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Traditional Method vs AI Chatbot-Assisted in Arabic Learning

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ENGLISH ABSTRACT
This study aims to compare the effectiveness of traditional Arabic language learning methods with AI-assisted learning using the Smojo.AI chatbot in improving students' reading skills. Using a mixed-methods approach, this research involved both quantitative and qualitative data collected from pre- and post-tests, interviews, and observations. The experimental group utilized the AI-powered Smojo.AI chatbot, while the control group followed traditional learning methods. The findings reveal that the experimental group demonstrated significant improvement in reading skills, with a higher post-test mean score compared to the control group, which showed a decline in performance. Statistical analysis confirmed the effectiveness of AI-assisted learning in enhancing students' Arabic language skills, especially in reading. This research contributes to the ongoing discussion about integrating technology into language education, offering valuable insights into the potential of AI tools in modernizing Arabic language teaching.

Keywords: Arabic Language Learning, Traditional Methods, AI-Assisted Learning, Chatbot, Reading Skills, Educational Technology

INDONESIAN ABSTRACT
Penelitian ini bertujuan untuk membandingkan efektivitas metode pembelajaran bahasa Arab tradisional dengan pembelajaran berbantuan AI menggunakan chatbot Smojo.AI dalam meningkatkan keterampilan membaca siswa. Dengan menggunakan pendekatan metode campuran, penelitian ini melibatkan data kuantitatif dan kualitatif yang dikumpulkan dari tes pra dan pasca, wawancara, dan observasi. Kelompok eksperimen menggunakan chatbot Smojo.AI bertenaga AI, sedangkan kelompok kontrol mengikuti metode pembelajaran tradisional. Temuan penelitian mengungkapkan bahwa kelompok eksperimen menunjukkan peningkatan yang signifikan dalam keterampilan membaca, dengan skor rata-rata pasca tes yang lebih tinggi dibandingkan dengan kelompok kontrol,

yang menunjukkan penurunan kinerja. Analisis statistik mengonfirmasi efektivitas pembelajaran berbantuan AI dalam meningkatkan keterampilan bahasa Arab siswa, terutama dalam membaca. Penelitian ini berkontribusi pada diskusi yang sedang berlangsung tentang mengintegrasikan teknologi ke dalam pendidikan bahasa, menawarkan wawasan berharga tentang potensi alat AI dalam memodernisasi pengajaran bahasa Arab.

***Kata Kunci**: Pembelajaran Bahasa Arab, Metode Tradisional, Pembelajaran AI, Chatbot, Keterampilan Membaca, Teknologi Pendidikan*

Introduction

Arabic is one of the languages that has a strategic role in the world of education, culture, and religion. Arabic, as the language of the Qur'an, is not only studied in Middle Eastern countries but also in various other countries, including Indonesia. The importance of Arabic encourages various educational institutions to continue to develop their teaching methods to be more effective and relevant to the needs of the times (Awaliyah, 2022; Bakalla, 2023; Ni'am, 2022).

For decades, traditional methods such as face-to-face learning, the use of textbooks, and memorization have been the main options in teaching Arabic. This approach has proven effective in building a foundation of grammar and vocabulary understanding (Hidayah, 2022; Sherina and Hendra, 2024). However, the limitations of traditional methods in providing interactive learning experiences are often a challenge, especially in learning contexts that demand reading and writing skills.

On the other hand, technological developments in the 20th century have opened up new opportunities in education, including in language learning. One innovation that has attracted attention is the use of artificial intelligence (AI) as a learning tool (Supriadi et al., 2022). AI is able to provide an interactive learning experience, personalization of materials, and access to learning anytime and anywhere. This technology is considered to be able to bridge the limitations that exist in traditional learning methods (Limna et al., 2022).

