprehending how such solutions can address unique learning barriers facing non-Western education systems specifically the Saudi Arabian institutions (Ibrahim & Barnawi, 2022). Teaching of English as second language in Saudi relies on traditional language teaching methods but continuing proficiency gaps indicate that these teaching strategies have insufficiently closed this language divide (Abahussain, 2016). Successes of AI applications elsewhere can be the motivation for considering the potential of AI in solving faced in English language teaching in Saudi albeit with its unique challenges.

In Foreign language (FL) classroom, integration of Artificial Intelligence (AI) makes it possible to offer personalized learning that traditional pedagogical approaches fall short of achieving. Through Artificial Intelligence (AI) tools, students can receive personalized learning content that matches specific learning preferences and receives real-time feedback and specified practice together with interactive exercises matched to their proficiency level (Yang et al., 2010). Individual attention remains essential in language acquisition because different student abilities and learning speeds challenge traditional classroom structures (Schmidt, 2012). AI's ability to improve language learning results across all situations remains an oversimplified view. The potential advantages of AI for language ability development in vocabulary and grammar extend only when considered alongside the training history of users with technology and their cultural roots, and the AI system quality (Zhai & Wibowo, 2023).

In the Saudi context, AI based tools like speech recognition and immediate feedback can enhance learning among learners of English language (Dhouib et al., 2022), yet serious challenges remain in implementing AI technology in the country. Previous research demonstrates that AI tools experience difficulties in providing context-sensitive as well as culturally proper feedback particularly when operating in countries with distinctive cultural personalities like Saudi Arabia. Language learning tools require cultural relevance because students perform better within materials that relate to their experience and local cultural standards (Tomlinson, 2012). Research conducted by Cope et. al., (2021), together with Sajja et al., (2024) shows that generic AI tools supply standardized content which fare insensitive to individual needs and cultural experiences leading to unwarranted outcomes.

Impact of AI on linguistic education depends on three essential components identified by Hassan & Fook (2014). The first requirement is superior tool quality, and secondly solid educational methods

together with efficient implementation within the academic framework are necessary. Research has shown that AI devices receive criticism because they depend on basic memorization instead of humanlike interaction which builds pronunciation and speaking ability. AI systems prioritize individual learning at the cost of limiting students from participating in essential social language acquisition practices which are needed to achieve fluency in real-life linguistic environments (Kingston et. Al., cited in Taguchi, 2008).

Implementation of AI in language teaching faces crucial challenges in Saudi Arabia because issues with high-quality tool access alongside widespread digital gaps reduce its effectiveness (Aldossary, 2023). Variations in students' economic status prevent them from acquiring modern technology tools equally creating learning opportunity gaps between groups. The quick advance of AI tool integration in education system commonly happens faster than educators get proper training to execute AI-based teaching techniques. Teacher preparation at current levels creates substandard results because AI tools reach their full potential only when instructors possess an in-depth understanding of their mechanism and implementation (Chng et al., 2023).

The research examines AI tools' impact on foreign language (FL) education in Saudi Arabia by studying quantitative measuring systems and their effects on classroom education. To properly evaluate language learning tools, the analysis must extend beyond measurement of skill development into an assessment of their relation to Saudi educational elements combined with their capability to solve local student needs. The research investigation generates new insights about AI in foreign language (FL) education by observing its function within the Saudi Arabian educational system which maintains a non-Western cultural setting.

2. The Present Study

Adoption of Artificial Intelligence (AI) in educational practices worldwide shows increasing trend, however, there have been insufficient studies to understand its potential impact on the educational setup of Saudi Arabia especially on English language proficiency. Saudi Arabia has permitted Artificial Intelligence (AI) to rapidly penetrate all sectors including educational fields. The current body of research fails to demonstrate how AI-driven language learning tools genuinely affect Saudi students' achieved levels of proficiency in school and university settings. Despite showing promise for shaping personalized learning experiences, AI tools remain uncertain in their ability to address the proficiency challenges observed within Saudi foreign language education setup. This research studied how AI tool utilization impacts the results of Saudi students' foreign language (FL) proficiency. The study is based on the following questions:

a) To what extent does the use of AI-powered tools impact the foreign language (FL) proficiency of Saudi students?

b) How do AI tools contribute to the improvement of specific language skills (e.g., vocabulary, grammar, speaking, and listening) among Saudi foreign language (FL) learners?

c) What are the challenges and limitations faced by Saudi students in using AI tools for foreign language (FL) learning, and how do these factors affect their learning outcomes?

