

“Teachers’ Perspectives of Integrating Artificial Intelligence Tools for Developing EFL Students’ Speaking Skills in Saudi Arabia”

Researchers:

Maram Bashir Alrarshidi

English Language Curriculum and Instruction - College of Education - Jeddah University - Kingdom of Saudi Arabia

Haitham Ali Althubaiti

Department of Curriculum and Instruction,

College of Education,

University of Jeddah

Jeddah, Saudi Arabia

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المنهج الوصفي الكمي، حيث تم جمع البيانات من 119 معلماً ومعلمة باستخدام استبانة منظمة.

أظهرت النتائج أن المعلمين يمتلكون مستوى مرتفعاً من الكفاءة الرقمية واتجاهاً إيجابياً نحو استخدام الذكاء الاصطناعي، رغم نقص التدريب الرسمي. كما تبين أن أدوات الذكاء الاصطناعي تُستخدم بشكل أساسي في تصحيح النطق وتقديم التغذية الراجعة الفورية، بينما كان استخدامها أقل في التطبيقات التفاعلية مثل المحادثات الذكية.

وأكدت النتائج الإحصائية أن الذكاء الاصطناعي يسهم بشكل كبير في تحسين طلاقة الطلاب ودقة النطق وزيادة الثقة بالنفس والدافعية نحو التعلم. ومع ذلك، كشفت الدراسة عن وجود معوقات رئيسية تعيق التطبيق الكامل، من أبرزها ضعف البنية التحتية، وقلة التدريب، وجمود المناهج الدراسية.

وتلخص الدراسة إلى أن الذكاء الاصطناعي يمثل أداة تعليمية واعدة، إلا أن نجاحه يعتمد على تبني نهج يوازن بين التكنولوجيا والعنصر البشري، مدعوماً بتطوير مهني للمعلمين وتحسين البيئة التعليمية.

الكلمات المفتاحية: الذكاء الاصطناعي - المملكة العربية السعودية - التكنولوجيا - المعلمين.

Abstract:

This study investigates primary school teachers' perspectives on the use of Artificial Intelligence (AI) tools to enhance English speaking skills in Saudi Arabia. Using a quantitative descriptive design, data were collected from 119 EFL teachers through a structured questionnaire. The findings reveal that teachers demonstrate high levels of digital competence and positive attitudes toward AI. AI tools are integrated despite limited formal training, primarily used for pronunciation correction and automated feedback, with moderate use of conversational and adaptive systems. Statistical analysis indicates that AI significantly improves students' fluency, pronunciation accuracy, confidence, and motivation. However, several barriers hinder full implementation, including inadequate infrastructure, lack of training, and rigid curricula.

The study concludes that AI has strong potential as a pedagogical tool but requires a human-centered integration approach supported by institutional reform. Effective implementation depends on teacher training, technological infrastructure, and curriculum flexibility.

Keywords: Artificial Intelligence, Speaking Skills, EFL, Primary Education, Teacher Perceptions, Saudi Arabia.

ملخص البحث

هدفت هذه الدراسة إلى استقصاء وجهات نظر معلمي اللغة الإنجليزية في المرحلة الابتدائية بالمملكة العربية السعودية حول استخدام أدوات الذكاء الاصطناعي في تنمية مهارات التحدث لدى الطلاب. اعتمدت الدراسة على

How to Cite This Article

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AJSP | Vol. 9 | Issue 91 | DOI: <https://doi.org/10.36571/ajsp.91>AJSP ORCID: <https://orcid.org/0009-0005-8048-2082>**1. Introduction**

In the contemporary global landscape, proficiency in English has become a fundamental requirement for academic advancement, economic participation, and intercultural communication. Among the four core language skills, speaking occupies a uniquely complex position, as it requires the real-time integration of linguistic knowledge, cognitive processing, and interactive competence. Unlike reading and writing, which allow for reflection and revision, speaking demands immediate production and spontaneous engagement, making it one of the most challenging skills for learners in English as a Foreign Language (EFL) context (Sharma, 2024; Mamatoyibov, 2024).

In the Kingdom of Saudi Arabia (KSA), English language education has undergone significant expansion in response to globalization and national development initiatives. Despite this expansion, a persistent gap remains between students' theoretical knowledge of English and their ability to communicate effectively in spoken contexts. Research indicates that traditional instructional practices in Saudi classrooms have historically prioritized grammar, vocabulary memorization, and reading comprehension over communicative competence (Mason & Krashen, 1997; Nakanishi, 2015; Alshumaimeri & Alhumud, 2021). Consequently, many learners' complete years of formal education with limited ability to express themselves fluently and confidently in real-life interactions.

This imbalance reflects a broader pedagogical issue within EFL instruction, where speaking is often treated as a secondary skill rather than a central objective. Studies have shown that limited opportunities for authentic interaction, combined with fear of making mistakes, contribute significantly to learners' reluctance to participate in spoken communication (Sharma, 2024; Abdumuxtorova & Rayimaliyeva, 2025). In addition, classroom environments that emphasize correctness over communication tend to increase anxiety and reduce student engagement, further hindering the development of speaking proficiency (Merelo et al., 2024).

From a theoretical standpoint, effective speaking instruction is grounded in interactive and socially mediated learning processes. Sociocultural theory posits that language acquisition occurs through meaningful interaction within a social context, where learners construct knowledge collaboratively (Qureshi et al., 2022; Glăveanu, 2021). Similarly, Communicative Language Teaching (CLT) emphasizes the importance of real-life communication as the primary goal of language learning, advocating for activities that promote dialogue, negotiation of meaning, and learner participation (Alharbi, 2021). Furthermore, Self-Regulated Learning (SRL) theory highlights the role of learner autonomy and continuous feedback in enhancing language performance, particularly in speaking tasks that require self-monitoring and adjustment (Teng, 2022; Erdemir & Brutt-Griffler, 2022).

