

## INTEGRATING ARTIFICIAL INTELLIGENCE INTO ARABIC LANGUAGE EDUCATION: PEDAGOGICAL STRATEGIES AND LEARNING OUTCOMES

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### Abstract

*This study investigates the integration of Artificial Intelligence (AI) in Arabic language education within Nigerian higher institutions, focusing on lecturers in the South-West region. Adopting a quantitative descriptive survey design, data were collected from 60 Arabic lecturers through an online questionnaire and analysed using descriptive statistics and t-tests. Findings reveal that most lecturers are familiar with AI tools, with ChatGPT being the most frequently used, while specialised Arabic-focused AI applications remain underutilized. Lecturers perceive AI as beneficial for enhancing student engagement, personalization, and instruction in grammar and vocabulary, but remain sceptical of its impact on oral proficiency and overall performance. Key challenges identified include ethical concerns, threats to teachers' roles, and pedagogical limitations, though cost was not perceived as a significant barrier. The study concludes that successful AI integration requires teacher training, institutional support, and the development of localized Arabic-specific AI tools. It contributes to global discourse by highlighting Nigeria's unique contextual challenges and emphasizing the need for balanced adoption strategies that view AI as a complement, rather than a substitute, for human-led Arabic instruction.*

**Keywords:** Artificial Intelligence (AI), Arabic Language Education, Higher Education, Nigeria, Pedagogical Integration, Ethical Considerations.

### INTRODUCTION

The integration of Information and Communication Technology (ICT) into language education has fundamentally reshaped the pedagogical landscape, transitioning instructional practices from conventional and teacher-centered approaches to more dynamic and technologically enhanced methods (Hampel & Stickler, 2012). The widespread accessibility of the internet and digital tools such as personal computers, smartphones, and tablets has enabled language

educators and learners to engage in real-time global communication and collaboration, significantly enriching the language acquisition process (Blake, 2013). ICT has not only expanded access to authentic linguistic resources but also fostered learner autonomy and interaction in multilingual settings (Chapelle, 2009).

More recently, the integration of Artificial Intelligence (AI) into language learning has gained increasing prominence, offering transformative possibilities for both instructors

and learners. This trend is rarely significant in the context of Arabic language instruction, which presents unique pedagogical challenges due to the language's complex morphology, diglossia, and reliance on nuanced variations in tone, pitch, and pronunciation (Habash, 2010). Traditional language teaching methods often fall short in accommodating diverse learner needs, especially in terms of pace, style, and auditory discrimination. In contrast, AI-powered tools such as intelligent tutoring systems, speech recognition software, and adaptive language learning platforms offer personalized, immersive environments that can adapt to learners' individual progress and support more effective acquisition of listening and speaking skills (Godwin-Jones, 2018; Wong et al., 2022). These and many more need much investigation and research on the issues of the Arabic language in the modern age.

### **Concept of Artificial Intelligence in Language Teaching and Learning**

Artificial Intelligence (AI) refers to the ability of machines to perform tasks that normally require human intelligence, such as learning, reasoning, and language processing (Horvitz & Fast, 2017; Doohee, 2024). In education, AI has emerged as a transformative tool, enabling personalized learning, adaptive feedback, and scalable solutions for language instruction (Li, Link, & Hegelheimer, 2015; Kukulska-Hulme, 2020).

In the context of Second Language Acquisition (SLA), AI-powered platforms such as ChatGPT, Grammarly, and Meta AI's LLaMA models have been applied to support writing, vocabulary acquisition, reading comprehension, and learner engagement (Godwin-Jones, 2021; Kasneci et al., 2023). These tools provide real-time corrective feedback, simulate interactive learning environments, and adapt content to learners' proficiency levels. Natural Language Processing (NLP) and computational linguistics further enable the processing and

generation of human language, allowing AI systems to analyze syntax, semantics, and discourse patterns (Jurafsky & Martin, 2021; Chowdhary, 2020).