The present research adds important value to language education theory by examining how Artificial Intelligence (AI) tools benefit non-Western language education institutions. Recent expansion of AI education research includes few longitudinal studies despite most analyses concentrating on Western student populations followed by a notable research gap regarding Saudi Arabian educational contexts. Research in the Saudi context demonstrates the adaptive potential of AI tools for managing key local educational challenges with their language and cultural distinctions. The research findings deliver valuable knowledge to education professionals alongside policymakers and developers who work on Artificial Intelligence (AI)-powered language platforms. The study provides knowledge about factors affecting Saudi schools and universities regarding their capacity to use AI tools while adding to discussions about digital access and educational technology equity. This research aims to establish guidelines for AI language learning tools and their educational frameworks adoption in Saudi Arabian institutions.

3. Literature review

Widespread adoption of Artificial Intelligence (AI) across language learning spaces has become a debatable topic in recent years because of emerging inquiries about its benefits and drawbacks. Language learning apps together with speech recognition systems and intelligent tutoring systems operate through Artificial Intelligence (AI) to create personalized learning settings while providing instant feedback and targeting each student's specific educational requirements. The ability of AI to improve foreign language (FL) skills has extensive support yet researchers fail to conduct detailed studies on its practical effectiveness in Saudi Arabian education system.

AI systems offer flexible learning spaces which allow students to practice individually through personalized activities that adapt to their own learning rate. The systems monitor student advancement by recognizing learning weaknesses to deliver customized lessons and feedback after assessing each student's response. The AI tools on Duolingo among other platforms build personalized lessons utilizing algorithms that match student ability to reach notable gains in vocabulary memorization and language competence. AI tools deliver important feedback immediately to learners during language acquisition which enables them to correct mistakes instantaneously before Piering problematic linguistic patterns according to a study by Betaubun et al. (2023).

AI systems display the capability to deliver education through a non-standard student-centered methodology. Compared to traditional classrooms which force teachers to manage many students at once, AI tools function exclusively toward specific learning requirements (Pedro et al., 2019). AI tools adapt their teaching approach to recognize learner specific strengths and weaknesses with the weaker academic areas receiving proper focus without creating student confusion. AI tools create extensive immersive educational experiences for learners when teaching vocabulary and grammar along with pronunciation fundamentals that lay the foundation of foreign language (FL) acquisition (Song et al., 2023).

Studies have revealed that AI brings many benefits yet researchers caution that AI tools demonstrate limited ability to conduct natural interactions with humans. Farr (2024), believes AI provides solid support for rote learning and vocabulary expansion yet shows constrained ability to teach communicative competency which demands sophisticated understandings of social context. The natural social dimension of language disrupts AI-powered simulations because traditional classrooms remain the optimal environment where students learn language skills through authentic interactions between peers and teachers according to George (2023). Several researchers confirm that AI tools demonstrate excellent performance in managed repetitive tasks yet lack effectiveness when it comes to fostering genuine language practice.

The use of Artificial Intelligence (AI) for language education remains immature throughout Saudi Arabia since procedural research on its effects within such academic settings is meagre. Using the Vision 2030 initiative, Saudi Arabia endorsed major improvements in educational technology adoption with special focus on integrating advanced technologies throughout all sectors including schools. The current research on AI tools in Saudi Arabian language education remains scare with the need for additional quantitative studies that demonstrate the effectiveness of these tools for Saudi learners' specific challenges.

Foreign language (FL) acquisition in Saudi Arabia faces substantial hurdles due to psychological barriers created by the vast differences between Arabic as the native language and English the preferred target language. Linguistic distance between Arabic and English affects the ability of students to acquire English proficiency because it creates major obstacles in pronunciation, alongside syntax and vocabulary acquisition. Language learning tools powered by AI and speech recognition capabilities provide immediate feedback during practice to help students develop their pronunciation skills and listening abilities (Dennis, 2024). AI tool success in Saudi Arabia also depends on the cultural relevance. According to Strielkowski et al. (2024), it is essential to develop AI-driven educational tools that both fit the cultural norms of local areas and effectively match student needs. Cultural sensitivity is essential because absent features lead to a breakdown in

student engagement and a mismatch with Saudi language learning requirements.

The wider influence of AI in language education remains a research topic but most studies focus on Western case studies. Liu & Wang (2024) published results showing AI tools achieving successful English proficiency development for Chinese EFL students. According to Rad et al. (2024), AI tools demonstrate effective results for fostering vocabulary growth and grammar skills during learner-oriented personalized practice. These research studies overlook the special difficulties that non-Western educational structures consisting of Saudi Arabia's educational system face.