One of the increasingly popular technology applications is the AI chatbot, which is now starting to be used as a learning medium. AI chatbots offer an interactive approach to learning, allowing students to communicate and practice directly with technology-based systems specifically designed for learning needs. In the context of Arabic language learning, AI chatbots have great potential to help students hone language skills, such as

speaking, reading, and writing, through conversation simulations, practice questions, and automated feedback (Labadze et al., 2023; Wu and Yu, 2024; Zaimah et al., 2024).

Research on technology integration in Arabic language learning has become an increasingly relevant topic along with the rapid development of digital technology. Various previous studies have examined the effectiveness of AI-based chatbots as interactive learning media. Azmi's (2023) research entitled "Arabic Language: Traditional vs AI-Enhanced Instruction" shows that AI-assisted Arabic language learning has advantages over traditional face-to-face teaching methods. Sa'idah et al. (2024) confirmed that the integration of AI in Arabic language teaching significantly improved student learning outcomes. This is evidenced by the path coefficient value of 0.45 ($p < 0.001$), which indicates the positive influence of AI on learning effectiveness. AI-based approaches are proven to be more effective in improving student learning outcomes as they can provide personalized and adaptive learning experiences (Azmi, 2023; Sa'Idah et al., 2024). The implementation of AI in the form of chatbots has been utilized by educators as discussion partners in the learning process. According to Belda and Calvo, AI chatbots are able to provide relevant and useful responses, so educators tend to have a positive perception of the integration of chatbots in language learning. However, educators showed moderate attitudes in terms of intentions to actively use this technology in their teaching practices (Belda-Medina and Calvo-Ferrer, 2022). The effectiveness of using an AI Chatbot in Arabic language learning has been confirmed through research conducted by Zaimah. "Acceptability and Effectiveness Analysis of Large Language Model-Based Artificial Intelligence Chatbot Among Arabic Learners" revealed that the use of an artificial intelligence-based chatbot in Arabic language learning has a positive impact on students' learning motivation. However, the study also noted concerns regarding the consistency of the content provided by the chatbot (Zaimah et al., 2023). According to Alrajhi (2024), in his research "Artificial intelligence pedagogical chatbots as L2 conversational agents," states that chatbots can help students to practice writing interactively, and can reduce the anxiety that often arises in the writing process in learning Arabic as a second language (Alrajhi, 2024).

This research specifically examines the comparison of the effectiveness of Arabic language learning between traditional approaches and technology-based approaches using an AI chatbot developed by Smojo.AI in learning reading skills, as well as the use of

AI chatbots in the learning process. This approach aims to provide a more in-depth overview of the advantages and challenges of each method, as well as evaluate the potential of AI chatbots as an innovative tool in Arabic language learning.

The Smojo.AI platform utilizes artificial intelligence to support language learning by providing features such as interactive exercises, automatic evaluation, and conversation simulation. These features present a different approach to learning compared to traditional methods. However, it is still necessary to investigate how effective AI chatbot-based learning is compared to traditional learning methods in the context of Arabic language learning.

This study aims to compare the effectiveness of traditional Arabic language learning with AI chatbot-assisted learning on the Smojo platform. The main focus of this research is to evaluate student learning outcomes against both methods. The results of this research are expected to provide new insights for educators, educational institutions, and technology developers about the advantages and disadvantages of each approach. By exploring the comparison between traditional and AI chatbot-assisted learning methods, this research is not only relevant to the context of Arabic language education but also makes a broader contribution to the discussion on the digitization of education. The findings of this study are expected to serve as a foundation for further innovations in language teaching in the age of technology.

Methods

This research uses a mixed methods approach with a convergent parallel design. This approach was chosen to combine quantitative and qualitative data to provide a more comprehensive understanding of the effectiveness of Arabic language learning with traditional methods compared to AI chatbot-assisted learning on the Smojo platform. Quantitative data were obtained through learning outcome tests and questionnaires, while qualitative data were collected through interviews and observations (Hitchcock and Onwuegbuzie, 2022; Nasarudin et al., 2024).