Despite these advances, the adoption of AI in Arabic language instruction faces unique challenges. Arabic's complex morphology, diglossia, and rich phonological system make it difficult for AI systems to generate coherent, grammatically correct text or accurately interpret idiomatic expressions (Zubaidi et al., 2022; Abdullatif & Alsubaie, 2022). Evaluations of tools like *I Read Arabic (IRA)* indicate inconsistent handling of verb forms and sentence structures, limiting comprehension and learning outcomes. Generative AI tools such as ChatGPT also struggle with pronunciation, contextual nuances, and culturally embedded expressions in Arabic (Mnguni et al., 2024). Pedagogical challenges further complicate integration, including variability in teacher delivery, limited student retention of grammar rules, and restricted vocabulary acquisition (Alshehri et al., 2022; Al-Zalzali, 2021).

Nonetheless, AI offers potential to enhance Arabic language teaching when adapted to linguistic and pedagogical needs. For instance, ChatGPT can assist in text generation and grammar exercises, while AI-based platforms can provide individualized practice for learners at different proficiency levels. WhatsApp or Telegram bots integrated with AI could also support interactive communication, though they currently lack sophisticated features for Arabic-specific learning.

This study, therefore, explores the integration of AI into Arabic language education in Nigerian higher education institutions, examining lecturers' perceptions, experiences, and readiness to adopt AI tools. By focusing on these applied perspectives, the research aims to

inform strategies for effective AI adoption that are responsive to the linguistic and pedagogical complexities of Arabic in non-Arabic speaking contexts.

## RESEARCH METHODOLOGY

### Research Design

This study adopts a quantitative research approach grounded in the positivist paradigm, which assumes that social reality is objective, measurable, and independent of the researcher. Within this framework, a descriptive survey design was employed to obtain empirical data from Arabic language lecturers in Nigerian higher institutions regarding the effective integration of Artificial Intelligence (AI) into the teaching and learning of Arabic. The descriptive survey method was deemed appropriate as it allows for the systematic collection and description of data from a representative sample, enabling generalization to the target population. The design also facilitates the identification of patterns, relationships, and trends in lecturers' perceptions and practices concerning AI adoption. Furthermore, an independent samples t-test was used to examine whether there is a statistically significant difference in AI adoption in classrooms based on the ethical concerns of the respondents. This statistical tool was selected because it is suitable for

comparing the means of two independent groups.

### Population and Sampling

The population of the study comprises all Arabic language lecturers in Nigerian South-West universities and colleges of education. Due to the wide geographical spread, a random sampling technique was employed to ensure representativeness across different institutions in the region. Data were collected using an online questionnaire, which was distributed directly to the selected lecturers through institutional contacts and professional academic networks. This approach enabled efficient coverage of a large geographical area while ensuring that responses were obtained from lecturers actively engaged in Arabic language teaching. A total of sixty (60) lecturers were selected in the South-West geopolitical zone of the country, where Arabic is currently offered as a course of study in higher institutions. This satisfied the sample size criteria of Krejcie & Morgan (1970). The report of the National University Commission 2025 and the National Commission of Colleges of Education 2025 show that there are five universities and three colleges of education in the south-west of Nigeria that offer Arabic language as a course of study. The names of the institutions with the population of lecturers and sample size taken from each institution are as follows:

Population and Sample Size of the Respondents

S/N	Name of the Institutions	Population of the Lecturers	Sample Size
1	Lagos State University, Ojo	13	10
2	Lagos State University of Education, Ijanikin	09	06
3	University of Ibadan	12	09
4	Summit University, Ofa	06	06
5	Emmanuel Alayande University of Education, Oyo	09	09
6	Federal College of Education, Abeokuta	06	06

7	Federal College of Education, Special, Oro	07	07
8	Osun State College of Education, Ilesa	07	07
<b>TOTAL</b>		<b>69</b>	<b>60</b>