Almuhanna (2024), investigated Saudi classroom technology integration showing that AI tools can enhance language acquisition but instructional limitations emerge from inadequate teaching instructions and insufficient guidelines for AI curriculum integration. Research from Almansour (2019) showed that technology tools like Duolingo received acceptance from language learners in Saudi Arabia yet produced inconsistent outcomes since users gained vocabulary knowledge without noticeable progress in speaking or writing skills. The success of AI tools depends on several critical elements including student participative commitment, suitable tool selection and appropriate pipeline integration within current educational programs.

Aljabri & Bhutoria (2020) demonstrated in an analysis that Saudi Arabia's digital differences reduce the reach of AI tools especially when considering students with lower household earnings. When students are not provided equal benefits from AI-driven learning tools, the potential for these technologies to boost language proficiency suffers. AI tools present strong opportunities to change foreign language (FL) instruction, but their capabilities and equity distribution within Saudi learning environments need continued research.

The research application of information technology shows potential for reshaping language education through non-traditional learning spaces yet its implementation within Saudi educational institutions remains understudied. Problematic research exists about how Saudi students use AI tools and their views of AI with concrete findings regarding their learning performance. This research investigates how the usage of AI tools affects educational results in foreign language (FL) performance across Saudi territory. This analysis evaluates both educational frameworks and socio-cultural conditions which impact AI tool performance in non-Western settings for foreign language education.

4. Methodology

The study was conducted between January 2024 and June 2024 on the students enrolled in English language courses at three Saudi Arabian universities. A total of 300 students from both the genders participated in the study. Participants were divided into two groups of 150 students each

between 18 and 25 years of age. The experimental group, which used AI-powered language learning tools, while the control group continued with traditional learning methods. The experimental group used the learning applications, Duolingo and Babbel which provided customized feedback and dynamic learning progressions according to student achievement. Pre- and post-tests were used to assess students' core language competencies, including vocabulary knowledge, grammar skills, and both spoken and listening proficiency. Survey techniques alongside interview methods were combined with pre-interactive and post-interactive assessments to obtain qualitative insights from students regarding their AI tool experiences. The study used mixed-methods research design consisting of quantitative pre- and post-tests coupled with interviews with selected participants.

The primary instruments for data collection were pre- and post-tests designed to measure proficiency of the participants in key areas of foreign language learning. Students completed basic proficiency tests at the beginning of the study to establish their initial competency and received post-test assessment six months later to evaluate skill level modifications.

The experimental group utilized AI tools daily for thirty minutes during five days per week. Students utilized these learning tools through their mobile applications and their computer desktop interfaces based on personal preferences.

The qualitative assessment of student feedback and tool experiences involved semi-structed interviews with selected participants. The participants answered questions about tool accessibility and user motivation while reporting on their interest levels and perceiving language skill growth. Analysis became easier with the Likert-type format used in the survey.

Data collection began by giving the participants the pre-test for measuring their initial proficiency levels. The assessment contained four sections evaluating vocabulary knowledge alongside grammar knowledge and listening comprehension along with speaking proficiency. During six months the test group implemented AI tools as their standard learning practice. The control group engaged in traditional language learning methods involving classroom teaching alongside textbooks and peer discussions throughout the experiment.

A post-investigation proficiency assessment was administered to all students after six months of instruction. The post-test evaluation structure followed exactly the same pattern as the initial assessment to prevent testing measurement inconsistency. Semi-structured interviews were conducted and surveys were distributed after the post-test phase to the entire sample, but the researchers conducted discussions with a reduced subset consisting of 30 students (15 each from the two groups). Recording capabilities were applied during interview sessions due to student preferences for conducting discussions either in English or Arabic.

Variable analysis employed paired-sample t-tests to evaluate statistical differences in language proficiency scores between the experimental and control populations at pre- and post-test intervals. The analysis used t-tests to perform both intra-group comparisons of mean pre- and post-test scores and between-group comparisons of the scores. Analysis of covariance (ANCOVA) supported the examination by controlling prior language proficiency levels together with AI tool usage time to confirm the intervention as the only cause of reported changes.

The study measured AI tool effects on individual language abilities through a multivariate analysis of variance structure that analyzed changes in vocabulary and grammar alongside listening comprehension and speaking tasks. Additional analysis through this method revealed precise areas where students achieved greatest enhancements through their utilization of AI tools.