Within this theoretical framework, the emergence of Artificial Intelligence (AI) presents a transformative opportunity to address longstanding challenges in speaking instruction. AI technologies, defined as systems capable of simulating human cognitive processes such as learning, reasoning, and language understanding (Russell & Norvig, 1995; Kenchakkanavar, 2023), have increasingly been integrated into educational environments. In language learning, AI applications include speech recognition systems, conversational agents, automated feedback platforms, and adaptive learning environments, all of which provide learners with opportunities for personalized and interactive practice (Madhavi et al., 2023; Sari, 2023).

One of the most significant advantages of AI in language education is its ability to provide immediate and individualized feedback. Research has demonstrated that AI-based pronunciation tools can significantly improve learners' phonological accuracy by analyzing speech patterns and offering real-time corrections (Khan et al., 2024; Nurhayati et al., 2024; Jamshed et al., 2025). In addition, conversational AI systems, such as chatbots, enable learners to engage in simulated dialogues, thereby enhancing fluency and communicative competence (Wu & Yu, 2024; Hussain et al., 2023; Ding & Yusof, 2025).

These tools create low-pressure environments where learners can practice speaking without fear of judgment, which has been shown to reduce anxiety and increase willingness to communicate (Merelo et al., 2024; Hussain et al., 2023).

Moreover, AI supports learner autonomy by enabling continuous practice outside the classroom. This aligns with SRL theory, as learners can monitor their progress, receive feedback, and adjust their performance independently (Molenaar, 2022; Teng, 2022). Gamified AI environments further enhance engagement by incorporating elements of motivation and competition, making language learning more interactive and enjoyable (Mohammed & Jesudas, 2025; Sari, 2023). As a result, AI has the potential to shift language learning from a teacher-centered model to a more learner-centered and adaptive approach.

Despite these advantages, the integration of AI in education is not without challenges. Several studies have highlighted barriers related to infrastructure, teacher training, and curriculum alignment, particularly in developing educational contexts (Alghamdi, 2022; Alrashdi, 2024; Amiri et al., 2024). In Saudi Arabia, while teachers generally demonstrate positive attitudes toward technology, they often lack the institutional support necessary for effective implementation (Chounta et al., 2022; Sailer et al., 2021; Almuhanna, 2025). This gap between teacher readiness and systemic support represents a critical issue in the adoption of AI in classrooms.

In addition to practical challenges, ethical concerns surrounding AI have gained increasing attention. Issues such as data privacy, algorithmic bias, and the potential reduction of human interaction raise important questions about the role of AI in education (Lins et al., 2021; Selwyn & Aagaard, 2021). While AI offers significant benefits, it cannot fully replicate the emotional and contextual dimensions of human teaching, which remain essential for effective language learning (Nguyen, 2024). Consequently, many scholars advocate for a balanced approach in which AI complements rather than replaces traditional pedagogical practices (Daher, 2025; Pratiwi et al., 2025).

Within this context, teachers play a central role in mediating the integration of AI into classroom practice. Their perceptions, beliefs, and competencies directly influence how technology is used and its impact on learning outcomes (Solikhah, 2023; Van Nuland & Gorbushina, 2023). Understanding teachers' perspectives is therefore essential for identifying both the opportunities and challenges associated with AI adoption.

Accordingly, this study seeks to investigate the perceptions of primary school EFL teachers in Saudi Arabia regarding the use of AI tools in developing students' speaking skills. By examining patterns of usage, perceived effectiveness, and implementation barriers, the study aims to provide a comprehensive understanding of the current state of AI integration in primary education.

From a research perspective, this study contributes to the growing body of literature on AI in language education by offering context-specific insights into the Saudi educational system. More importantly, it highlights the need for a systemic approach to technology integration, where teacher readiness, institutional support, and pedagogical design are aligned to maximize the potential of AI in enhancing speaking skills.

2. Research Problem

While technological integration in language education has been widely explored, the specific role of Artificial Intelligence in developing speaking skills among young learners remains insufficiently examined. Existing research has predominantly focused on reading, writing, and vocabulary acquisition, leaving speaking skills underrepresented in empirical investigations. Furthermore, teachers' perspectives arguably the most critical factor in successful technology adoption—have not been adequately addressed, particularly in primary education settings. Teachers are not merely users of technology; they are mediators who determine how effectively these tools are integrated into classroom practice.

In Saudi Arabia, additional challenges complicate this issue, including:

- Limited institutional training programs
- Infrastructural constraints
- Curriculum rigidity
- Variability in teacher readiness

These factors create uncertainty regarding the actual effectiveness and sustainability of AI integration in enhancing speaking skills.

3. Research Objectives

This study aims to:

1. Identify the types of AI tools used by primary school teachers in teaching speaking skills
2. Examine teachers' perceptions of AI effectiveness in improving fluency, pronunciation, and confidence
3. Investigate barriers to AI integration in EFL classrooms
4. Explore pedagogical strategies for effective AI implementation

4. Significance of the Study

This study is significant as it provides empirical evidence on the practical role of Artificial Intelligence in enhancing speaking skills within primary EFL contexts, an area that remains underexplored in current research. It also offers valuable insights for policymakers and curriculum designers by identifying the gap between teacher readiness and institutional support, thereby contributing to more informed educational decision-making. Furthermore, the study supports the development of learner-centered instructional models by demonstrating how AI can create interactive, low-anxiety environments that promote active communication and sustained engagement among young learners.