The population in the study was students at Madrasah Aliyah Negeri 5 Tangerang, with samples selected by purposive sampling. The sample consisted of two groups: an experimental group that used an AI chatbot and a control group that learned using traditional methods. The research design used a quasi-experimental design with a non-

equivalent control group. Both groups were given a pre-test to measure initial ability and a post-test to measure learning outcomes after treatment. Purposive sampling was used to ensure that the selected participants met specific criteria relevant to the research objectives. This method allowed the researcher to choose students who were enrolled in the same Arabic language program, at the same grade level, and who had similar academic backgrounds. The criteria for selecting the sample included students' availability, willingness to participate, equal access to learning resources, especially technology for the experimental group, and no prior exposure to AI-based Arabic learning tools. This approach helped maintain the comparability of both groups and supported the validity of the research findings.

The research instruments included learning outcome tests, questionnaires, interviews, and observation guides. The learning outcome test covered aspects of reading, writing, listening, and speaking in Arabic. Observation was used to record the learning dynamics in both groups. Data analysis was conducted in parallel. Quantitative data were analyzed using inferential statistics, such as a t-test to compare pre-test and post-test scores, as well as descriptive analysis for questionnaire data. Qualitative data was analyzed through thematic analysis techniques to identify patterns and main themes from interviews and observations. Results from both types of data were then compared and combined to provide a more in-depth interpretation.

The Analysis of Traditional Methods and AI-Chatbot Assisted

The research data began by collecting pre-test results, both in the experimental class and the control class. The initial overview was used to explain the data distribution of the experimental and control groups in this study. The data presented includes the minimum, maximum, average (mean), and standard deviation values for each condition, both pre-test and post-test of the application of learning methods. The following table summarizes the results of descriptive statistics for the experimental and control groups.

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-test Experiment	33	60	92	78,39	9,447
Post-test Experiment	33	72	95	86,42	6,067
Pre-test Control	33	51	95	75,85	13,556
Post-test Control	33	30	90	59,15	14,217
Valid N (listwise)	33				

Table 1 shows descriptive statistics of student learning outcomes in the experimental and control groups, both pre-test and post-test, after treatment. In the experimental group, the pre-test value has an average of 78.39 with a minimum value of 60 and a maximum of 92, and a standard deviation of 9.447. After the treatment, the post-test score in this group increased with an average of 86.42, with a minimum score of 72, a maximum of 95, and a standard deviation of 6.067.

In the control group, the pre-test score had an average of 75.85 with a minimum score of 51, a maximum of 95, and a standard deviation of 13.556. However, the post-test scores in the control group showed a decrease, with an average of 59.15, a minimum score of 30, a maximum of 90, and a standard deviation of 14.217. The data showed an increase in learning outcomes in the experimental group after treatment, while the control group tended to experience a decrease in learning outcomes. This indicates that the treatment applied to the experimental group has the potential to improve student learning outcomes compared to the method applied to the control group.

Before conducting further statistical analysis, it is important to ensure that student learning outcomes data are normally distributed. Normality tests were conducted using Kolmogorov-Smirnov and Shapiro-Wilk for all variables in this study, both in the experimental and control groups. Normally distributed data is one of the basic assumptions in parametric analysis, which allows the use of statistical methods such as the t-test or ANOVA to test hypotheses. The following table presents the normality test results for each research variable.

Table 2. Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
Students' Learning Outcomes	Pre-Test Experiment (CAI)	,132	33	,158	,937	33	,056
	Post-Test Experiment (CAI)	,114	33	,200*	,952	33	,151
	Pre-Test Control	,137	33	,117	,938	33	,059
	Post-Test Control	,103	33	,200*	,980	33	,797

Based on the normality test results in the table, the student learning outcomes data for the experimental and control groups show a normal distribution. In the Experiment Pre-Test (CAI), the Kolmogorov-Smirnov significance value is 0.158 and Shapiro-Wilk is 0.056, both greater than 0.05, so the data is considered normally distributed. The same was found for the Experiment Post-Test (CAI), with a