Researchers analyzed the survey and interview data through thematic approaches. The survey responses received thematic codes that captured recurring ideas about students' views regarding AI tools and their engagement with learning materials and difficulties they encountered. A grounded theory analysis of interview transcripts extracted verbalized patterns that students encountered while using AI technologies. Through qualitative analysis the study obtained expanded insight into AI tool usage patterns among students while uncovering what motivates them to use the tools and what barriers prevent effective use.

5. Results

5.1 Quantitative Analysis

The variance equality test known as Levene's assessment determined uniformity between students in the control and experimental groups before the project began. For t-tests and ANCOVA to produce valid results, the variance between groups requires homogeneity. The analysis verifies if both groups maintain comparable levels of statistical variation.

Group	F-value	p-value
Experimental Group	1.23	0.267
Control Group	1.27	0.254

Table 1. Levene's Test for Homogeneity of Variance

The experimental and control groups demonstrate comparably homogenous variances because their Levene's test p-values exceed 0.05. The homogeneity of variance assumption proves valid making further analyses with t-tests and ANCOVA appropriate.

Both pre-test score distributions were assessed for normality through the Shapiro-Wilk test. The ability to use t-tests and ANCOVA requires that test data exhibits normality characteristics.

Group	W-value	p-value
Experimental Group	0.986	0.144
Control Group	0.981	0.201

Table 2. Shapiro-Wilk Test for Normality of Pre-test Scores

The Shapiro-Wilk test demonstrates that experimental ($p = 0.144$) and control ($p = 0.201$) dataset p-values exceed 0.05. The pre-test scores of both groups exhibit normal distribution patterns which enable subsequent analysis.

To establish baseline proficiency indicators, we began by examining the pre-test descriptive statistics for both groups. The pre-test measured language skills in four key areas; students obtained scores from assessments evaluating their vocabulary alongside grammar use alongside listening comprehension and speaking skills.

Group	Mean Score	Standard Deviation	Minimum Score	Maximum Score	N
Experimental Group	56.5	8.3	42	72	150
Control Group	55.3	7.9	41	71	150

Table 3. Descriptive Statistics of Pre-test Scores

The recorded mean scores for experimental participants (56.5) matched closely with those of the control group (55.3). Standard deviations show that test scores spread moderately throughout both groups (8.3 and 7.9). Pre-intervention testing demonstrated similar language skill strengths for both participant groups.

Students received post-tests after the six-month AI tools implementation within the experimental group combined with traditional teaching methods in the control group. Table 1 below shows the descriptive statistics that analyze post-test results after assessment of both groups.

Group	Mean Score	Standard Deviation	Minimum Score	Maximum Score	N
Experimental Group	78.4	9.2	61	95	150
Control Group	69.2	7.6	54	84	150

Table 4. Descriptive Statistics of Post-test Scores

The experimental group showed superior success in foreign language acquisition following intervention since their mean score reached 78.4, while the control group scored 69.2. Both groups show moderately spread data points although the experimental group displays higher score variability indicating participants improved their language skills with diverse effectiveness.

A paired-sample T-Test compared students' scores from pre-test to post-test periods to identify significant changes between pre- and post-retest scores for each experimental bloc.

Test	Mean Difference	t-value	df	p-value
Pre-test vs Post-test	21.9	15.24	149	0.000

Table 5**.** Paired-Sample T-Test Results for Experimental Group

The paired-sample t-test results for the experimental group show a significant improvement in language proficiency from pre-test (M = 56.5) to post-test (M = 78.4), with a t-value of 15.24 and a p-value of 0.000. This indicates that the use of AI tools significantly improved the students' proficiency in foreign language skills.

Test	Mean Difference	t-value	df	p-value
Pre-test vs Post-test	13.9	10.56	149	0.000

Table 6. Paired-Sample T-Test Results for Control Group

Post-test data from the control group provided evidence of significant language proficiency growth between pre-test (M = 55.3) to post-test (M = 69.2), reflected in the t-value (10.56) and p-value (0.000). The experimental group exceeded the control group in its success rate at acquiring language skills although both groups experienced improvements.

The contrast between experimental and control group post-test results was evaluated with an independent-samples t-test protocol.

Group	Mean Score	t-value	df	p-value
Experimental Group	78.4	8.67	298	0.000
Control Group	69.2	8.67	298	0.000

Table 7. Independent-Samples T-Test for Post-test Scores

A significant difference emerged between experimental group mean scores (M = 78.4) and control group mean scores (M = 69.2) as determined by an independent-samples t-test with t = 8.67 and p = 0.000. The experimental group achieved greater language proficiency gains when using AI tools than the control group without access to AI tools.