4.1 Theoretical Contribution

It also extends existing theoretical frameworks by integrating AI within sociocultural and self-regulated learning perspectives, highlighting its role in facilitating interactive and autonomous language development. Additionally, the study contributes to the conceptualization of AI as a mediating tool rather than a replacement for human instruction, reinforcing hybrid pedagogical models. Moreover, it provides a context-specific theoretical foundation for understanding AI adoption in developing educational systems, particularly within the Saudi primary education context.

5. Methodology

This study adopts a quantitative descriptive research design to systematically examine teachers' perceptions regarding the integration of Artificial Intelligence (AI) in developing speaking skills. This design is particularly suitable for capturing large-scale patterns of attitudes and practices across diverse educational settings, as it allows for statistical generalization and objective interpretation (Creswell, 2021).

Unlike experimental designs that focus on causality, the descriptive approach enables the researcher to explore naturally occurring phenomena within real classroom environments. In the context of AI integration, where implementation varies widely depending on institutional conditions and teacher readiness, such a design provides a realistic and comprehensive understanding of current practices (Chounta et al., 2022).

5.1 Population and Sampling

The target population consists of English as a Foreign Language (EFL) teachers working in primary schools across the Kingdom of Saudi Arabia. The questionnaire was distributed to 500 teachers, and 119 valid responses were received (response rate: 23.8%), representing a diverse range of teaching experiences, institutional types, and technological competencies.

A convenience sampling technique was employed due to the accessibility of participants through professional networks and online platforms. While this method may limit strict generalizability, it is widely used in educational research to capture practical insights from active practitioners (Creswell, 2021).

The inclusion of both novice and experienced teachers provides a balanced perspective, as research suggests that teaching experience influences technology adoption differently, with experienced teachers relying on established practices and novice teachers showing greater openness to innovation (Filiz et al., 2025)

5.2 Research Instrument (Detailed)

The primary instrument used in this study was a structured questionnaire designed to measure multiple dimensions of AI integration. The questionnaire was informed by previous studies on technology adoption and language learning (Benek, 2025; Almuhanha, 2025).

The questionnaire consisted of five major sections:

- Demographic information
- AI usage in teaching speaking
- Perceived effectiveness of AI tools
- Barriers to implementation
- Instructional strategies and future expectations

Each item was measured using a five-point Likert scale, which allows for capturing varying degrees of agreement and is widely recognized as effective for measuring attitudes in educational research (Creswell, 2021).

5.3 Validity and Reliability

To ensure content validity, the questionnaire was reviewed by experts in educational technology and language pedagogy. Their feedback contributed to refining item clarity, relevance, and alignment with research objectives. Reliability was assessed using Cronbach's Alpha, which measures internal consistency among items. The results exceeded the acceptable threshold ($\alpha \geq 0.80$), indicating that the instrument reliably measures the constructs under investigation (Hattie & Timperley, 2007).

5.4 Data Collection Procedure

Data collection was conducted over a two-month period using an online survey platform. Participants were invited through email and professional social networks, ensuring accessibility across different regions.

The use of digital data collection aligns with contemporary research practices and allows for efficient participation regardless of geographical constraints (Nguyen & Nguyen, 2024). Ethical considerations were strictly followed, including informed consent, anonymity, and voluntary participation.

5.5 Data Analysis

The collected data were analyzed using SPSS, employing both descriptive and inferential statistical techniques. Descriptive statistics, including mean and standard deviation, were used to identify general trends in teacher perceptions. Inferential statistics, such as one-sample t-tests, were conducted to determine whether the observed mean values significantly differed from neutral benchmarks.

Additionally, paired-samples t-tests were used to compare the effectiveness of interactive versus non-interactive AI strategies. This approach provides deeper insight into the pedagogical impact of different types of AI applications (Wang et al., 2023).

6. Results

The results of this study provide a comprehensive statistical overview of teachers' perceptions regarding the integration of Artificial Intelligence (AI) in developing speaking skills among primary school students in Saudi Arabia. The demographic distribution presented in Table (4-1) provides a critical contextual foundation for interpreting the study's findings, as it reflects the structural composition of the teaching workforce involved in AI integration within Saudi primary education. The slight predominance of female teachers (57.1%) aligns with the broader demographic reality of primary education in Saudi Arabia, where female educators play a central role, particularly in language instruction. This gender distribution suggests that the study's findings are representative of the dominant teaching population and may reflect gender-related pedagogical tendencies, such as increased engagement in communicative practices and student-centered learning environments.

Furthermore, the distribution of teaching experience reveals a balanced representation between highly experienced teachers (40.3% with more than ten years) and novice educators (38.7% with less than three years of experience). This duality is statistically significant in interpreting the adoption of AI tools, as experienced teachers often rely on established pedagogical frameworks, while novice teachers tend to exhibit greater openness toward technological innovation. The coexistence of these two groups within the sample enhances the reliability of the findings by capturing both traditional and progressive instructional perspectives.

The dominance of public-school teachers (67.2%) indicates that the results are heavily influenced by government-funded educational environments, which are often characterized by standardized curricula and limited flexibility in adopting new technologies. In contrast, the smaller representation of private school teachers (29.4%) may reflect comparatively higher exposure to technological resources and institutional support. This imbalance provides a crucial explanatory variable when interpreting barriers to AI integration, particularly those related to infrastructure and policy constraints.

One of the most striking findings in this table is the discrepancy between teachers' self-reported digital competence and their exposure to formal AI training. While nearly half of the participants rated their computer skills as excellent (48.7%), a majority (55.5%) reported having no formal training in AI or educational technology. This statistical contradiction highlights a structural gap between individual capability and institutional support. From an analytical perspective, this suggests that teachers possess the foundational skills necessary for AI adoption but lack the pedagogical and technical guidance required for effective implementation. Consequently, this gap may significantly influence both the depth and quality of AI integration observed in subsequent results.