Kolmogorov-Smirnov significance value of 0.200 and a Shapiro-Wilk of 0.151, which also indicated normal distribution. For the Control Pre-Test, the Kolmogorov-Smirnov value of 0.117 and Shapiro-Wilk of 0.059 were above the 0.05 limit, so the data also met the assumption of normality. On the Control Post-Test, the Kolmogorov-Smirnov significance value of 0.200 and Shapiro-Wilk of 0.797 indicate a normal distribution. Thus, all data on student learning outcomes, both in the experimental and control groups, fulfill the assumption of normality so that they can be used in parametric statistical analysis.

A paired samples t-test is conducted after obtaining normally distributed data through a normality test using either Kolmogorov-Smirnov or Shapiro-Wilk, and aims to determine the average difference in two paired samples. The paired samples t-test will answer the effect of the treatment given to the class in Arabic language learning by testing the pre-test and post-test data of the experimental class using CAI and the class using the traditional approach.

Table 3. Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-test Experiment Post-test Experiment	-8,030	5,955	1,037	-10,142	-5,919	-7,746	32	,000
Pair 2	Pre-test Control Post-test Control	16,697	15,800	2,751	11,094	22,300	6,070	32	,000

Through the paired samples t test that has been carried out, Table 3 confirms that the output in pair 1 and pair 2 obtained Sig. (2-tailed) of 0.000 <0.05, so it can be concluded that the two classes have differences in learning outcomes, both in the experimental class using CAI and the control class using the traditional approach. Based on the discussion of the output in pair 1, it can be concluded that there is a significant effect on the class that uses CAI as an Arabic language learning model in reading skills. The average difference in learning outcomes before and after treatment in Arabic

language learning in the experimental and control classes is illustrated in the following table.

Table 4. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test Experiment	78,39	33	9,447	1,645
	Post-test Experiment	86,42	33	6,067	1,056
Pair 2	Pre-test Control	75,85	33	13,556	2,360
	Post-test Control	59,15	33	14,217	2,475

Based on Table 4, there is a significant difference between the pre-test and post-test scores in both groups, experimental and control. For the experimental group, the mean pre-test score was 78.39 with a standard deviation of 9.447 and a standard error of the mean of 1.645. After the application of learning, the mean value of the post-test increased to 86.42 with a standard deviation of 6.067 and a standard error of 1.056. This shows an increase in the average score in the experimental group.

On the other hand, in the control group, the pre-test mean score was 75.85 with a standard deviation of 13.556 and a standard error of 2.360. However, the mean value of the post-test decreased to 59.15 with a standard deviation of 14.217 and a standard error of 2.475. This shows a decrease in the average score in the control group after the application of traditional learning methods. The comparison between the two groups shows that the experimental group experienced an increase in learning outcomes, while the control group actually experienced a decrease.

Furthermore, the homogeneity test needs to be done to see whether the research data coming from two different groups are homogeneous or heterogeneous. In this homogeneity test, it is used to determine whether the variants of the post-test data of the CAI experimental class and the control class data, using the traditional approach, are homogeneous or not. The following table shows the results of the homogeneity test for two different classes.

Table 5. Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Students' Learning Outcomes	Based on the Mean	14,509	1	64	,000
	Based on the Median	12,474	1	64	,001
	Based on the Median and With adjusted df	12,474	1	41,776	,001
	Based on the trimmed mean	14,543	1	64	,000

Based on the data output in Table 5, the homogeneity test results show a significance based on the mean of 000<0.05, so it can be concluded that the data variance is not homogeneous. Overall, the very small significance value below 0.05 indicates that the variance between groups is not homogeneous, so tests that require the assumption of homogeneity of variance, such as the independent t test with the assumption of equal variance, cannot be applied directly. As an alternative, it is necessary to use statistical tests that do not assume homogeneity of variance.