### Research Instrument

The study employed a structured questionnaire adapted from Vera (2023), titled Questionnaire on the Use of Artificial Intelligence (QUIA), which has a reported reliability coefficient of 0.75 (Cronbach's Alpha). From the original instrument, 20 items were adopted and categorized into four sections:

1. Demographic Information capturing respondents' background characteristics.
2. Familiarity with AI Tools - comprising four items. The first item used a four-point Likert scale (1 = Very Familiar to 4 = Not Familiar at All), while the remaining items were categorical.
3. Perceived Pedagogical Strategies – six items designed to investigate lecturers' pedagogical views on integrating AI into Arabic instruction. Responses were measured on a four-point Likert scale (1 = Strongly Disagree to 4 = Strongly Agree).
4. Perceived Challenges and Ethical Considerations - 3 items assessing lecturers' concerns regarding AI use in Arabic education, also measured on a four-point Likert scale (1 = Strongly Disagree to 4 = Strongly Agree).

### Procedure for Data Analysis

Data collected were analysed using the Statistical Package for Social Sciences (SPSS) version 18.0. Descriptive statistics, including frequencies and percentages, were employed to analyse responses from Section Two (Familiarity with AI Tools). Means and standard deviations were used to interpret responses from Sections Three and Four (Perceived Pedagogical Strategies and Challenges/Ethics). A mean score below 2.50 was interpreted as a negative response. To test the hypothesis, an independent samples t-test

was conducted to determine whether there was a statistically significant difference between lecturers' perceptions of AI pedagogical strategies and their perceptions of AI-related challenges and ethical considerations.

### Research Objectives

This study seeks to empirically investigate the adoption and integration of Artificial Intelligence (AI) in the teaching of Arabic within Nigerian institutions of higher learning. Specifically, in the South-West of the country. The objectives of the study are to:

1. Examine the extent to which Arabic lecturers are familiar with AI tools currently applied in language teaching and learning.
2. Investigate lecturers' perceptions of pedagogical strategies suitable for integrating AI-enhanced learning into Arabic instruction.
3. Explore lecturers' perceptions of the challenges and ethical considerations associated with the use of AI in Arabic education.

### Research Questions

The study will be guided by the following research questions:

1. To what extent are Arabic lecturers familiar with AI tools used in language instruction?
2. What pedagogical strategies do Arabic lecturers perceive as suitable for integrating AI in Arabic teaching and learning?
3. What challenges and ethical considerations do Arabic lecturers perceive in the use of AI for Arabic education?

### Research Hypothesis

The study will test the following null hypothesis:

**H<sub>0</sub>:** There is no significant difference between lecturers' perceptions of AI-based pedagogical strategies and their perceptions of the challenges and ethical considerations associated with AI adoption in Arabic education.

### Significance of the Study

This study contributes to the growing body of literature on educational technology by providing empirical evidence on the role of AI in Arabic language pedagogy within Nigeria. The findings will assist curriculum developers,

educators, and policymakers in designing effective AI-integrated Arabic learning environments. Furthermore, the study has broader implications for promoting innovative, technology-driven approaches to language education in multilingual and multicultural contexts.

### DATA ANALYSIS

#### Descriptive statistics showing the bio data of the participants in the study

The demographic profile of participants in this study provides important insights into the characteristics of Arabic language lecturers in Nigerian higher institutions.

#### Gender Distribution

Gender	Frequency	Percent	Cumulative Percent
Male	48	80.0	80.0
Female	12	20.0	100.0
Total	60	100.0	

The results reveal that 80% of the respondents were male and 20% were female. This imbalance reflects the persistent underrepresentation of women in Arabic and Islamic studies. Previous studies (Shittu, 2012; Yusuf, 2024) have attributed this disparity to

socio-cultural and religious factors that often discourage female participation in Arabic programmes. The finding suggests that gender mainstreaming efforts in Nigerian higher education have not yet had a significant impact on staffing in Arabic departments

#### Age Distribution

Age	Frequency	Percent	Cumulative Percent
Under 30years	4	6.7	6.7
31 to 40years	33	55.0	61.7
41 to 50years	16	26.6	88.3
Above 50years	7	11.7	100.0
Total	60	100.0	

Most respondents (55%) were between 31 and 40 years, while 26.6% were between 41 and 50 years, 6.7% were below 30 years, and 11.7%

were above 50 years. This indicates that Arabic departments are largely staffed by mid-career lecturers.

