



**The Dynamics of AI Technology Utilization in Arabic Language
Skills Learning in the Merdeka Curriculum**

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Citation

Chicago Manual of Style 17th Edition

Rifqi Aulia Rahman et al., "The Dynamics of AI Technology Utilization in Arabic Language Skills Learning in the Merdeka Curriculum," *El-Syaker*, 2(3), 146-162

Received: 28 April 2025 **Accepted:** 11 Juli 2025 **Published:** 1 Agustus 2025

Abstract

The utilization of Artificial Intelligence (AI) in Arabic language learning is crucial in the Society 5.0 era, where technology significantly enhances educational quality. Arabic language learning faces challenges, particularly in grammatical aspects, translation, and speaking and writing skills, which require a more adaptive and practical approach. This study examines AI's application in Arabic language learning within the Merdeka Curriculum, focusing on technologies such as Artificial Intelligence Markup Language (AIML), E-Muhadathah, GAFE, Powtoon, and Alexa. A qualitative library research approach is employed, with data analyzed descriptively through relevant themes. The findings indicate that AI can optimize Arabic language teaching by reducing human error, speeding up the evaluation process, and supporting the development of students' Arabic language skills. However, challenges related to costs, machine creativity limitations, and adequate infrastructure must be addressed. In conclusion, AI offers a potential solution to enhance Arabic language learning. However, the success of learning still depends on the active involvement of both students and teachers in the process.

Keywords : artificial intelligence, arabic language learning, merdeka curriculum

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A. Introduction

Artificial intelligence (AI) technology in this sophisticated digital age enables machines to respond to and learn human behavior.¹ This technology uses software programs based on algorithms or robots that can understand, interpret, and respond according to human wishes. Its widespread use has led to the production of popular high-tech products such as smartphones, tablets, laptops, driverless cars, drones, and robots.²

In the current era of digital learning, the successful integration of educational technology into the teaching and learning process is a very complex challenge.³ Choosing the right digital technology as a learning medium for teachers and students is not simple.⁴ It requires understanding and agreement from both parties, educators and students, so that the chosen technology aligns with the characteristics and needs of students and teachers' abilities.⁵ Educators face the challenge of continuously improving their understanding and skills in mastering technology to achieve the expected learning objectives effectively.⁶

Information and communication technology has sparked innovation in learning systems through the use of various interesting applications and software programs.⁷ Technology in learning has become a necessity in this era.⁸ Considering that education will never be separated from social dynamics, this step is taken to anticipate various social dynamics that exist in society.⁹

In the context of Arabic language learning, learners themselves are often faced with several challenges.¹⁰ The main challenge is the complexity of the Arabic language itself, especially for non-native speakers who are learning this

¹ Irina V Alyoshina, "Artificial Intelligence in an Age of Digital Globalization," in *International Conference Technology & Entrepreneurship in Digital Society*, 2019, 26–30.

² Nukman Nukman and Ahmad Fadhel Syakir Hidayat, "Utilization of Network-Based Learning Technology by Millennial Generation Lecturers: A Review of Arabic Language Learning in Higher Education," *Al Mi'yar: Jurnal Ilmiah Pembelajaran Bahasa Arab Dan Kebahasaaraban* 7, no. 1 (2024): 437–58; Li Deng, "Artificial Intelligence in the Rising Wave of Deep Learning: The Historical Path and Future Outlook [Perspectives]," *IEEE Signal Processing Magazine* 35, no. 1 (2018): 177–80.

³ Senad Bećirović, "Challenges and Barriers for Effective Integration of Technologies into Teaching and Learning," in *Digital Pedagogy: The Use of Digital Technologies in Contemporary Education* (Springer, 2023), 123–33.

⁴ Isabel Fialho, Marília Cid, and Marcelo Coppi, "Advantages and Difficulties in the Use of Digital Platforms and Technologies by Teachers and Students," *Revista Brasileira de Educação* 28 (2023): e280050.

⁵ Bryan Berrett, Jennifer Murphy, and Jamie Sullivan, "Administrator Insights and Reflections: Technology Integration in Schools," *Qualitative Report* 17, no. 1 (2012): 200–221.

