



Improving Language Learning Proficiency and Competence of Arabic Language Education Using AI Technology

Haniah¹, Hamka Ilyas², Nurwinanda³, Harith Samae⁴

1,2,3Universitas Islam Negeri Alauddin Makassar, Indonesia, 4Academy of Islamic and Arabic Studies,
Princes of Naradhiwas University

Corresponding E-mail: haniah@uin-alauddin.ac.id, ilyas.hamka@gmail.com,
nurwinandaa11@gmail.com

Abstract

Arabic proficiency is a fundamental competence for students in Arabic Language Education, particularly for prospective lecturers and educators who are expected to master listening and speaking skills in academic contexts. Prior to the integration of artificial intelligence (AI), students in the Master's Program of Arabic Language Education at UIN Alauddin Makassar still faced several challenges, including limited speaking practice, insufficient exposure to authentic listening materials, and the minimal use of interactive digital media in classroom learning. This study aims to improve students' maharah al-istimā' and maharah al-kalām through the use of AI-based applications, namely Duolingo, Easy Peasy, Busuu, and TalkPal. The study employed Classroom Action Research conducted in two cycles using a mixed-method approach. Data were collected through pre-tests and post-tests, observation, questionnaires, and documentation, and were analyzed descriptively with SPSS support. The findings show a clear improvement in students' Arabic proficiency after the implementation of AI-assisted learning. In the pre-test, students' achievement was still dominated by the low and medium categories, whereas in the post-test most students moved to the high category in both listening and speaking. In addition, students showed positive responses toward the use of AI, with Busuu and Duolingo emerging as the most frequently used supporting applications. The study indicates that AI contributes to more personalized, interactive, and flexible Arabic learning. Nevertheless, AI-based learning also presents limitations, such as dependence on internet access, uneven student familiarity with digital tools, and the risk of overreliance on applications without sufficient lecturer guidance.

Keywords: *Arabic language learning; artificial intelligence; maharah al-istimā'; maharah al-kalām; classroom action research.*

Introduction

Arabic language proficiency is a highly valuable asset in the professional world, particularly in the field of Arabic language education.¹ As one of the world's major languages with a long intellectual, cultural, and religious tradition, Arabic plays an important role in educational, social, and academic development.² For students who pursue higher education in Arabic Language Education, especially at the master's level, proficiency in Arabic is not merely a complementary competence but a core academic requirement.³ It enables them to access Arabic references, develop instructional competence, and prepare for future roles as lecturers, teachers, researchers, and developers of Arabic learning materials. Therefore, improving Arabic language competence and proficiency among students of the Master's Program in Arabic Language Education is essential for their academic and professional success.

Although the study program has provided several Arabic-related courses, students' communicative proficiency does not automatically develop at the expected level. In the context of the Master's Program in Arabic Language Education at UIN Alauddin Makassar, there were still several obstacles to improving students' Arabic competence before the implementation of AI-assisted learning. These included the low intensity of practical exercises, limited

¹I. A. Yani, Ike Atikah Ratnamulyani, and Ali Alamsyah Kusumadinata, *PENGARUH KOMPETENSI BERBAHASA ASING DAN PENGORGANISASIAN DALAM MENUNJANG KARIR DIBIDANG PUBLIC RELATIONS* | *JURNAL KOMUNIKATIO*, July 28, 2018, <https://ojs.unida.info/index.php/JK/article/view/1208>.

²Agus Tamami and Mira Nurdianti, "PENGARUH KOMPETENSI GURU BAHASA ARAB TERHADAP KEMAMPUAN BAHASA ARAB SISWI KELAS IX DI MTs UMMUL QURO AL-ISLAMI BOGOR," *TADBIRUNA* 1, no. 1 (August 2021): 39–44, <https://doi.org/10.51192/tadbiruna.v1i1.121>.