Researchers used MANOVA to evaluate how AI tools affected students' language abilities combining vocabulary results with grammar results and listening comprehension scores with speaking performance data.

Language Skill	F-value	p-value
Vocabulary	21.34	0.000
Grammar	18.92	0.000
Listening Comprehension	16.58	0.000
Speaking	15.72	0.000

Table 8. MANOVA Results for Post-test Scores by Language Skill

Tests from MANOVA analysis demonstrate that AI tools produced meaningful consequences across every element of language proficiency. Statistics from the four language skill areas show AI tools produced positive relationships with student performance since all p-values including vocabulary ($p = 0.000$), grammar ($p = 0.000$), listening comprehension ($p = 0.000$) and speaking ($p = 0.000$) fell below 0.05.

Language Skill	Mean Score	Standard Deviation	Minimum Score	Maximum Score	N
Vocabulary	19.4	3.1	14	24	150
Grammar	20.2	2.8	15	25	150
Listening Comprehension	19.6	3.2	13	24	150
Speaking	19.2	3.5	14	23	150

Table 9: Breakdown of Post-test Scores for Experimental Group

Results indicate that experimental group students achieved the most significant gains in grammar ($M = 20.2$) and listening comprehension ($M = 19.6$). The detected levels of standard deviation across four language skills demonstrate that students experienced average variation while improving their performance. Students achieved substantial improvements in grammar proficiency and listening comprehension through the usage of AI tools because these tools adapt to learner needs.

Language Skill	Mean Score	Standard Deviation	Minimum Score	Maximum Score	N
Vocabulary	16.5	2.9	12	21	150
Grammar	17.3	3.1	13	22	150
Listening Comprehension	17.2	3.0	12	22	150
Speaking	18.2	3.3	13	23	150

Table 10. Breakdown of Post-test Scores for Control Group

Students who did not employ AI tools achieved less growth in their language abilities than participants who adopted AI tools. The experimental group achieved the greatest improvement in speaking ($M = 18.2$) yet maintained higher total proficiency scores than the control group. AI-based language learning techniques yielded superior outcomes when compared to traditional methods which otherwise maintained their effectiveness.

Variable	B-value	Standard Error	Beta	t-value	p-value
AI Tool Usage (Experimental vs. Control)	8.5	1.2	0.42	7.08	0.000

Table 11. Regression Analysis Results

The experimental group students achieved improved language proficiency through AI tool use according to regression analysis.

Students who participated in AI tool utilization achieved an average 8.5 point higher improvement compared to the control group students according to the B-value of 8.5. The calculated t-value (7.08) and p-value of 0.000 show significant statistical effects plus the beta coefficient (0.42) confirms moderate strength of relationships between variables. Research evidence demonstrates AI tools produce substantial improvements in language learning achievements.

Gender	Mean Score	Standard Deviation	N
Male	79.2	8.5	75
Female	77.6	9.1	75

Table 12. Gender Differences in Post-test Scores for Experimental Group

Male students in the experimental group scored slightly higher (M = 79.2) than female students (M = 77.6) during testing although their overall performance remained equivalent. The standard deviation results indicate varied levels of achievement in each gender group yet the mean score differences indicate minimal evidence of a gender disparity in AI language training effects.

Gender	Mean Score	Standard Deviation	N
Male	70.1	7.9	75
Female	68.3	7.7	75

Table 13. Gender Differences in Post-test Scores for Control Group

Post-test scoring data demonstrated that male participants in the control section achieved higher overall scores than female participants with M = 70.1 versus M = 68.3. Effects from the intervention showed improvement across both genders but genders remained close to one another through their mean performance points. The analysis points to a minor gender effect on learning achievement which remains below the significant improvements across all participant groups.

Age Range	Mean Score	Standard Deviation	N
18-22	80.3	8.2	90
23-27	77.8	9.3	60
28 and above	75.9	9.6	30

Table 14. Age Differences in Post-test Scores for Experimental Group

Research findings indicate that students between 18-22 years in the experimental group achieved the highest post-test scores at M = 80.3. Students aged 23-27 obtained scores at M = 77.8. The language proficiency results indicated older students (M = 75.9) achieved the lowest scores among all age groups which points to a possible moderate relationship between age and language acquisition improvement. Participants in the younger age bracket demonstrated higher scores because they comfortably use both technology tools and AI-based educational resources.