### Teaching Experience

Teaching Experience	Frequency	Percent	Cumulative Percent
0 to 5years	13	21.7	21.7
6 to 10years	25	41.7	63.3
11 to 20years	15	25.0	88.3
21 years plus	7	11.7	100.0
Total	60	100.0	

Respondents' teaching experience shows that 41.7% had between 6 and 10 years of experience, 25% had between 11 and 20 years, and 11.7% had over 21 years. Only 21.7% had less than five years of teaching experience. The

dominance of mid-level teaching experience suggests a solid workforce foundation, but with relatively few highly experienced lecturers.

### Area of Specialization

Arabic Language Specialization	Frequency	Percent	Cumulative Percent
Linguistics	25	41.7	41.7
Literature	21	35.0	76.7
Education	10	16.7	93.3
Others	4	6.7	100.0
Total	60	100.0	

A total of 41.7% of participants specialized in Linguistics, 35% in Literature, 16.7% in Education, and 6.7% in other related fields.

This distribution shows that relatively few lecturers are trained in Arabic education, which raises concerns about pedagogical competence.

### Institutional Distribution

Institution	Frequency	Percent	Cumulative Percent
University	47	78.3	78.3
College of Education	13	21.7	100.0
Total	60	100.0	

The study also shows that 78.3% of the lecturers were from universities, while 21.7% were from colleges of education. This pattern reflects the stronger institutional presence of Arabic programmes in Nigerian universities

compared to colleges of education. Nonetheless, given that colleges of education play a critical role in teacher preparation, their underrepresentation may further limit the supply of professionally trained Arabic teachers

Academic Qualification	Frequency	Percent	Cumulative Percent
B.A.	8	1.7	1.7
B.A. Ed.	1	13.3	15.0
M.A.	32	53.3	68.3
M.A. Ed.	8	13.3	81.7

PhD	11	18.3	100.0
Total	60	100.0	

**Academic Qualification**

In terms of academic qualifications, 53.3% held a Master of Arts (M.A.), 13.3% a Master of Arts in Education (M.A. Ed.), 18.3% a Doctor of Philosophy (Ph.D.), while only 15% had a first degree. This finding suggests a relatively high concentration of postgraduate qualifications among Arabic lecturers, which is consistent with Mustapha’s (2017) report on language lecturers in West African universities. However, the relatively small number of M.A. Ed. holders further reinforces the gap in pedagogical training.

**Synthesis and Implications**

Taken together, the demographic findings highlight several structural issues in Arabic language teaching in Nigeria: (1) a gender imbalance favoring male lecturers, (2) limited recruitment of younger academics, (3) insufficient specialization in pedagogy, (4) dominance of universities over colleges of education, and (5) concentration of academic qualifications in linguistics and literature rather than educational training. These findings align

with past literature (Oladosu, 2012; Yusuf, 2015; Salawu, 2018; Olanrewaju, 2021) and point to the urgent need for targeted interventions in recruitment, professional training, and gender inclusion in the Arabic language teaching workforce.

**RESULTS**

**Research Question 1:** How familiar are Arabic language lecturers with AI tools currently used in their institutions?

To address this research question, responses to Items 1- 4 were analyzed. These items examined lecturers’ familiarity with AI, their use of AI tools, and the types of tools commonly adopted in Arabic language teaching.

**1. Familiarity with Artificial Intelligence (Item 1)**

Participants were first asked to indicate their level of familiarity with Artificial Intelligence. Table 1 presents the distribution.