The independent samples t-test is used to test the average difference contained in two unpaired samples. this statistical test is carried out based on normally distributed data in Table 2. Tests of Normality and homogeneity of variance tests based on data in Table 5. Tests of Homogeneity of Variances. The independent samples t-test with inhomogeneous data uses Equal variances not assumed, as shown in the following table.

Table 6. Independent Samples Test

		t-test for Equality of Means						
		T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Result	Equal variances not assumed	10,135	43,282	,000	27,273	2,691	21,847	32,698

Table 6 shows the t-test results for independent samples with Equal variances not assumed. The results of this test show that there is a significant difference between the two groups tested, with a t value of 10.135 and degrees of freedom (df) 43.282. Based on the table, the significance value (Sig. 2-tailed) obtained is 0.000 <0.05, so it can be concluded that the difference between the two groups is significant. The mean difference between the experimental and control groups is 27.273, which means that the experimental group shows higher results compared to the control group. The standard error of the mean difference is 2.691, which illustrates how much uncertainty there is in the estimation of this difference. In addition, the 95% confidence interval for the mean difference ranges from 21.847 to 32.698, which indicates that we are 95% confident that the mean difference lies within this range. Overall, these results indicate that learning with the experimental class using CAI yielded better results than learning with the control group using the traditional approach.

Traditional Methods Vs AI-Assisted Arabic Language Learning

Traditional methods in Arabic language learning refer to the conventional approach that focuses on direct interaction between teachers and students in the classroom, or known as Teacher Centered Learning (TCL). According to Hoidn (2020), TCL is a typical Asian learning approach used at all levels of education in a structured, teacher-centered manner (Hoidn and Klemenčič, 2020).

In the Arabic language learning process, the TCL approach is still widely adopted by Islamic boarding school institutions that hold that language acquisition can be obtained through practice or drill, as Ibn Khaldun's thesis states that language is not only a gift to humans, but a skill that can be cultivated (Khaldûn et al., 2020). Varatta (2017) states that TCL places the teacher as the main source of knowledge and controller of the learning process. In this approach, the main focus lies on delivering learning materials systematically, where the teacher acts as a dominant teacher, giving lectures or explanations directly to students. Students tend to act as passive recipients of information, with minimal involvement in group discussions or interactions. This learning process also emphasizes individual student work, where learning activities are carried out independently with full direction from the teacher. Evaluation of learning outcomes becomes the primary responsibility of the teacher, including measuring understanding, resolving learning difficulties, and determining the overall success of learning (Varatta, 2017).

Based on the results of statistical analysis in this study, the implementation of the traditional approach in Arabic language learning, especially in reading and text comprehension skills, showed fewer effective results. The post-test scores tend to be lower than the pre-test scores. This finding indicates that the traditional approach is no longer relevant to the needs and characteristics of learning in the modern era. This incompatibility can be caused by the lack of adaptation of the method to the times, so a more innovative approach is needed, and in accordance with the needs of students, to improve the effectiveness of language learning.

According to Kennedy (2015), there are three main factors that influence the learning process. First, personal factors of the learner, which include personality, age, gender, and individual interest in the material being learned. Second, internal factors, which include learners' intellectual abilities and mental state, such as concentration

level and memory. Third, external factors, which are environmental elements that surround the learning process, such as educational facilities, classroom atmosphere, social support, and the role of educators. These three factors interact dynamically in determining the success of the learning process (Management Association, 2015).

These three factors become important considerations in making decisions regarding the determination of Arabic learning approaches and methods. The conditions of personality development of learners who live in a modern environment require adaptation of learning with a modern approach as well. This adjustment aims to create a learning experience that is more effective, interesting, and in accordance with the needs of students in the digital era. This is in line with the statistical analysis in this study, which states that adaptive learning using CIA-based technology is more effective than learning Arabic using traditional methods.