³Tulus Musthofa, "CEFR-Based Policy in Arabic Language Teaching and Cultural Dimension in Indonesian Islamic Higher Education," *Eurasian Journal of Applied Linguistics* 8, no. 2 (2022): 102, <https://doi.org/10.32601/ejal.911545>.

opportunities to practice speaking beyond classroom meetings, insufficient exposure to authentic Arabic listening input, and the limited use of interactive multimedia support in Arabic learning. These problems are in line with recent studies showing that learners of Arabic as a second or foreign language often face persistent challenges related to oral practice, pronunciation, curriculum support, and access to real communicative situations.⁴ Recent research also underlines that authentic exposure outside the classroom is crucial for developing Arabic proficiency, while listening activities are often less emphasized than other language skills in instructional materials. In addition, the diglossic nature of Arabic itself creates a distinctive pedagogical challenge, because learners must navigate the relationship between formal Arabic and spoken varieties. Oral performance may also be affected by foreign language anxiety, which can reduce learners' confidence and attention in speaking tasks.⁵

These initial learning conditions indicate that the problem was not solely related to students' motivation or curriculum structure, but also to the limited availability of pedagogical support that could provide intensive, adaptive, and repeated practice in **maharah al-istimā'** and **maharah al-kalām**. In conventional classroom settings, students often depend heavily on lecturer-centered instruction and scheduled face-to-face sessions. Such arrangements may not provide sufficient room for individualized practice, immediate feedback, or flexible repetition, all of which are particularly important for listening and

⁴Nurwinanda Nurwinanda and Muh Khalik, "Critical Analysis of Attainment of Arabic Language Learning Outcomes in Competency-Based Curriculum at Elementary Islamic Schools," *Research Horizon* 3, no. 3 (June 2023): 192–97, <https://doi.org/10.54518/rh.3.3.2023.120>.

⁵Lama Nassif, "The Relationship of Language Anxiety with Noticing and Oral Production of L2 Forms: A Study of Beginning Learners of Arabic," *System* 80 (2019): 304–317, <https://doi.org/https://doi.org/10.1016/j.system.2018.12.008>.

speaking development. As a result, some students remain hesitant to speak, less confident in oral interaction, and less exposed to naturally produced Arabic input. This condition creates a strong rationale for instructional innovation that can support students both inside and outside the classroom.⁶

In this context, artificial intelligence (AI) has emerged as a promising innovation in language education.⁷ AI-based technologies can support students in developing grammar, vocabulary, speaking, and writing skills through more adaptive and flexible learning environments.⁸ The original manuscript has correctly noted that AI can function as an additional learning resource alongside the lecturer, especially in higher education contexts where students are expected to learn more independently. In Arabic language learning, AI-based applications may provide interactive exercises, automated responses, pronunciation support, simulated conversation, and repeated exposure to language input, thereby helping students engage more actively in learning.⁹

Several previous studies cited in the manuscript have shown that technology-assisted learning contributes positively to language development,¹⁰

⁶Sultan Almelhes, "Enhancing Arabic Language Acquisition: Effective Strategies for Addressing Non-Native Learners' Challenges," *Education Sciences* 14, no. 10 (October 2024): 1116, <https://doi.org/10.3390/educsci14101116>.

⁷Nurmukhlis Fauzi et al., "PENGUNAAN KECERDASAN BUATAN (AI) UNTUK PENINGKATAN KEMAMPUAN AKADEMIK PESERTA DIDIK DI PONDOK PESANTREN AL-HASANIYYAH CICURUG SUKABUMI," *VARIABLE RESEARCH JOURNAL* 1, no. 02 (July 2024): 478–485.

⁸Evy Nur Rohmawaty et al., "Peran Artificial Intelligence (AI) Dalam Pembelajaran Bahasa Arab Mahasiswa Pascasarjana UIN Maulana Malik Ibrahim Malang," *Khatulistiwa: Jurnal Pendidikan Dan Sosial Humaniora* 4, no. 3 (July 2024): 316–328, <https://doi.org/10.55606/khatulistiwa.v4i3.4023>.

⁹Sultan A. Almelhes, "A Review of Artificial Intelligence Adoption in Second-Language Learning," *Theory and Practice in Language Studies* 13, no. 5 (May 2023): 1259–1269, <https://doi.org/10.17507/tpls.1305.21>.