**Table 1:** Familiarity with Artificial Intelligence (N = 60)

Response	Category	Frequency	Percent	Cumulative Percent
Very familiar	24		40.0	40.0
Somewhat familiar	20		33.3	73.3
Slightly familiar	14		23.3	96.7
Not familiar at all	02		3.3	100.0

A total of 40% of lecturers reported being *very familiar* with AI, while 33.3% were *somewhat familiar*. Only 3.3% indicated *no familiarity*. Overall, the majority demonstrated moderate to high awareness of AI technology.

**2. Previous Use of AI Tools in Teaching (Item 2)**

Participants were asked whether they had used any AI applications in their instructional practices.

**Table 2:** Use of AI Tools in Teaching (N = 60)

Response	No	Frequency	Percent	Cumulative Percent
Yes	38		63.3	63

Response	No	Frequency Percent	Cumulative Percent
No	22	36.7	100.0

Results show that 63.3% had used AI tools, while 36.7% had not. This indicates that nearly two-thirds of Arabic lecturers had some practical experience with AI in instruction.

### 3. AI Tools Commonly Used by Lecturers (Item 3)

Respondents who indicated prior use of AI (n = 38) were further asked to identify the specific tools they employed.

**Table 3:** Frequently Used AI Tools (n = 38)

AI Tool	Frequency	Percent	Cumulative Percent
ChatGPT	20	57.5	60.5
Metal AI	10	21.4	100.0
Grammarly	5	13.2	73.7
Turnitin	2	5.3	79.0
Quetext	1	2.6	81.6
Duolingo	0	0.0	60.5
Mendeley	0	0.0	81.6

ChatGPT was the most widely used tool (57.5%), followed by Metal AI (21.4%) and Grammarly (13.2%). Use of plagiarism-detection tools (Turnitin, Quetext) was marginal, and no respondents reported using Duolingo or Mendeley.

### 4. Types of ChatGPT-Based or Related Platforms Used (Item 4)

Participants who used AI were also asked to specify which ChatGPT-based platforms they employed for Arabic language teaching.

**Table 4:** ChatGPT Platforms Used (n = 38)

Platform	Frequency	Percent	Cumulative Percent
ChatGPT (OpenAI)	26	68.4	68.4
Scribens AI / Grammarly	5	13.2	81.6
Replika	4	10.5	82.1
LangAI Chatbots	3	7.9	100.0
Duolingo Max	0	0.0	68.4
Quillionz	0	0.0	68.4

ChatGPT (OpenAI) accounted for the highest usage (68.4%), while other AI-supported writing and conversational platforms had

comparatively lower adoption. No respondent used Duolingo Max or Quillionz.

Findings for research question 1 showed that the majority of Arabic lecturers demonstrated

moderate to high levels of familiarity with AI, with 73.3% reporting being very or somewhat familiar. Additionally, 63.3% had already used AI tools in their teaching. This level of awareness aligns with global trends in higher education. Zawacki-Richter et al. (2019) similarly found increasing faculty exposure to AI technologies across universities, though with varying degrees of practical engagement. Holmes et al. (2022) also reported that while lecturers across disciplines recognize the growing relevance of AI, professional confidence in using these tools remains inconsistent.

Furthermore, the use of general-purpose AI tools such as ChatGPT, Grammarly, and Metal AI by Arabic lecturers reflects the pattern observed by Kasneci et al. (2023), who noted that educators gravitate towards generative AI due to its versatility and ease of integration. In contrast, the limited use of language-specific tools like Duolingo aligns with Ouyang and Jiao (2021), who found that specialized AI platforms are often underutilized because they lack localization for specific languages, especially non-Western languages like Arabic. The implication is that familiarity alone does not automatically translate into deep pedagogical integration. Arabic lecturers have access to AI tools, but their engagement tends to revolve around general academic support rather than tailored language-learning features. As Al-Ahdal (2020) noted, Arabic language education globally has lagged in adopting emerging technologies due to contextual constraints, the absence of localized AI solutions, and low institutional support.