Age Range	Mean Score	Standard Deviation	N
18-22	71.2	8.0	90
23-27	68.3	7.5	60
28 and above	67.1	7.8	30

Table 15. Age Differences in Post-test Scores for Control Group

The control group students between age 18 and 22 obtained higher scores (M = 71.2) than all other participants while individuals aged 28 or older demonstrated the lowest mean score (M = 67.1). Results show that age impacts language learning performance independently of AI tools utilization due perhaps to students' differing past experience with language methods and their varying design to learn.

5.2 Qualitative analysis

Following are presented statements drawn from the semi-structured interviews with selected participants of the study upholding the significance of AI based tools in supplementing language learning.

At first, I was skeptical about using AI for language learning. But after a few sessions, I saw how quickly I was learning new words and phrases. It felt like I had a personal tutor.

The participant's viewpoint suggests that AI tools which foster student-teacher interaction serve as essential educational tools that create improved learning engagement. This has been observed by Henrie et al., (2015) that students found technology-mediated learning experiences to be more engaging and satisfying.

The AI system seemed to understand my mistakes and corrected them immediately. This was different from how teachers do it in class, where you may not get feedback right away.

The main benefit of AI tools becomes evident because students receive immediate evaluations. Delays in feedback emergence in traditional classrooms occur as a result of either teacher workloads or too large student-to-teacher ratios. Through real-time feedback AI technology shows its ability to deliver corrections which confirms the system's potential to connect gaps between feedback and learning progress. Language learners benefit strongly from fast feedback because it enables them to retain information and correct mistakes with greater speed (Sheen, 2007).

It was interesting how the AI would adjust its difficulty level based on how I was doing. It didn't feel like I was stuck on the same task for too long.

AI tools adjust their instructional approach to a learner's personal speed and educational levels, thereby enhancing personalized learning standards. AI systems enables an educational system through their adaptive capabilities to deliver standardized teaching instruction. A

study by Xu (2024) concludes that AI-driven learning when tailored to students' specific needs produces improved academic results.

Using AI, the lessons feel less intimidating. It was like practicing in a low-pressure environment, so I felt more confident trying new things."

AI tools establish learning environments to support students especially those who experience higher levels of anxiety in speaking. Artificial Intelligence (AI) creates a non-threatening learning space for Saudi students who find themselves in performance-success pressure environments, so they feel more comfortable participating in activities (Doghan, 2020).

I could see how much my vocabulary improved. The AI gave me so many new words, and the quizzes helped me remember them better.

Trackable language improvement shows how AI-driven tools effectively train learners in precise language competencies. Computer-driven interactive exercises that combine learning with memory reinforcement dramatically speed up the acquisition process for newcomers to language vocals. The results connecting vocabulary mastery to language skills quality show AI capability for creating streamlined and captivating vocabulary learning pathways especially effective for the Saudi Arabian education context (Almuhanna, 2024).

I struggled with grammar, but the AI's interactive explanations and examples helped me understand the rules better than I expected."

One of the most difficult language learning areas is grammar but the positive experience with AI-based interactive methods illustrates fundamentally how AI effectively addresses confusing language components. AI-directed personalized explanations guide students through confusing grammatical structures thanks to adaptive instructional approaches while serving English-language learners in Saudi Arabia who face challenges because of linguistic differences between Arabic and English (Al-Nasser, 2015).

The speaking exercises were the hardest for me. But over time, the AI's voice recognition system helped me get more confident with my pronunciation.

The participant's observations about speaking exercises coupled with their experience using AI voice recognition systems underline important aspects of language learning pronunciation and speech development. A significant number of learners in Saudi Arabia avoid speaking classes because they lack confidence and make mistakes when speaking with their classmates. Students benefit from AI solutions which provide uncondemning opportunities to practice speech leading to improvement in their fluency and confidence (Poelling, 1971).

However, participants also reported a series of challenges while using the AI tools, some of which are as below.

Sometimes the AI misunderstood what I said, and that was frustrating. I had to repeat myself several times.

The participant's experience demonstrates how voice recognition systems alongside natural language processing features in AI are currently restrictive. AI technology demonstrates numerous advantages yet it still possesses recognized limitations. Backup issues from technology could interrupt students' educational progression specifically when these issues exceed their ability to address them successfully. The wider adoption of AI tools in language learning faces an important limitation because AI systems require further evolution to correctly understand different accents and speech styles (Dong et al., 2024).

I felt that sometimes the AI focused too much on grammar rules, and I wanted to practice speaking more.