⁶ Isdawati Ismail, "Utilizing Technologies in Teaching Soft Skills: Issues and Challenges," in *The 2nd International Conference on Sustainable Development and Multi-Ethnic Society* (Redwhite Pres, 2019), 6–11.

⁷ Liliana Peter, "Information and Communication Technologies and Education," in *International Conference Globalization, Innovation and Development. Trends and Prospects (GIDTP)* (Editura Lumen, Asociatia Lumen, 2020), 344–53.

⁸ Siyamoy Ghory and Hamayoon Ghafory, "The Impact of Modern Technology in the Teaching and Learning Process," *International Journal of Innovative Research and Scientific Studies* 4, no. 3 (2021): 168–73.

⁹ Paul Richards, "Cultivation: Knowledge or Performance?," in *An Anthropological Critique of Development* (Routledge, 2002), 73–90.

¹⁰ Ahmad Fadhel Syakir Hidayat et al., "Attempts to Unravel and to Overcome The Educational Issues of Nahwu (A Multi-Site Descriptive Study at UINSI Samarinda and UNSIQ Wonosobo)," *Al-Jawhar: Journal of Arabic Language* 2, no. 1 (2024): 1–18.

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language.¹¹ Learning Arabic requires a strong understanding of grammar, sentence structure, a broad vocabulary, and good speaking and listening skills.¹² Additionally, teaching Arabic often faces issues such as the effectiveness of learning methods, the limited availability of competent human resources to teach the language, and the need to expand access to Arabic education across various segments of society, including in boarding schools, which are traditionally focused on Arabic language studies.

According to Maghfiroh and Sholeh,¹³ through Society 5.0, humans can develop their skills and abilities by utilizing various technologies that have been developed.¹⁴ With this concept, it is hoped that humans can continue to develop alongside the rapid advancement of artificial technology. However, the dramatic changes in technology and access to information have created a need to develop more innovative and effective learning methods. Students now prefer easy access to various online learning resources and are accustomed to advanced technology. Artificial Intelligence (AI) technology can generate adaptive learning systems that tailor content and teaching methods based on student's performance in real-time. This ensures that each student faces challenges appropriate to their level of understanding. By integrating AI into the curriculum, students can develop digital and technical skills relevant to the future workplace, including understanding how AI technology works and its applications across various fields.

In the era of Society 5.0, with rapid advances in science and technology, Arabic language learning must adapt to technological developments and society's increasingly complex and dynamic demands. Society 5.0 is an era in which humans and machines can work together harmoniously, using artificial intelligence (AI) as a tool. Artificial Intelligence (AI) technology can produce adaptive learning systems that adjust teaching materials and methods based on students' performance in real-time. This ensures that each student faces challenges appropriate to their level of understanding. With the integration of AI into the curriculum, students can develop digital and technical skills relevant to the future workplace, including an understanding of how AI technology works and its applications across various fields.

Based on previous studies, the integration of artificial intelligence (AI) technology in Arabic language learning has been proven to provide significant benefits, such as personalized learning, improved language skills, and the creation of a more interactive and engaging learning environment.¹⁵ Previous

¹¹ Leila Ahya Husnaya and Rizka Eliyana Maslihah, "Musykilaat Ta'allum Al-Lughah Al-'Arabiyyah Bi Al-Madrasah Al-Mutawassithah Al-Islamiyyah Nurul Mujtahidin Mlarak Ponorogo," *Tsaqofiya: Jurnal Pendidikan Bahasa Dan Sastra Arab* 4, no. 1 (2022): 136–58.

¹² Diah Aulia Ulfah et al., "The Effect of Muhawarah Method on Speaking Skills of Arabic Language Education Students at UINSI Samarinda," *El-Syaker: Samarinda International Journal of Language Studies* 1, no. 1 (2024): 42–54; S Abdullah et al., "Overcoming Problems in Learning Arabic Speaking Skills of Class X Students at Madrasah Aliyah Darul Ihsan Samarinda," ... *Samarinda International* ..., 2024, <https://journalweb.org/ojs/index.php/El-Syaker/article/view/50>.