The study also revealed that ChatGPT was the most used AI tool (57.5%), followed by Metal AI (21.4%) and Grammarly (13.2%). Platforms designed specifically for language learning, such as Duolingo Max or Quillionz, recorded zero usage. The preference for generative AI

mirrors the findings of Kasneci et al. (2023), who emphasized that ChatGPT has become the default AI tool among educators because of its ability to generate textual explanations, provide translations, create activities, and support lesson planning.

Furthermore, the use of Grammarly and Turnitin aligns with studies such as Dwivedi et al. (2021), which highlighted the widespread adoption of AI-supported writing tools in academia. However, the absence of language-specific AI tools suggests a gap in technological alignment with Arabic language structures. Almalki (2023) reported a similar trend in Saudi universities, where teachers relied more on AI for writing assistance than for linguistic or grammar instruction in Arabic.

This pattern raises pedagogical concerns: while generative AI can support text generation, translation, and feedback, its lack of Arabic-specific morphological depth means that teachers may not be fully benefiting from AI's potential for grammar, vocabulary, and pronunciation training. As Olaniran (2023) argued in the African context, infrastructural and training limitations often restrict lecturers to the simplest and most accessible technologies rather than tools directly aligned with their subject.

The implication is that although Arabic lecturers are using AI, their utilization remains at the level of general academic productivity rather than domain-specific instructional enhancement. Without institutional training and curated Arabic-focused AI resources, deeper integration will remain limited.

**Research Question Two:** What are the perceptions of pedagogical strategies suitable for integrating AI-enhanced learning in Arabic instruction?

To address this question, the responses to items 5-12 (teachers' perceptions of AI-enhanced

learning) were analyzed using mean and standard deviation. The results are summarized in Table 5.

**Table 5:** Mean and Standard Deviation on Teachers' Perceptions of AI-Enhanced Learning

S/N	Items	Mean	SD	Remark
5	AI can enhance student engagement.	2.63	0.89	Agreed
6	AI personalizes learning for different levels.	2.78	0.93	Agreed
7	AI supports grammar and vocabulary teaching.	2.67	1.02	Agreed
8	Using AI improves students' overall performance.	1.79	1.04	Disagreed
9	I am confident in using AI tools.	2.63	0.93	Agreed
10	Teachers need training on using AI.	2.74	0.78	Agreed
11	AI is suitable for teaching Arabic.	2.83	0.93	Agreed
12	AI can improve pronunciation and speaking practice.	1.19	0.87	Disagreed

The findings from this study provide important insights into Arabic language teachers' perceptions of pedagogical strategies for integrating AI into classroom instruction. Specifically, the results show that most respondents agreed that AI can enhance student engagement (M = 2.63), personalize learning (M = 2.78), support grammar and vocabulary teaching (M = 2.67), and is suitable for teaching Arabic (M = 2.83). Teachers also expressed confidence in their ability to use AI tools (M = 2.63) but emphasized the importance of training (M = 2.74). In contrast, participants disagreed that AI directly improves overall student performance (M = 1.79) or significantly enhances pronunciation and speaking practice (M = 1.19). These findings reflect both Nigerian realities and global perspectives in language education.

These findings for research question 2 suggest that lecturers recognize AI's potential to support structural and cognitive aspects of language learning, such as grammar, vocabulary, and adaptive learning, but remain cautious about its efficacy in developing oral proficiency. These perceptions align with global evidence indicating that AI-powered platforms can effectively personalize learning, provide immediate feedback, and enhance