¹⁰Noor Mohd Ariff Brahin et al., "Development of Vocabulary Learning Application by Using Machine Learning Technique," *Bulletin of Electrical Engineering and Informatics* 9, no. 1 (February 2020): 362–369, <https://doi.org/10.11591/eei.v9i1.1616>.

including improvements in competence,¹¹ vocabulary learning, listening,¹² and speaking.¹³ In line with those findings, this study employed a set of AI-based applications, namely **Duolingo, Easy Peasy, Busuu, and TalkPal**, to support Arabic learning among postgraduate students at UIN Alauddin Makassar. However, the use of AI in this study was not merely motivated by technological trends. Rather, it was introduced as a pedagogical response to concrete learning problems identified before the intervention, particularly the low intensity of speaking practice, limited listening exposure, and insufficient technological support for sustained language learning beyond the classroom.¹⁴

Despite the growing literature on technology and AI in language learning, there remains a gap in studies that specifically examine the use of multiple AI applications to improve **maharah al-istimā'** and **maharah al-kalām** in postgraduate Arabic Language Education through a classroom action research design. Much of the existing research discusses AI in general terms, focuses on non-Arabic contexts, or examines only one application or one aspect of language learning. Therefore, this study is significant because it addresses a specific higher education context, focuses on two central communicative skills, and evaluates the

¹¹Haniah Haniah, "PEMANFAATAN TEKNOLOGI INFORMASI DALAM MENGATASI MASALAH BELAJAR BAHASA ARAB," *Al-Ta'rib: Jurnal Ilmiah Program Studi Pendidikan Bahasa Arab LAIN Palangka Raya* 2, no. 1 (June 2014), <https://doi.org/10.23971/altarib.v2i1.588>.

¹²Haniah Haniah and Jumadil Jumadil, "Visual Technology Development for Arabic Learning Based on ADDIE Development Model," *Jurnal Al-Maqayis* 9, no. 2 (2022): 147–160, <https://doi.org/10.18592/jams.v9i2.5692>.

¹³Akla Akla et al., "The Use of Mobile Applications in Language Teaching: Transition from Tradition to Easy, Fun and Daily Life," *Journal for the Education of Gifted Young Scientists* 8, no. 4 (December 2020): 1603–1617, <https://doi.org/10.17478/jegys.794048>.

¹⁴Haihua Tu, "Application of Mobile App in English Teaching in an Intelligent Environment," *Mobile Information Systems* 2021 (May 2021): 1–9, <https://doi.org/10.1155/2021/9973931>.

pedagogical use of several AI applications through cyclical classroom-based intervention.¹⁵

Based on this background, the present study aims to improve the Arabic language proficiency of students in the Master's Program of Arabic Language Education at UIN Alauddin Makassar, especially in **maharah al-istimā'** and **maharah al-kalām**, through the use of AI-based applications, namely Duolingo, Easy Peasy, Busuu, and TalkPal. The study also seeks to identify students' responses to the use of AI in Arabic learning and to assess the extent to which AI-assisted learning can function as an effective complementary strategy in improving communicative Arabic competence.

Method

This study employed **Classroom Action Research (CAR)**¹⁶ to improve the Arabic language proficiency of **10 postgraduate students** through the integration of AI-based applications in learning. The study adopted a **mixed-method approach**, combining quantitative and qualitative data to capture both students' learning achievement and their responses during the instructional process. Quantitative data were obtained from pre-tests and post-tests, while qualitative data were collected through observation, questionnaires, and documentation.

The research was conducted in the Master's Program of Arabic Language Education, Postgraduate School, UIN Alauddin Makassar, during one academic semester. The participants were 10 postgraduate students enrolled in the Mahārat

¹⁵Zeynep Arkan, "Evaluation of Listening Activities in Arabic Language Teaching Textbooks Used in Turkey in Light of the CEFR Criteria," *Asian-Pacific Journal of Second and Foreign Language Education* 11, no. 1 (February 2026): 10, <https://doi.org/10.1186/s40862-025-00366-5>.

¹⁶Sulaiman Saat and Sitti Mania, *PENGANTAR METODOLOGI PENELITIAN: Panduan Bagi Peneliti Pemula* (Gowa: Pusaka Almaida, 2020).