¹³ Nailyl Maghfiroh and Muhamad Sholeh, "Implementasi Kurikulum Merdeka Belajar Kampus Merdeka Dalam Menghadapi Era Disrupsi Dan Era Society 5.0," *Jurnal Inspirasi Manajemen Pendidikan* 9, no. 05 (2022): 1185–96.

¹⁴ Yose Indarta et al., "Relevansi Kurikulum Merdeka Belajar Dengan Model Pembelajaran Abad 21 Dalam Perkembangan Era Society 5.0," *Edukatif: Jurnal Ilmu Pendidikan* 4, no. 2 (2022): 3011–24.

¹⁵ Suharia Sarif, Moh Zulkifli Papatungan, and Musdelifa Abu Samad, "INOVASI PEMBELAJARAN BAHASA ARAB BERTEKNOLOGI ARTIFICIAL INTELLEGENCE," *Al-Mulk: Jurnal*

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studies have also shown that AI can enhance learning effectiveness by providing real-time feedback and enabling adaptation to individual learning styles.¹⁶ However, the novelty of my research lies in its focus on the application of AI in the context of the Merdeka Curriculum, which emphasizes independent learning and critical thinking, as well as the adaptation of AI technologies such as AIML and E-Muhadathah to enhance the competencies of Maharah al-Kitabah and Maharah al-Muhadatsah in Arabic language learning.

AI can also help automate administrative tasks such as grading assignments and managing student data, allowing teachers to focus more on teaching and direct interaction with students. In today's era, multimedia, such as PowerPoint, Adobe Flash, Powtoon, and Video Scribe, can support learning. This study examines AI's application in Arabic language learning within the Merdeka Curriculum

B. Method

This study is a review using a qualitative approach with library research methods, with data sources taken from literature exploration. The data was then analyzed using descriptive qualitative analysis. It consists of data collection, reduction, presentation, and conclusion drawing.¹⁷ Using Google Scholar and Research Gate as data sources, data was searched using keywords such as artificial intelligence (AI), Arabic language learning, and Arabic communication skills to obtain online data. Subsequently, the online data obtained was collected and analyzed descriptively according to the theme.

C. Findings and Discussion

After reviewing various literature on the use of AI or artificial intelligence in improving Arabic language learning competencies, it can be concluded that the basic working system of AI is a computer trained to complete specific tasks by processing large amounts of data and recognizing patterns in the data. AI's core process or working method is learning reasoning and self-correction.¹⁸ AI is capable of automating learning and repetitive discovery through data. AI can add intelligence, such as conversation platforms, bots, and smart machines.

AI can also analyze more data more accurately and in greater depth. The AI systems commonly used in Arabic language learning are (1) Learning Machines, which are programmed to search for or conclude something, and (2) Natural Language Processing, which analyzes, understands, and generates human language, enabling users to communicate with computers using everyday

Pengabdian Masyarakat 2, no. 2 (2024): 171-82; Muhamad Fahmi and Syifaul Adhimah, "Peran Artificial Intelligence Dalam Pembelajaran Bahasa Arab: Peluang Dan Tantangan," *Journal of Practice Learning and Educational Development* 4, no. 4 (2024): 330-36.

¹⁶ Dedi Mulyanto et al., "استخدام الذكاء الاصطناعي لتطوير مهارات اللغة العربية في تعلمها," *An-Nidzam: Jurnal Manajemen Pendidikan Dan Studi Islam* 11, no. 1 (2024): 18-32; Evy 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 (2024): 316-28.

¹⁷ John W Creswell and J David Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (Sage publications, 2017).

¹⁸ Bernd Carsten Stahl and Bernd Carsten Stahl, "Ethical Issues of AI," *Artificial Intelligence for a Better Future: An Ecosystem Perspective on the Ethics of AI and Emerging Digital Technologies*, 2021, 35-53.