Table (4-1): Demographic Characteristics of Respondents

Variable	Category	Frequency	Percentage
Gender	Female	68	57.1%
Gender	Male	50	42.0%
Experience	>10 years	48	40.3%
Experience	<3 years	46	38.7%
School Type	Public	80	67.2%
School Type	Private	35	29.4%
Computer Skills	Excellent	58	48.7%

Variable	Category	Frequency	Percentage
Training	No	66	55.5%

Figure (4-1) illustrates a clear divergence between teachers perceived readiness to use AI and their actual participation in formal training programs. The graphical comparison indicates that readiness levels consistently exceed training participation rates, suggesting that teachers' confidence and willingness to adopt AI are not dependent on institutional training. This finding carries substantial pedagogical implications, as it indicates that teachers are intrinsically motivated to engage with technological innovations, even in the absence of structured professional development.

From a statistical standpoint, this disparity can be interpreted as an indicator of latent readiness within the teaching population. However, the absence of formal training may lead to superficial or inconsistent use of AI tools, limiting their pedagogical effectiveness. The figure therefore reinforces the argument that training programs should not aim to create readiness, but rather to channel and refine existing teacher motivation into structured and effective practices

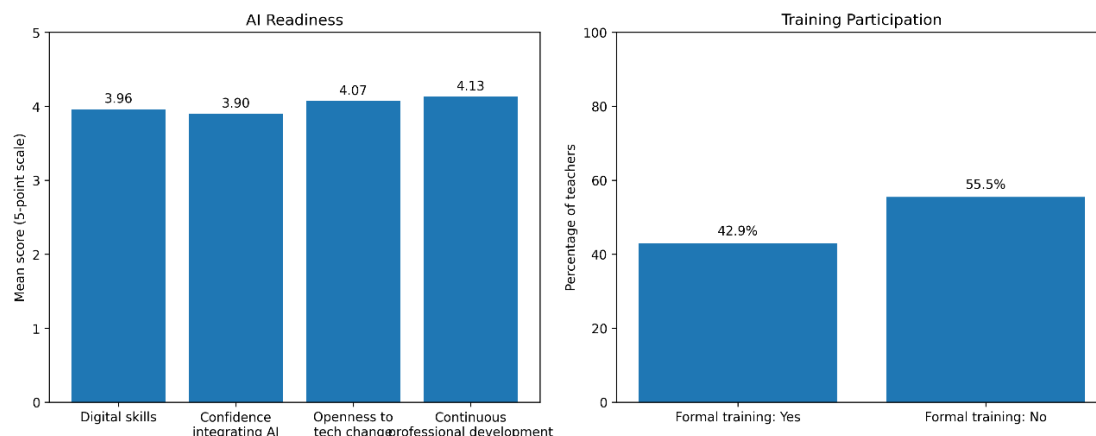


Figure (4-1): Comparison between teachers perceived readiness to use AI and their participation in formal training programs.

The results presented in Table (4-2) indicate a consistently high level of readiness among teachers, as reflected by mean scores approaching or exceeding 4.00 across most variables. The highest mean score (4.07) corresponds to teachers' openness to technological change, suggesting a strong positive disposition toward innovation. This finding is particularly significant in the context of educational transformation, as teacher attitude is widely recognized as a primary determinant of successful technology adoption.

The relatively high mean scores for digital skills (3.96) and confidence in using AI tools (3.90) further reinforce the conclusion that teachers possess both the technical competence and psychological readiness required for AI integration. The low standard deviation values indicate a high level of agreement among respondents, suggesting that this readiness is not limited to a specific subgroup but is broadly distributed across the sample.

However, when these findings are interpreted in conjunction with the lack of formal training observed in Table (4-1), a critical insight emerges: readiness alone does not guarantee effective implementation. The statistical evidence suggests that while teachers are capable and willing, their practices may lack consistency and pedagogical depth due to insufficient institutional support. This reinforces the need for targeted professional development programs that bridge the gap between competence and application.

Table (4-2): Teachers' Readiness for AI Integration

Item	Mean	SD
Digital Skills	3.96	0.91
Confidence	3.90	0.89
Openness	4.07	0.86

Table (4-3) reveals a differentiated pattern of AI tool usage among teachers, with higher engagement in tools related to pronunciation correction and feedback, and comparatively lower usage of conversational AI such as chatbots. The mean score for feedback tools (3.86) represents the highest level of usage, indicating that teachers prioritize functions that provide immediate corrective input. This aligns with pedagogical theories emphasizing the importance of feedback in language acquisition.

In contrast, the lower mean score for chatbot usage (3.48) suggests a degree of hesitation or limited familiarity with interactive AI tools. This disparity may be attributed to several factors, including concerns about accuracy, lack of training, and limited integration within existing curricula. The higher standard deviation associated with chatbot usage indicates variability in adoption, suggesting that while some teachers actively use these tools, others avoid them entirely.

From a statistical perspective, this pattern indicates that AI is currently being used in a supportive rather than transformative capacity. Teachers appear to integrate AI selectively, focusing on specific functions that complement traditional teaching methods rather than replacing them. This transitional stage of adoption highlights the need for pedagogical frameworks that promote more comprehensive and interactive use of AI technologies.

The figure illustrates the distribution of AI tools usage among teachers, showing that feedback tools and pronunciation applications have the highest mean scores, indicating more frequent use. In contrast, chatbots and adaptive learning systems display lower mean values, suggesting more limited adoption. This pattern reflects a tendency among teachers to prioritize tools that provide immediate and practical instructional benefits, while more advanced or interactive technologies remain underutilized. The relatively small differences between the latter tools indicate a consistent but moderate level of familiarity rather than strong integration.