learner engagement (Godwin-Jones, 2021; Holmes et al., 2022; Kasneci et al., 2023). Similar trends have been observed in other language contexts, where teachers appreciate AI's capacity to supplement instruction rather than replace human-mediated teaching (Ouyang & Jiao, 2021; Smutny & Schreiberová, 2020). However, the skepticism regarding pronunciation and performance mirrors challenges reported in languages with complex phonological and morphological systems, where AI tools often fail to capture nuanced oral and prosodic features (Al-Ahdal, 2020; Shadiev et al., 2021). Within the Nigerian context, these findings reflect the realities of limited infrastructure, inconsistent digital literacy, and the absence of Arabic-specific AI applications, which constrain effective integration (Okebukola, 2021; Olaniran, 2023). While lecturers are increasingly familiar with AI and willing to adopt it, their confidence is tempered by the lack of structured training and localized tools. Comparatively, high-resource settings in Europe, China, and the Middle East have shown that systematic professional development, reliable digital infrastructure, and access to tailored AI applications enhance teacher competence and learning outcomes (Dwivedi et al., 2021; Feng & Ha, 2022). In this regard, the study highlights a dual challenge:

the potential of AI is acknowledged and valued by Nigerian Arabic lecturers, yet its effective implementation is constrained by contextual factors. Consequently, AI is perceived as a complementary pedagogical tool rather than a comprehensive solution, with its effectiveness contingent on professional training, infrastructural support, and the adaptation of tools to Arabic language intricacies.

**Research Question Three:** What are the challenges and ethical considerations in using AI for Arabic Education?

The participants' responses on items 13 to 15 regarding challenges and ethical considerations in AI usage were analyzed using mean and standard deviation. The results are summarized in Table 1 below.

**Table 1:** Mean and Standard Deviation of Challenges and Ethical Considerations of AI in Arabic Education

S/N	Items	Mean	Std. Dev.	Remark
13	AI threatens the role of teachers in the classroom	2.72	0.92	Agreed
14	AI may lead to ethical or academic honesty issues	2.84	0.88	Agreed
15	AI usage is very challenging due to cost implications	2.11	0.34	Disagreed

The results show that lecturers largely agree that AI poses a potential threat to the traditional role of teachers (M = 2.72) and may give rise to ethical or academic honesty concerns (M = 2.84). Conversely, cost is not perceived as a major barrier (M = 2.11), suggesting that while material resources are less pressing, the pedagogical and ethical implications of AI integration are of greater concern.

These perceptions reflect Nigerian realities, where language educators often view AI as a double-edged sword enhancing learning while raising issues of plagiarism, academic dishonesty, and potential devaluation of teacher expertise (Yusuf, 2022; Adegbite & Bello, 2021). Globally, similar anxieties have been documented; educators express concern over possible displacement by AI systems, even though research emphasizes that AI is most effective when complementing rather than replacing human instruction (Luckin et al., 2016; Holmes et al., 2022). Ethical concerns, such as overreliance on generative AI and lack

of transparency in automated assessment, are similarly recognized internationally (Almalki, 2023; Ouyang & Jiao, 2021). The relatively low concern about cost contrasts with global findings, where financial constraints are often cited as barriers to AI adoption (Zawacki-Richter et al., 2019). This may be explained by Nigerian lecturers' use of freely available AI platforms, such as ChatGPT, which reduce the financial threshold compared to subscription-based systems common in other contexts. Overall, these findings highlight the need for professional guidance, ethical frameworks, and policies to ensure AI enhances rather than undermines Arabic language pedagogy.

**Hypothesis One:** There is no significant difference between the lecturers' perception of AI strategies and challenges in Arabic Education.

A t-test was conducted to determine whether a significant difference existed between Arabic language teachers' perceptions of AI strategies and AI challenges in Arabic education. The results are presented in Table 6.

**Table 6:** Independent Samples t-test Comparing Teachers' Perceptions of AI Strategies and Challenge

Variable	N	Mean	SD	df	t	p	Decision
Strategies	60	2.65	0.61	59	-0.30	0.76	Not Significant
Challenges	60	2.67	0.67				

The analysis on Table 6 shows no statistically significant difference between teachers' perceptions of AI strategies and AI challenges in Arabic education,  $t(59) = -0.30, p = .76$  ( $p > .05$ ). This implies that teachers rate the availability of AI strategies and the challenges they face at almost the same level, suggesting a balanced perception of both benefits and constraints.