This participant emphasizes the critical equilibrium requirement which exists between language capabilities in Artificial Intelligence (AI) learning systems. Speaking practice gets insufficient attention according to this participant despite the important role of grammar instruction. The Saudi Arabian educational system typically gives limited importance to speaking abilities, so AI tools must develop balanced domains to serve students best (Khosravi et al., 2022).

The system wasn't always easy to use, especially when there were updates or changes. It was confusing to navigate sometimes.

The educational benefits from using AI tools remain inaccessible to students especially in Saudi regions because of varying student proficiency levels with technology. The adoption of new technologies presents a learning curve that creates challenges for learners whose pattern of exposure to frequent technological changes and updates is limited according to Blin & Munro (2008).

I didn't feel like the AI could answer all my questions. Sometimes I needed a human teacher for more in-depth explanations.

The instant data AI provides about language practice needs human educators to supply the essential depth and empathy needed to enrich classroom learning. This learner emphasized a need for human-instructed explanations that address intricate language problems but AI tools currently show limitations in handling these complex situations. Research suggests that Saudi Arabian language learners will benefit most from combining Artificial Intelligence (AI)tools with traditional teaching approaches as found in Alotaibi & Alshehri (2023).

6. Discussion

The study evaluated how AI-powered technologies influence the skills development of foreign language (FL) operations in Saudi Arabia. Both vocabulary acquisition and listening comprehension benefited substantially according to data collected from the study. The research demonstrated key obstacles as well as restrictions for AI in both

improving speech proficiency and recognizing cultural differences. The results established both their educational impact of AI within Saudi language education and their broader international relevance.

The study demonstrated striking vocabulary gains together with improved listening abilities when students utilized AI tools for their language learning. The results indicate that AI-powered learning approaches work best when students receive personalized education which underlines recent academic research on using AI in language education. Research shows that AI-powered learning tools create personalized feedback and adapt educational content to student advancement so learners build stronger vocabulary knowledge alongside better listening abilities (Newton & Nation, 2020). Participants in this research mentioned that AI tools improved their word retention since they came across words in multiple situations that is vital for effective language learning. A student observed that AI presented the words in multiple contextual examples to make meanings more understandable to students. Coșulean (2024), demonstrated a similar finding which showed that customized AI-learning through dynamic educational platforms helps students better maintain their vocabulary.

The research demonstrated valuable progress in vocabularies and listening comprehension but showed important limitations in AI systems when it comes to teaching students conversational fluency. This study confirms an isolated discovery. Literature about language acquisition reveals mounting evidence that Artificial Intelligence (AI) struggles to teach fluent speech skills (Li & Lan, 2022). The investigation showed participants being disappointed about their limited access to perform authentic dialogues since they saw actual conversation practice as vital for better vocal proficiency. One participant told us, "I could remember words and phrases but struggled to communicate naturally." Language learning faces difficulties because actual speaking practice stands as an essential component for developing fluency alongside real-world communication confidence (Richards, 2005). AI tools succeeded in helping students learn pronunciation and word recognition yet these resources did not provide essential conversational context which communication competence needs.

The research found an essential problem with AI language learning systems because of their cultural competence barriers. The study participants noted how AI tools lacked capability to deliver the essential cultural background information tying certain phrases together. According to one interviewee AI systems provided vocabulary support but did not teach cultural context because this made learning difficult at times. Current AI systems demonstrate an important functional limitation when it comes to teaching cultural competence to language learning students. Research has documented how AI struggles to resolve cultural complexities during language educational processes

when cultural and language elements are densely linked (Silverstein, 2004). Teaching true proficiency requires full understanding of cultural nuances because Saudi language frequently follows both cultural and religious directives. The effectiveness of AI tools for vocabulary instruction and grammar teaching is diminished by their lack of capability to deliver cultural context which smooths the learning process.

Students demonstrated different levels of contentment with AI tools depending on their personal engagement with the systems along with their technical complications. The students reported differing experiences with AI tools through positive assessments of their ease of access while some students struggled with the technological challenges especially how effectively the tools recognized speech. A student noted his dissatisfaction after the AI handling system failed to properly understand his speech pattern in answering questions because it misidentified his accent. Recent studies show that AI speech recognition systems frequently encounter difficulties understanding various accents in multicultural settings particularly Saudi Arabia (El Zahraa, 2025). Serious problems developed due to the technology's limitations when processing speech from students who spoke with distinct regional accents or special speech patterns. This highlights a significant limitation of AI tools in language learning. Modern speech recognition systems face difficulties in understanding diverse linguistic patterns which requires attention from future Artificial intelligence (AI) developers.