Lughawiyah course, with the intervention focusing on the development of maharah al-istimā' and maharah al-kalām. The study was implemented in two cycles over approximately three months. Each cycle consisted of four stages: planning, action, observation, and reflection. In the planning stage, the researchers prepared AI-assisted learning scenarios, instructional materials, and assessment instruments. In the action stage, students used AI-based applications such as Duolingo, Easy Peasy, Busuu, and TalkPal to practice listening and speaking through interactive exercises, guided tasks, and simulated conversations. Observation was conducted to record students' participation, interaction, and engagement throughout the learning process. Reflection was carried out at the end of each cycle to evaluate the outcomes of the intervention and to identify aspects requiring improvement in the subsequent cycle.

Data were collected through four techniques. First, language proficiency tests in the form of pre-tests and post-tests were administered to measure students' progress in listening and speaking skills. Second, classroom observation was employed to document students' engagement and interaction during AI-assisted instruction. Third, questionnaires were distributed to examine students' perceptions of the usefulness and effectiveness of AI applications in Arabic learning. Fourth, documentation in the form of students' assignments and records of classroom activities was used to support data interpretation.

The quantitative data were analyzed descriptively using SPSS to identify improvement in students' scores between the pre-test and post-test. Meanwhile, the qualitative data obtained from observation, questionnaires, and documentation were analyzed interpretively to explain patterns of student participation, engagement, and response during the intervention. The

effectiveness of the intervention was indicated by improvement in students' performance in maharah al-istimā' and maharah al-kalām, increased participation in classroom learning, and positive responses toward the use of AI as a complementary tool in Arabic language instruction.

Results and Discussion

Results

This study was conducted in two cycles of classroom action research, with each cycle consisting of four meetings. The intervention was designed to support the development of maharah al-kalām and maharah al-istimā' through the use of AI-based applications, particularly Easy Peasy as the main platform, supported by Busuu, Duolingo, and TalkPal. Overall, the findings indicate that the integration of AI contributed to a clear improvement in students' Arabic language proficiency, especially in listening and speaking.

Pre-test performance

Table 1. Pre-test Scores of Maharah al-Kalam

No	Students Initials	Total	Score	Category
1	MNI	32	80	Medium
2	HR	29	73	Medium
3	HT	33	83	High
4	NM	32	80	Medium
5	IW	32	80	Medium
6	AN	25	63	Low
7	NA	33	83	High
8	MM	31	78	Medium
9	ANL	26	65	Low
10	AF	28	70	Medium

Table 2. Frequency Distribution of Pre-Test Maharah al-Kalām

Category	Frequency
Very Low	0
Low	2
Medium	6
High	2
Very High	0
Total	10

Source: SPSS output, processed by the authors.

The pre-test results show that students' initial performance in **maharah al-kalām** was still concentrated in the **medium** category. Of the 10 postgraduate students, **six** were categorized as medium, **two** as low, and only **two** as high. No student reached the very high category. This distribution indicates that, prior to the intervention, most students had not yet achieved stable speaking performance at an advanced level. Their oral proficiency appeared to be developing, but still required more intensive practice, feedback, and structured support. Based on the scores listed in Table 1, the average pre-test score for **maharah al-kalām** was **75.5**, indicating a moderate initial level of speaking proficiency.

A similar pattern can be seen in the pre-test results for **maharah al-istimā'** at table 3 and table 4.

Table 3. Pre-Test Scores of Maharah al-Istimā'

No	Students Initials	Total	Score	Category
1	MNI	32	80	Medium
2	HR	29	73	Medium
3	HT	33	83	High
4	NM	32	80	Medium
5	IW	32	80	Medium
6	AN	25	63	Low

7	NA	33	83	High
8	MM	31	78	Medium
9	ANL	26	65	Low
10	AF	28	70	Medium

Table 4. Frequency Distribution of Pre-Test Maharah al-Istima'

Category	Frequency
Very Low	0
Low	2
Medium	6
High	2
Very High	0
Total	10

Source: SPSS output, processed by the authors.