## DISCUSSION

The t-test analysis ( $t = -0.30; df = 59; p = 0.76$ ) indicated that there is **no significant difference** between Arabic language teachers' perceptions of AI strategies and the challenges associated with its use. Consequently, the null hypothesis ( $H_0$ ) is not rejected. This suggests that teachers perceive AI strategies and challenges as closely aligned, reflecting a balanced awareness of both the potential benefits and limitations of AI integration in Arabic education. These findings are consistent with recent research on language teaching and AI integration. For instance, Dwivedi et al. (2021) note that educators generally recognize both opportunities and constraints of AI, particularly in contexts where digital literacy varies. Similarly, Ouyang and Jiao (2021) report that teachers in language learning contexts often acknowledge AI's role in enhancing engagement and personalized learning while also recognizing its limitations, particularly in oral proficiency and ethical concerns. In Arabic education specifically, Al-Ahdal (2020) highlighted that teachers perceive AI tools as useful for structural aspects of language, such as grammar and vocabulary, but remain cautious about their ability to support pronunciation and communicative competence.

Moreover, this finding aligns with global discussions on AI adoption in language instruction, where teachers tend to hold a **nuanced view** embracing AI for pedagogical enhancement while being mindful of ethical, cultural, and practical challenges (Godwin-Jones, 2021; Holmes et al., 2022). In the Nigerian context, this equilibrium likely reflects both growing familiarity with AI tools (e.g., ChatGPT, Grammarly) and recognition of infrastructural, professional, and linguistic limitations that may constrain their effective use (Olaniran, 2023; Yusuf, 2022).

Overall, the hypothesis result underscores a critical insight: Arabic language teachers in Nigeria are **cognizant of AI's dual role** as both an enabler and a potential source of pedagogical and ethical challenges, reflecting trends observed in global language education.

## CONCLUSIONS AND RECOMMENDATIONS

This study explored the integration of Artificial Intelligence (AI) into Arabic language education in Nigerian higher education, focusing on lecturers' familiarity with AI tools, perceptions of pedagogical strategies, challenges, and ethical considerations. Findings indicate that most Arabic lecturers demonstrate moderate-to-high familiarity with AI, predominantly using generative and writing support tools such as ChatGPT and Grammarly, while adoption of Arabic-specific platforms remains limited. Lecturers perceive AI as enhancing engagement, personalization, and grammar and vocabulary instruction, but remain skeptical about its impact on oral proficiency and overall student performance.

Ethical concerns, particularly regarding academic honesty and the potential devaluation of teachers' roles, emerged as the main challenges, whereas cost was not seen as a major barrier.

Based on these findings, several recommendations are proposed. First, AI should be systematically integrated into Arabic curricula through blended pedagogical models that leverage AI for drills, composition, and feedback while reserving teacher-led sessions for discourse, cultural nuance, and oral fluency (Zawacki-Richter et al., 2019; Popenici & Kerr, 2017). Second, structured professional development is essential, encompassing pedagogical design, ethical AI use, assessment integration, and Arabic-specific AI applications, delivered in collaboration with national and international EdTech organizations (Dwivedi et al., 2021; UNESCO, 2023).

Third, there is a critical need for localized AI tools tailored to Arabic phonology and linguistic structures, including speech recognition and prosody analysis, to address gaps in oral proficiency development (Feng & Ha, 2022; Holmes et al., 2022). Fourth, institutional support and infrastructure are necessary, including reliable internet, computer labs, licensed AI platforms, and policies ensuring equitable access and academic integrity. Finally, blended lesson designs should balance AI-assisted preparatory work with in-class teacher guidance, promoting learner autonomy while safeguarding culturally and linguistically nuanced instruction.

In sum, AI offers promising pedagogical strategies for Arabic instruction in Nigeria, particularly in engagement, personalization, and structural aspects of the language. However, its effectiveness is context-dependent, requiring professional development, localized tool adaptation, and institutional

backing. AI should complement, not replace, teachers, ensuring that Arabic education maintains both technological relevance and educational integrity.

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