Research investigated how AI functions as an additional tool for language education after detecting these results. The positive learning outcomes from the study transformed vocabulary knowledge and listening skills yet students underlined the necessity for personal human instruction during their education. One participant student observed that AI tools help yet requires teacher involvement to help understand complex concepts that students need clarification on. According to Bartolomé et al. (2018), technology performs better than human teachers at enhancing educational outcomes yet it lacks their capability to supply personalized emotional support. Language education transcends vocabulary development and grammatical structure learning because it is fundamentally a social experience where emotional connection and motivation alongside meaning interpretation call for personal interaction between learners (Pintrich, 2003). Human instructors create dynamic learning environments which AI tools fail to duplicate even though they bring worthwhile reinforcement to language skill development. Study results demonstrate the importance of AI integration within a model which merges traditional teaching approaches with automated systems.

Research data showed that the success rate of AI tools in language learning depends on two factors: student drive to learn and their existing skills using technology. The research showed that participants benefiting most from AI tools were students who had trust in technology combined with elevated motivation levels. Research by Naamati-Schneider & Alt (2024), indicated students who demonstrate strong digital literacy receive better outcomes using AI-powered educational tools and this study supports these earlier findings. The AI tools worked better for students who demonstrated skilled use of technology yet students who lacked comfort with technology found navigating these tools quite challenging. The success of AI in language learning depends on combined approaches which account for students' technological expertise and deliver sufficient instructional and support methods. Current conditions challenge educational institutions in Saudi Arabia to establish strategies that will eliminate digital accessibility gaps for AI-powered tool utilization among all student populations.

Participants perceived AI tools to be performance enhancing accessories that especially benefited students who did poorly with conventional language education styles. According to one student's voice "I use AI tools because they offer interactive features and game-like interfaces." Research indicates how AI tools should transform language education through improved interactive approaches that combat student boredom in standard approaches reported in the study by Tai & Chen (2024). Artificial intelligence (AI) tools generate personalized learning experiences that maintain student participation and their willingness to stay motivated in the process. AI-powered tools demonstrate motivational qualities yet their designers need to create frameworks that support sustained student participation and combat technology dependency. Thus, it is needed to use motivational aspects of AI while protecting students from automation-dependence which leads them to lose critical thinking skills.

7. Conclusion and Recommendations

This research demonstrates that AI tools have the potential to substantially improve foreign language (FL) abilities among Saudi Arabian students especially vocabulary and listening skills. The results of the study substantiate research in language education which demonstrates that technology-mediated personalized learning enhances specific language competencies. However, significant restrictions on the use of Artificial Intelligence (AI) in teaching language need to be placed and combined with human educational strategies as these tools still fall short of delivering the interactive and culturally adaptive aspects of traditional classroom instruction.

Technology development requires additional advancements to adapt speech recognition software for diverse accents and regional specifications mainly in Saudi Arabia's bilingual educational setting. The system's boundaries test the boundaries of AI capabilities for language acquisition by basic educational techniques where human contact with culture remains essential.

The study proves that AI technology successfully plays an important function by driving language learning through increased learner engagement and motivation. Students' positive reactions towards AI tools stem from the interactive and personalized features which indicate smart technology implementation offers complementary powerful learning solutions. Educational practitioners need to maintain the right mix of AI systems and human-loaded teaching approaches to build a complete and efficient linguistic education territory.

AI researchers need to concentrate on developing their technologies which effectively support dialogue capabilities and cultural awareness. Additional research combining AI with conventional teaching practices will give us deeper insight into how we can optimize AI systems in language education environments.

8. Limitations of the Study

Despite its contributions to language education research, this study faces several limitations that need acknowledgement. Results from this study only apply to university foreign language (FL) students because the research exclusively focused on this specific population of learners. A study duration of six months proved insufficient to evaluate potential long-term effects of AI tools upon language proficiency development. The complex nature of language acquisition together with its gradual learning trajectory makes it plausible that this research study measures only short-term improvements instead of long-term development. This research only investigated a particular selection of AI tools so the results cannot be generalized to all AI-based language learning technology platforms. The self-reported data from surveys and interviews contained possible biases because participants could have let their personal views about AI tools or study outcome expectations impact their responses. The analysis lacked control methods to eliminate outside variables including students' prior language knowledge or unique learning styles that potentially shaped the research outcomes.

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