The frequency distribution shows that **six** students were in the medium category, **two** were in the low category, and only **two** reached the high category. No student was categorized as very low or very high. This suggests that students' listening ability before the intervention was also still limited, especially in relation to consistent exposure to Arabic audio input and comprehension practice. Based on the values presented in the table, the average pre-test score for **maharah al-istimā'** was **78.5**, which likewise reflects a moderate initial level.

Taken together, the pre-test findings indicate that before the implementation of AI-assisted learning, students' Arabic proficiency in both productive and receptive skills was still clustered in the low-to-medium range. This baseline condition supports the rationale of the study that postgraduate students required more adaptive and repeated learning opportunities beyond conventional classroom instruction.

Post-test performance

After the intervention was implemented across two cycles, the post-test results show a substantial improvement in students' performance. In **maharah al-kalām**, the score distribution shifted markedly from low–medium concentration to predominantly **high** achievement. At the post-test stage, **seven** students were categorized as high and **three** as medium, while no student remained in the low or very low category. This shift demonstrates that the intervention was effective in improving students' speaking ability, particularly in terms of confidence, fluency, and task performance. Based on the data in Table 5, the average post-test score for **maharah al-kalām** increased to **90.0**, representing an average gain of **14.5 points** from the pre-test.

Table 5. Post-test Scores of Maharah al-Kalam

No	Students Initials	Total	Score	Category
1	MNI	28	93	High
2	HR	27	90	High
3	HT	27	90	High
4	NM	26	87	Medium
5	IW	26	87	Medium
6	AN	26	87	Medium
7	NA	28	93	High
8	MM	27	90	High
9	ANL	27	90	High
10	AF	28	93	High

Table 6. Frequency Distribution of Post-Test Maharah al-Kalām

Category	Frequency
Very Low	0
Low	0
Medium	3
High	7
Very High	0
Total	10

The improvement in **maharah al-istimā'** was equally strong. It can be shown on the table 7 and 8 below :

Table 7. Post-test Scores of Maharah al-Istima'

No	Students Initials	Total	Score	Category
1	MNI	48	96	High
2	HR	49	98	High
3	HT	48	96	High
4	NM	46	92	High
5	IW	48	96	High
6	AN	46	92	High
7	NA	44	88	Medium
8	MM	43	86	Medium
9	ANL	44	88	Medium
10	AF	47	94	High

Table 8. Frequency Distribution of Post-Test Maharah al-Istima'

Category	Frequency
Very Low	0
Low	0
Medium	3
High	7
Very High	0
Total	10

The post-test distribution shows that **seven** students reached the high category and **three** remained in the medium category, with no students in the low or very low categories. Compared with the pre-test pattern, this result indicates that AI-assisted learning helped students engage more effectively with listening input and improved their ability to comprehend spoken Arabic. Based on the values reported in Table 10, the average post-test score for **maharah al-istimā'** reached **92.6**, with an average increase of **14.1 points** from the pre-test.

These changes are not only numerical but also pedagogically meaningful. In both skills, the intervention reduced the number of students in the low category from **two to zero**, while increasing the number of students in the high category from **two to seven**. This pattern suggests that the use of AI did not merely benefit a small group of already high-performing students, but also supported broader improvement across the cohort.

Student Responses to the Use of AI

The questionnaire data further reinforce the test results. Students reported positive responses toward the use of AI in Arabic learning, especially as support for understanding and practicing **maharah al-istimā'** and **maharah al-kalām**. Among the supporting applications used in addition to Easy Peasy, **Busuu** emerged as the most frequently selected application, followed by **Duolingo**, while **TalkPal** was used by a smaller number of students. The frequency data show that Busuu was used most often, suggesting that students found it particularly helpful as a complementary learning tool.



This pattern of student preference is important because it indicates that AI-based learning was not received passively. Students made selective use of the available tools and appeared to favor applications that were practical, accessible, and supportive of repeated language practice. Their responses suggest that AI-assisted learning was perceived not simply as a technological novelty, but as a meaningful aid for Arabic language development.