Research's Implications

Based on the results of the study comparing traditional Arabic language learning with CAI-assisted learning, there are several significant implications that can be used as a reference in the development of Arabic language education in the digital era. The use of CAI is proven to increase the effectiveness of learning by providing immediate feedback and personalizing the learning experience. This allows students to understand and apply Arabic better. The integration of technology, such as CAI, in the Arabic language learning curriculum can increase students' attraction to learning materials. The curriculum needs to be designed to blend traditional in-depth approaches with the practicality of AI-based technology, to help students prepare for the challenges of globalization and support the sustainability of Arabic language education in the digital era.

Improving teachers' competencies is also an urgent matter. Teachers need to be trained to understand and implement CAI technology effectively, both as a teaching aid and to utilize student interaction data to evaluate their learning progress. This technology can also reduce the burden on teachers in providing routine exercises and feedback, so that teachers can focus more on teaching complex material and give more attention to students who need special assistance.

The development of educational infrastructure is an important need to support the use of AI-based technology. Educational institutions need to ensure adequate access

to technological devices and the internet. Sixth, AI chatbots have the potential to improve equitable access to learning, especially for students in remote areas who have limited access to qualified teachers. Thus, the education gap between regions can be minimized. With these implications, the use of AI chatbots in Arabic language learning is not only an alternative but also a strategic necessity in transforming education in the technological era.

Conclusion

The results of this study show that CAI-assisted Arabic language learning on the Smojo.AI platform is significantly more effective than traditional methods in improving student learning outcomes, particularly in reading skills. Based on statistical data, the experimental group using the AI chatbot experienced an increase in average learning outcomes from pre-test to post-test, while the control group showed a decrease. This indicates that technology-based approaches have the advantage of providing interactive, adaptive, and relevant learning to students' needs.

The statistical test results further corroborate the conclusion that the use of an AI chatbot is able to have a positive impact on student learning outcomes, as evidenced by the significant increase in post-test scores in the experimental group. In addition, the AI chatbot was also recognized as providing a more personalized learning experience, reducing student anxiety, and increasing learning motivation. However, this study also uncovered some challenges, including the consistency of content provided by the chatbot and the moderate perception of educators in actively adopting this technology. Therefore, further development of CAI technology in Arabic language learning is needed so that it can meet higher pedagogical standards and be widely accepted by educators. This research makes an important contribution to supporting the digitalization of education, particularly in the context of Arabic language teaching. The findings can serve as a basis for further innovation in the design of technology-based teaching methods, while offering practical insights for educators, educational institutions, and educational technology developers.

References

Alrajhi, Assim S. 2024. "Artificial Intelligence Pedagogical Chatbots as L2 Conversational Agents." *Cogent Education* 11(1). doi: 10.1080/2331186X.2024.2327789.

Awaliyah, Mursyidatul. 2022. "Analisis Kontrastif Bahasa: Urgensi Memahami Budaya Dalam Kajian Bahasa Arab." *TASHWIR* 10(2):109–22.

Azmi, Ziaurrahman. 2023. "Arabic Language: Traditional vs AI-Enhanced Instruction." Pp. 1–4 in *Proceedings of the 5th International Conference on Information Management & Machine Intelligence*. New York, NY, USA: ACM.

Bakalla, Muhammad Hasan. 2023. *Arabic Culture: Through Its Language and Literature*. Taylor & Francis.

Belda-Medina, Jose, and José Ramón Calvo-Ferrer. 2022. "Using Chatbots as AI Conversational Partners in Language Learning." *Applied Sciences* 12(17):8427. doi: 10.3390/app12178427.

Hidayah, Wahyudi. 2022. "APLIKASI METODE SOROGAN DALAM MENINGKATKAN BERBICARA BAHASA ARAB DI SEKOLAH MENEGAH KEJURUAN." *Humantech: Jurnal Ilmiah Multidisiplin Indonesia* 2(Spesial Issues 1):148–54.

Hitchcock, J. H., and A. J. Onwuegbuzie. 2022. *The Routledge Handbook for Advancing Integration in Mixed Methods Research*. Taylor & Francis.