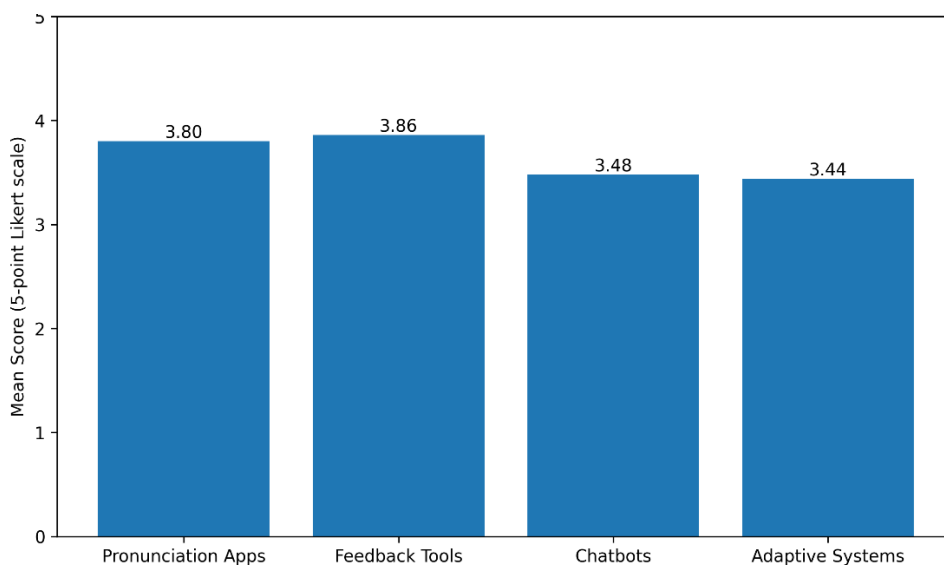


Figure (4-2). Mean scores of AI tools usage in teaching speaking skills among primary school EFL teachers
Table (4-3): AI Tools Usage

Tool	Mean	SD
Pronunciation Apps	3.80	0.91
Feedback Tools	3.86	0.88
Chatbots	3.48	1.01

The data presented in Table (4-4) demonstrate a strong consensus among teachers regarding the effectiveness of AI tools in enhancing students' speaking skills. All mean scores exceed 3.90, indicating a high level of agreement. The highest score for pronunciation (3.96) suggests that AI is particularly effective in addressing phonological accuracy, likely due to the precision of speech recognition technologies.

The high scores for fluency (3.94) and confidence (3.91) indicate that AI tools not only improve linguistic performance but also influence affective factors. This dual impact is statistically significant, as language learning is influenced by both cognitive and emotional variables. The relatively low standard deviation values suggest consistency in teacher perceptions, reinforcing the reliability of these findings.

These results provide strong empirical support for the hypothesis that AI enhances speaking skills. More importantly, they highlight the role of AI in creating low-anxiety learning environments, which are essential for encouraging student participation and reducing communication apprehension.

Table (4-4): Effectiveness of AI in Speaking Skills

Skill	Mean	SD
Pronunciation	3.96	0.87
Fluency	3.94	0.89
Confidence	3.91	0.90

The figure presents the mean scores of the perceived barriers to AI integration, clearly illustrating that lack of training represents the most significant obstacle, followed closely by infrastructural limitations and technical support issues. The relatively small differences between the top three barriers suggest that they are interrelated and collectively contribute to limiting effective implementation. In contrast, curriculum rigidity and concerns about screen time, while still above the neutral threshold, appear to have a comparatively lower impact. This pattern indicates that the primary challenges associated with AI integration are structural rather than pedagogical, emphasizing the need for institutional support and professional development.

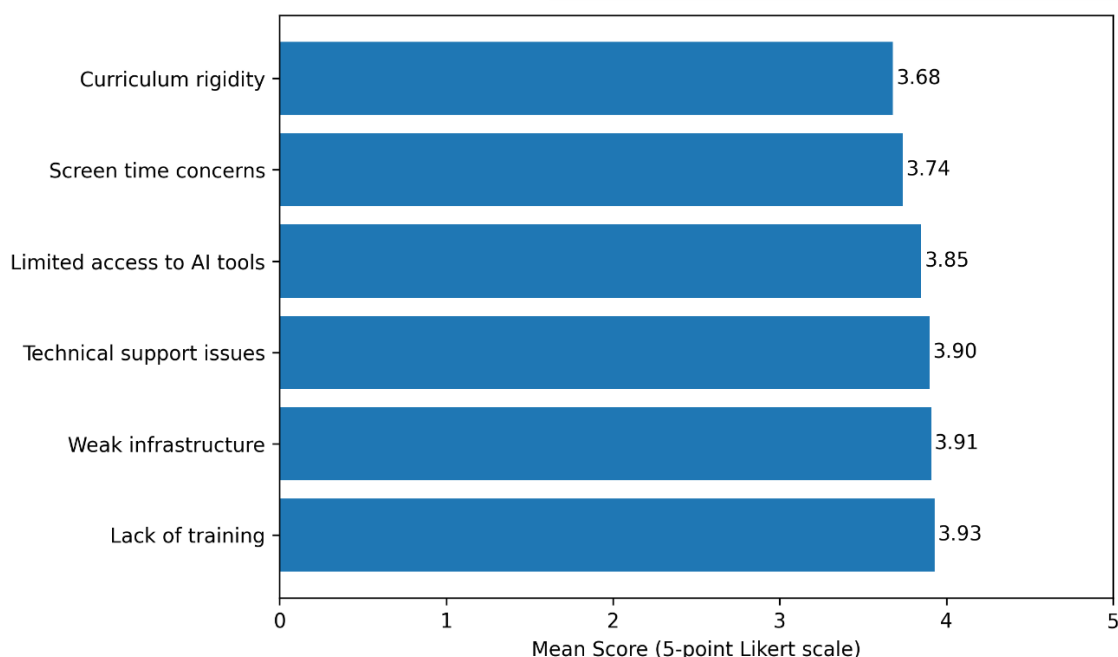


Figure (4-3). Mean scores of perceived barriers to AI integration among primary school EFL teachers in Saudi Arabia