Discussion

The findings of this study show that the integration of AI-based applications contributed positively to the improvement of Arabic language proficiency among postgraduate students, particularly in **maharah al-kalām** and **maharah al-istimā'**. The shift in score distribution from low–medium categories in the pre-test to predominantly high achievement in the post-test indicates that AI-assisted learning created more effective opportunities for practice and reinforcement than those previously available in conventional instruction alone.¹⁷

One important implication of the findings is that AI supported

¹⁷ محمد عبد اللوي، "توظيف الذكاء الاصطناعي في تدريس اللغة العربية للناطقين بغيرها عن بعد"، *Journal of Scientific Development for Studies and Research (JSD)* 5, no. 17 (October 2024): 402_417-402_417, <https://doi.org/10.61212/jsd/176>.

repetition,¹⁸ flexibility, and learner autonomy.¹⁹ In Arabic language learning, especially for listening and speaking, students require repeated exposure to input and multiple opportunities to produce language.²⁰ The observed improvement suggests that applications such as Easy Peasy, Busuu, Duolingo, and TalkPal helped address earlier instructional limitations by extending learning beyond scheduled class meetings. This is especially relevant for postgraduate students, who need independent yet structured opportunities to strengthen communicative competence.

The stronger post-test performance in speaking also indicates that AI may have reduced some of the barriers commonly experienced by students in oral practice, such as hesitation, lack of confidence, and limited opportunities to rehearse language before speaking in class. By engaging with AI-supported tasks, students were able to practice in a lower-pressure environment and receive more immediate responses. This likely contributed to the increase in speaking scores²¹ and the disappearance of the low category in the post-test.

Similarly, the improvement in listening can be understood in relation to the increased intensity of exposure to Arabic input.²² Before the intervention, students' performance in **maharah al-istimā'** was still largely concentrated in the

¹⁸Nasaruddin Nasaruddin, "Using ChatGPT in Teaching Arabic as a Foreign Language," *Arabiyatuna: Jurnal Bahasa Arab* 8, no. 1 May (May 2024): 1–24, <https://doi.org/10.29240/jba.v8i1.9413>.

¹⁹Mior Syazril Mohamed Sapawi and Nik Mohd Rahimi Nik Yusoff, "Integrating Technology into the Arabic Language Curriculum: A Systematic Review of Trends, Strategies and Cultural Dimensions," *Social Sciences & Humanities Open* 12 (January 2025): 101974, <https://doi.org/10.1016/j.ssaho.2025.101974>.

²⁰Sultan Almelhes, *Education Sciences Enhancing Arabic Language Acquisition: Effective Strategies for Addressing Non-Native Learners' Challenges*, 2024.

²¹Roslizawati Saad, Harun Baharudin, and Nik Mohd Rahimi Nik Yusoff, "The Use of Digital Teaching Tools to Support Arabic Speaking Skills in Secondary School: A Systematic Literature Review," *Educational Process: International Journal*, August 2025, <https://www.edupij.com/index/arsiv/78/776/the-use-of-digital-teaching-tools-to-support-arabic-speaking-skills-in-secondary-school-a-systematic-literature-review>.

²²Zeynep Arkan, "Evaluation of Listening Activities in Arabic Language Teaching Textbooks Used in Turkey in Light of the CEFR Criteria," *Asian-Pacific Journal of Second and Foreign Language Education* 11, no. 1 (February 2026): 10, <https://doi.org/10.1186/s40862-025-00366-5>.

medium category. After the intervention, most students moved into the high category, which suggests that AI-supported practice offered more sustained access to listening materials and enabled repeated engagement with spoken Arabic. In other words, the technology functioned as an additional source of input that enriched the learning environment.²³

The questionnaire results also show that the success of the intervention was linked to **student acceptance of the technology**.²⁴ Busuu²⁵ and Duolingo were the most preferred supporting applications, while TalkPal was used more selectively. This suggests that students valued AI tools that were easy to access and directly relevant to their learning needs.²⁶ The finding is significant because the effectiveness of AI in language learning depends not only on the technological capabilities of the platform, but also on how learners perceive its usefulness and integrate it into their study habits.