Hoidn, S., and M. Klemenčič. 2020. *The Routledge International Handbook of Student-Centered Learning and Teaching in Higher Education*. Taylor & Francis.

Khaldûn, I., N. J. Dawood, F. Rosenthal, and B. B. Lawrence. 2020. *The Muqaddimah: An Introduction to History - Abridged Edition*. Princeton University Press.

Labadze, Lasha, Maya Grigolia, and Lela Machaidze. 2023. "Role of AI Chatbots in Education: Systematic Literature Review." *International Journal of Educational Technology in Higher Education* 20(1):56.

Limna, Pongsakorn, Somporch Jakwatanatham, Sutithep Siripipattanakul, Pichart Kaewpuang, and Patcharavadee Sriboonruang. 2022. "A Review of Artificial Intelligence (AI) in Education during the Digital Era." *Advance Knowledge for Executives* 1(1):1–9.

Management Association, I. R. 2015. *Curriculum Design and Classroom Management: Concepts, Methodologies, Tools, and Applications: Concepts, Methodologies, Tools, and Applications*. IGI Global.

Nasarudin, N., M. Rahayu, D. P. Asyari, A. Sofyan, M. Fadli, K. K. Hari, B. M. Nehe, L. O. M. R. A. U. Manarfa, Y. Yelfiza, and E. Mulyati. 2024. *Metode Penelitian Kombinasi (Mixed Method)*. CV. Gita Lentera.

Nely Rahmawati Zaimah, Eko Budi Hartanto, and Fatchiatu Zahro. 2023. "Acceptability

and Effectiveness Analysis of Large Language Model-Based Artificial Intelligence Chatbot Among Arabic Learners." *Mantiqu Tayr: Journal of Arabic Language* 4(1):1–20. doi: 10.25217/mantiqutayr.v4i1.3951.

Ni'am, Ahmad Miftahun. 2022. "Urgensi Transformasi Kurikulum Bahasa Arab Madrasah Aliyah Di Indonesia: Menelisik Historisitas Dan Perkembangannya Dari Masa Ke Masa." *Jurnal Pendidikan Dan Pemikiran* 13–24.

Sa'Idah, Mandrasi Amira, Karno Diantoro, Umi Mahmudah, Ellen Dolan, Nesti Anggraini Santoso, and Sausan Raihana Putri Junaedi. 2024. "Enhancing Arabic Language Teaching through Artificial Intelligence: Assessing Effectiveness and Educational Implications." Pp. 1–8 in *2024 3rd International Conference on Creative Communication and Innovative Technology (ICCIT)*. IEEE.

Sherina, Putri, and Faisal Hendra. 2024. "Analisis Komparatif Antara Metode Gramatika Terjemah Dan Metode Langsung Dalam Pembelajaran Bahasa Arab." *Jurnal Multidisiplin West Science* 3(03):255–63.

Supriadi, Salsabila Rheinata Rhamadani Putri, Sulistiyani Usman Haedi, and Muhammad Minan Chusni. 2022. "Inovasi Pembelajaran Berbasis Teknologi Artificial Intelligence Dalam Pendidikan Di Era Industry 4.0 Dan Society 5.0." *Jurnal Penelitian Sains Dan Pendidikan (JPSP)* 2(2):192–98.

Varatta, Katie. 2017. "Teacher-Centered versus Learner-Centered Learning." *Retrieved May* 23:2020.

Wu, Rong, and Zhonggen Yu. 2024. "Do AI Chatbots Improve Students Learning Outcomes? Evidence from a Meta-analysis." *British Journal of Educational Technology* 55(1):10–33.

Zaimah, Nely Rahmawati, Eko Budi Hartanto, and Fatchiatu Zahro. 2024. "Acceptability and Effectiveness Analysis of Large Language Model-Based Artificial Intelligence Chatbot Among Arabic Learners." *Mantiqu Tayr: Journal of Arabic Language* 4(1):1–20.