Table (4-5) presents a detailed ranking of the barriers perceived by primary school EFL teachers when attempting to integrate AI tools into speaking instruction. The results show that the most critical barrier is the lack of training, which recorded the highest mean score ($M = 3.93$, $SD = 0.91$). This indicates that teachers view insufficient professional preparation as the most substantial challenge hindering the effective pedagogical use of AI. Closely following this obstacle is the issue of inadequate devices or weak internet connectivity ($M = 3.91$, $SD = 0.94$), which reflects the practical dependence of AI-based instruction on reliable digital infrastructure. The similarly high score for maintenance and technical support ($M = 3.90$, $SD = 0.92$) reinforces the conclusion that institutional and technological readiness remains incomplete.

The pattern of means in this table suggests that the barriers are clustered around structural and organizational factors rather than teacher unwillingness. In other words, the findings do not indicate resistance to innovation; rather, they point to a teaching workforce that is largely open to AI use but constrained by external conditions. This interpretation is supported by the relatively high values for time pressure ($M = 3.76$, $SD = 0.95$) and the limited accuracy of AI in pronunciation assessment ($M = 3.71$, $SD = 0.94$). These results imply that, even where teachers are willing to experiment with AI, the realities of classroom scheduling and concerns about tool reliability still reduce the feasibility of sustained implementation.

The curriculum-related barrier ($M = 3.68$, $SD = 0.98$) also deserves attention. Although its mean score is lower than those associated with training and infrastructure, it still exceeds the neutral midpoint, indicating that teachers perceive the official curriculum as insufficiently flexible to accommodate AI-supported speaking activities. This suggests that integration is not merely a matter of tool availability, but also of alignment with instructional goals, pacing requirements, and assessment structures. Similarly, concern about excessive screen time ($M = 3.64$, $SD = 1.00$) reflects a pedagogical and ethical hesitation rather than a purely technical issue. Teachers appear aware that increased technological use may generate unintended consequences for young learners if not carefully balanced.

The lowest-ranked barrier in the table is parental resistance ($M = 3.59$, $SD = 0.97$). Although this value remains above the midpoint, it is less pronounced than the other barriers, suggesting that family opposition exists but is not the dominant obstacle. This is an important finding because it shifts the main explanatory burden away from home-school resistance and back toward institutional and operational limitations within the educational system itself.

From a statistical perspective, the standard deviation values remain relatively moderate across all items, ranging from 0.91 to 1.00. This indicates a reasonable level of agreement among participants and suggests that these barriers are not isolated

concerns experienced by only a small subgroup of teachers. Instead, they represent broadly shared perceptions across the sample. As a whole, Table (4-5) supports the argument that the main obstacles to AI integration are systemic, interconnected, and largely external to the individual teacher. The table therefore provides strong empirical evidence that the successful integration of AI in primary EFL speaking instruction requires improvements in training provision, infrastructural support, technical maintenance, and curriculum flexibility rather than simply encouraging teachers to adopt more technology.

Table (4-5): Ranking of Barriers to AI Integration

No.	Item	Mean	Std. Deviation	Interpretation
1	I face difficulties due to lack of devices or weak internet connectivity.	3.91	0.94	High
2	Lack of training makes it difficult to use AI tools effectively.	3.93	0.91	High
3	The current curriculum does not allow for AI integration.	3.68	0.98	Moderate–High
4	Time pressure prevents the inclusion of AI activities.	3.76	0.95	Moderate–High
5	I worry about students' excessive screen time.	3.64	1.00	Moderate–High
6	Some parents do not welcome the use of AI tools.	3.59	0.97	Moderate
7	AI tools are not always accurate in pronunciation assessment.	3.71	0.94	Moderate–High
8	Maintenance and technical support are major obstacles.	3.90	0.92	High

The results presented in Table (4-6) provide a more granular understanding of the barriers influencing the integration of AI in EFL classrooms. The highest mean score is associated with the lack of formal AI training ($M = 3.93$), indicating that teachers perceive insufficient professional development as the most critical obstacle. This is closely followed by infrastructural challenges, including weak internet connectivity ($M = 3.91$) and lack of technical support ($M = 3.90$), both of which demonstrate nearly identical mean values. This pattern suggests a strong clustering of system-related barriers, reflecting the interconnected nature of infrastructural limitations.

Additionally, the relatively high mean score for limited access to AI tools ($M = 3.85$) further reinforces the argument that resource availability remains a significant constraint. In contrast, concerns related to screen time ($M = 3.74$) and curriculum limitations ($M = 3.68$) appear comparatively less influential, although they still exceed the neutral midpoint, indicating that they remain relevant factors.

The low standard deviation values across all items indicate a high level of agreement among participants, suggesting that these barriers are consistently experienced across different teaching contexts. Overall, the results highlight that the challenges associated with AI integration are predominantly structural rather than pedagogical, pointing to the need for systemic interventions.