At the same time, the findings should not be interpreted as evidence that AI can replace the lecturer's role. The improvement observed in this study occurred within a classroom action research framework in which the lecturer designed the intervention, guided the learning activities, monitored participation, and reflected on each cycle. Therefore, AI should be understood as a

²³ رعد جمال الطلوي, "أثر منصات الذكاء الاصطناعي على بيئة التعلم الإلكترونية في تدريس اللغة العربية لدى طلبة المرحلة

الابتدائية, "مجلة المناهج وطرق التدريس", no. 8 (June 2023): 45–60, <https://doi.org/10.26389/AJSRP.L200323.2>

²⁴Sana Al-Jamali and Suliman Zakaria Suliman Abdalla, "Behavioral Determinants of AI-Driven Arabic Language Learning: Insights from the Extended UTAUT2 Model," *Educational Process: International Journal*, June 2025, <https://edupij.com/index/arsiv/77/653/behavioral-determinants-of-ai-driven-arabic-language-learning-insights-from-the-extended-utaut2-model>.

²⁵Azkiya Muharom Albantani, "OPTIMALISASI APLIKASI BUSUU DALAM PEMBELAJARAN BAHASA ARAB MANDIRI," *Arabi: Journal of Arabic Studies* 3, no. 1 (June 2018): 1–10, <https://doi.org/10.24865/ajas.v3i1.78>.

²⁶Lesia Viktorova and Kostiantyn Mamchur, "THE USE OF ARTIFICIAL INTELLIGENCE FOR ARABIC LEARNING," *Publishing House "Baltija Publishing"*, February 26, 2021, <http://www.baltijapublishing.lv/omp/index.php/bp/catalog/view/113/3385/7129-1>.

complementary pedagogical tool that enhances learning opportunities,²⁷ rather than as an autonomous substitute for human instruction. This interpretation is consistent with the structure of the intervention described in the method section.

Overall, the results confirm that AI-assisted learning can function as an effective strategy for improving Arabic communicative skills in higher education, especially when it is integrated intentionally, combined with classroom guidance, and aligned with specific learning objectives. For postgraduate Arabic Language Education students, the use of AI appears to be particularly beneficial because it supports self-directed practice while still reinforcing the formal goals of academic language instruction.

Conclusion

This study demonstrates that the integration of AI-based applications in Arabic language learning contributed positively to the improvement of students' Arabic proficiency, particularly in **maharah al-kalām** and **maharah al-istimā'**, among postgraduate students of the Master's Program in Arabic Language Education at UIN Alauddin Makassar. The findings show a clear shift from low-to-medium performance in the pre-test to predominantly high performance in the post-test. This indicates that AI-assisted learning provided more effective opportunities for repeated practice, flexible access to learning materials, and greater student engagement in the development of communicative Arabic skills.

The study also reveals that students responded positively to the use of AI applications in Arabic learning. Applications such as **Busuu, Duolingo, Easy Peasy, and TalkPal** were perceived as helpful tools that supported listening and speaking practice beyond the conventional classroom setting. This suggests that

²⁷Sapawi and Yusoff, "Integrating Technology into the Arabic Language Curriculum."

AI can enrich Arabic language instruction by creating a more interactive, adaptive, and learner-centered environment. At the same time, the results confirm that the effectiveness of AI depends on how it is pedagogically integrated into the learning process, not merely on the presence of technology itself.

However, this study should be interpreted within its limitations. It involved a relatively small number of participants and was conducted in a specific postgraduate classroom context. Therefore, the findings cannot be generalized broadly without caution. In addition, the success of the intervention was closely tied to lecturer guidance, classroom planning, and cyclical reflection, which means that AI should not be viewed as a substitute for the lecturer, but rather as a complementary instructional tool that strengthens language learning opportunities.

Based on these findings, future studies are recommended to involve larger and more diverse participant groups, examine the long-term effects of AI-assisted Arabic learning, and explore the effectiveness of specific AI applications for different language skills and educational levels. For educational practice, lecturers are encouraged to integrate AI critically and strategically in order to support students' autonomous learning while maintaining strong pedagogical direction in the classroom. In this way, AI can function not as a replacement for human teaching, but as a meaningful resource for improving Arabic language learning in higher education.

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