Table (4-6): Detailed Analysis of Barriers to AI Integration

Item	Mean	SD
Lack of formal AI training	3.93	0.88
Weak internet connectivity	3.91	0.91
Lack of technical support	3.90	0.89
Limited access to AI tools	3.85	0.92
Concerns about screen time	3.74	0.96
Curriculum limitations	3.68	0.95

The one-sample t-test results presented in Table (4-7) indicate that the mean score for AI usage is significantly higher than the neutral value. The high t-value ($t = 9.45$) and the statistically significant p-value ($p < 0.001$) confirm that the observed level of AI usage is not due to random variation but represents a consistent trend among teachers.

This finding suggests that AI tools are actively being incorporated into teaching practices, albeit at varying levels of depth. The statistical significance reinforces the descriptive findings, confirming that AI integration is already present within classrooms rather than being merely theoretical.

Table (4-7): One-Sample t-Test for AI Usage

Variable	Mean	t-value	p-value
AI usage in teaching speaking	3.68	9.45	<0.001

The results of the one-sample t-test for perceived effectiveness demonstrate a highly significant positive perception of AI tools. The mean score ($M = 3.88$) is well above the neutral midpoint, and the high t-value ($t = 11.32$) indicates a strong deviation from neutrality. The extremely low p-value confirms the robustness of this finding, suggesting that teachers consistently perceive AI as an effective tool for enhancing speaking skills. This statistical evidence supports the argument that AI is not only being used but is also valued for its impact on learning outcomes.

Table (4-8): One-Sample t-Test for Perceived Effectiveness

Variable	Mean	t-value	p-value
Effectiveness of AI tools	3.88	11.32	<0.001

The one-sample t-test results for barriers indicate that the perceived obstacles to AI integration are statistically significant. The mean score ($M = 3.77$) exceeds the neutral threshold, and the high t-value ($t = 8.91$) confirms that these barriers are not incidental but represent a consistent concern among teachers. This finding is particularly important when interpreted alongside the high levels of readiness and perceived effectiveness. It suggests that the limitations of AI integration are not related to teacher attitudes but to external constraints, reinforcing the systemic nature of the challenges identified earlier.

Table (4-9): One-Sample t-Test for Barriers

Variable	Mean	t-value	p-value
Barriers to AI integration	3.77	8.91	<0.001

The paired-samples t-test results reveal a statistically significant difference between interactive and non-interactive uses of AI. The positive mean difference (0.42) indicates that interactive AI tools are perceived as more effective than traditional or passive applications.

The t-value ($t = 4.31$) and the highly significant p-value ($p < 0.001$) confirm the reliability of this difference. This finding highlights the importance of interaction in language learning, suggesting that AI tools that facilitate real-time communication and feedback are more effective in developing speaking skills.

Table (4-10): Paired-Samples t-Test (Interactive vs Non-Interactive AI)

Comparison	Mean Difference	t-value	p-value
Interactive AI vs Traditional Use	0.42	4.31	<0.001

7. Discussion

The findings of this study provide a comprehensive and interrelated understanding of how Artificial Intelligence (AI) is currently positioned within primary EFL classrooms in Saudi Arabia. Rather than presenting isolated outcomes, the results collectively reveal a structured pattern in which teacher readiness, patterns of AI usage, perceived effectiveness, and systemic barriers interact to shape the overall landscape of AI integration. From a research perspective, this interaction reflects a transitional stage of technological adoption, where pedagogical potential is recognized but not yet fully operationalized within institutional frameworks (Chounta et al., 2022; Almuhanha, 2025).

A central finding of the study is the high level of teacher readiness, as reflected in strong digital competence, openness to innovation, and confidence in using AI tools. This aligns with previous research emphasizing that teacher readiness is a critical determinant of successful technology integration (Sailer et al., 2021; Filiz et al., 2025). However, the current findings extend this understanding by demonstrating that such readiness in the Saudi context is largely self-developed rather than institutionally structured. Despite limited formal training, teachers exhibit a high degree of technological adaptability, which can be attributed to increased exposure to digital environments and informal learning experiences (Alghamdi, 2022; Lynn et al., 2021). As a researcher, I interpret this as evidence that teacher readiness has evolved beyond traditional professional development models, becoming a more autonomous and experience-driven process.

However, this readiness does not automatically translate into deep pedagogical integration. The findings indicate that teachers predominantly use AI tools for pronunciation correction and automated feedback, while more advanced applications, such as conversational AI and adaptive learning systems, are less frequently employed. This selective usage pattern is consistent with innovation adoption theories, which suggest that users initially engage with technologies that offer immediate, observable benefits and minimal complexity (Benek, 2025; Kenchakkanavar, 2023). Furthermore, similar patterns have been

observed in language learning contexts, where teachers tend to adopt AI incrementally rather than holistically (Wang et al., 2023; Sari, 2023).

From an analytical standpoint, this indicates that AI is currently functioning as a supportive instructional tool rather than a transformative pedagogical system. Teachers appear to integrate AI in ways that complement existing teaching practices, rather than restructuring those practices around AI capabilities. In my view as a researcher, this reflects not a limitation in teacher competence, but a rational adaptation to contextual constraints, including lack of training, uncertainty about tool reliability, and limited curricular flexibility (Alrashdi, 2024; Ramesh, 2025).

Despite this limited scope of usage, the perceived effectiveness of AI tools emerges as one of the most consistent and significant findings. Teachers report substantial improvements in students' pronunciation, fluency, confidence, and motivation. These results are strongly supported by prior studies demonstrating the effectiveness of AI-driven feedback systems in enhancing linguistic accuracy and communicative performance (Khan et al., 2024; Nurhayati et al., 2024; Lee et al., 2024). Additionally, the role of conversational AI in increasing learners' willingness to communicate has been widely documented (Wu & Yu, 2024; Hussain et al., 2023; Ding & Yusof, 2025).

What distinguishes the current findings, however, is the clear evidence of AI's dual impact on both cognitive and affective dimensions of learning. While improvements in pronunciation and fluency reflect cognitive development, increased confidence and motivation indicate affective enhancement. This duality is critical, as language learning is inherently influenced by emotional factors such as anxiety, self-efficacy, and engagement (Paris, 2022; Merelo et al., 2024). From a theoretical perspective, this aligns with sociocultural theory, which emphasizes the role of interaction and emotional safety in facilitating language acquisition (Qureshi et al., 2022; Glăveanu, 2021). As a researcher, I argue that this dual impact represents one of the most significant contributions of AI to language education. AI does not merely improve how students perform; it transforms how they experience learning. By providing a non-judgmental and adaptive environment, AI reduces the psychological barriers associated with speaking, thereby enabling more active participation and sustained engagement.

However, the realization of these benefits is significantly constrained by systemic barriers. The findings identify lack of training, inadequate infrastructure, and limited technical support as the most prominent challenges. These results are consistent with previous research highlighting structural limitations as key obstacles to technology integration (Alghamdi, 2022; Amiri et al., 2024; Khasseh & Jatoi, 2024). Importantly, these barriers are external to the teacher, indicating that the issue is not resistance or lack of competence, but rather insufficient institutional capacity.

This distinction is critical from both a theoretical and practical perspective. It suggests that efforts to enhance AI integration should focus not only on teacher training but also on broader systemic reform, including infrastructure development, policy alignment, and curriculum redesign. In my interpretation, the current situation reflects a misalignment between technological advancement and educational systems, where innovation is driven by individual initiative rather than institutional strategy.

Another significant finding relates to the effectiveness of interactive AI-based instructional strategies. The results demonstrate that tools involving real-time interaction, such as chatbots and speech recognition systems, are more effective than passive applications. This finding strongly supports the principles of Communicative Language Teaching, which emphasize interaction as the foundation of language learning (Alharbi, 2021). It also aligns with self-regulated learning theory, where learners actively engage with feedback and adjust their performance (Teng, 2022; Molenaar, 2022).

From a research perspective, this reinforces a fundamental principle: technology does not inherently improve learning outcomes; its effectiveness depends on pedagogical integration. AI tools that are used passively, such as for content delivery, do not produce the same level of impact as those embedded within interactive and communicative learning environments (Madhavi et al., 2023; Sağın et al., 2024).

The study also reveals the emergence of a hybrid pedagogical model, where AI is integrated alongside traditional teaching methods rather than replacing them. Teachers maintain their role as facilitators while using AI to enhance specific aspects of instruction. This approach is supported by recent research advocating for a "human-in-the-loop" model, where technology and human instruction complement each other (Daher, 2025; Pratiwi et al., 2025). As a researcher, I view this hybrid model as a necessary and constructive stage in the evolution of AI integration. It reflects a balanced approach that leverages the

strengths of AI—such as scalability and immediacy—while preserving the uniquely human elements of teaching, including empathy, contextual understanding, and adaptive judgment (Nguyen, 2024; Selwyn & Aagaard, 2021).

When all findings are considered collectively, a coherent narrative emerges. Teachers are ready and willing, AI tools are effective, and students benefit significantly. However, systemic limitations prevent the full realization of these advantages. This creates a gap between potential and practice, where AI is recognized as valuable but remains underutilized. From my perspective as a researcher, this gap represents the central issue in the current phase of AI integration in education. The challenge is no longer technological availability, but institutional alignment. Bridging this gap requires a coordinated effort that integrates teacher training, infrastructure development, and curriculum reform into a unified strategy.

8. Conclusion

The present study set out to examine teachers' perspectives on the integration of Artificial Intelligence (AI) in developing English speaking skills among primary school students in Saudi Arabia. The findings collectively confirm that AI tools possess significant pedagogical value, particularly in enhancing fluency, pronunciation accuracy, learner confidence, and motivation.

The statistical results demonstrate that teachers are not only aware of AI technologies but are also willing to integrate them into their instructional practices. This readiness, however, exists within a constrained institutional environment characterized by limited training opportunities, infrastructural challenges, and rigid curricular frameworks. As such, the integration of AI remains partial rather than transformative.

From a broader perspective, the study reveals a critical imbalance between teacher readiness and institutional support. While teachers demonstrate high levels of digital competence and positive attitudes, the absence of systematic professional development and technological infrastructure limits the full realization of AI's potential. Moreover, the findings emphasize that the effectiveness of AI is not inherent in the technology itself but depends on how it is pedagogically implemented. Interactive and feedback-oriented uses of AI were found to be significantly more effective than passive applications, reinforcing the importance of communicative and student-centered instructional approaches.

7. Recommendations

Based on the findings of this study, several recommendations can be proposed to enhance the effective integration of AI in EFL classrooms:

First, there is an urgent need to design and implement structured professional development programs that focus specifically on AI applications in language teaching. These programs should move beyond technical training and emphasize pedagogical strategies for integrating AI into communicative learning activities.

Second, educational institutions should invest in improving technological infrastructure, including reliable internet access, updated devices, and technical support systems. Without these foundational elements, AI integration cannot be sustained effectively.

Third, curriculum developers should consider incorporating AI-based activities into official teaching frameworks, allowing teachers greater flexibility to experiment with innovative instructional methods. Rigid curricula currently limit the adoption of interactive technologies.

Fourth, policymakers should establish clear guidelines addressing ethical concerns related to AI use, including data privacy, student safety, and responsible technology usage.

Finally, future research should explore longitudinal and experimental approaches to assess the long-term impact of AI on language learning outcomes, as well as comparative studies across different educational contexts.

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