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language.¹⁹ AI can be used in learning as virtual assistants such as Artificial Intelligence Markup Language,²⁰ E-Muhadastah,²¹ Google Form,²² ChatGPT,²³ Powtoon,²⁴ and Alexa.²⁵ The presence of AI in Arabic language learning has advantages such as reducing the potential for human error and assisting in problem-solving.

Artificial Intelligence Markup Language (AIML)

In the Artificial Intelligence Markup Language (AIML) study, information is only transmitted without analysis, prompting researchers to develop a similar application with further development and application flow. Artificial Intelligence Markup Language (AIML) for Maharah Al-Kitabah proficiency. Researchers developed an application to analyze students' writing errors, correct them, and provide responses based on previous corrections. This prompted the researcher to conduct further research. Next is a relevant study titled "Integration of AIML Chatter Bot for News Application On Whatsapp",²⁶ which uses a third-party application, namely the social media platform WhatsApp, which can reach a wider audience due to its ease of use in daily activities. Therefore, the researcher developed an application that can be accessed across multiple operating systems, also known as a multiplatform application.

There is also research that combines Name Entity Recognition and Artificial Intelligence Markup Language for the application of text-based chatbots.²⁷ The difference between this research and this research is the integration of applications to assist the system's working mechanism. The researchers also integrated similar things, namely master data stored in the cloud, thus facilitating the development and training of the chatbot being developed.

This research also has similarities with the study on the Utilization of Artificial Intelligence Markup Language (AIML) and Latent Semantic Analysis

¹⁹ Souad Larabi Marie-Sainte et al., "Arabic Natural Language Processing and Machine Learning-Based Systems," *IEEE Access* 7 (2018): 7011–20.

²⁰ Dimas Fajar Ramadhan, Sidik Noertjahjono, and Joseph Dedy Irawan, "Penerapan Chatbot Auto Reply Pada Whatsapp Sebagai Pusat Informasi Praktikum Menggunakan Artificial Intelligence Markup Language," *JATI (Jurnal Mahasiswa Teknik Informatika)* 4, no. 1 (2020): 198–205.

²¹ Aidah Novianti Putri and Muhammad Zaenuri, "Model Pembelajaran Online Maharah Al-Kalam Di Pusat Kursus Bahasa Arab Pondok 'Takallam' Pare Kediri Jawa Timur," *Qismul Arab: Journal of Arabic Education* 1, no. 02 (2022): 47–66.

²² ABPIRS Sari et al., "Google Forms as an EFL Assessment Tool: Positive Features and Limitations," 2020.

²³ Renti Yasmar, Aidillah Suja, and Ahmad Fadhel Syakir Hidayat, "Pemanfaatan ChatGPT Dalam Meningkatkan Keterampilan Menulis/Maharah Kitabah Berbasis 6C (Critical Thinking, Creativity, Collaboration, Communication, Computational and Compassion)," *Al-Jawhar: Journal of Arabic Language* 1, no. 2 (December 22, 2023): 87–104, <https://doi.org/10.69493/ajal.v1i2.28>.

²⁴ Rika Al Fitri, "The Use of Powtoon in Teaching Reading Recount Text," *IALLTEACH (Issues In Applied Linguistics & Language Teaching)* 4, no. 1 (2022): 90–96.

²⁵ Jinjin Zhao et al., "Introducing Alexa for E-Learning," in *Proceedings of the Seventh ACM Conference on Learning@Scale, 2020*, 427–28.

²⁶ Rinkal D Dharani and A C Suthar, "Integration of Aiml Chatter Bot for News Application on Whatsapp," *International Research Journal of Engineering and Technology (IRJET)* 3, no. 5 (2016): 2158–61.

²⁷ David Christianto, Elisafina Siswanto, and Ria Chaniago, "Penggunaan Named Entity Recognition Dan Artificial Intelligence Markup Language Untuk Penerapan Chatbot Berbasis Teks," *Jurnal Telematika* 10, no. 2 (2015): 61–68.

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(LSA) in the Development of E-Education Chatbots,²⁸ which focuses more on frequently asked questions (FAQs) by matching patterns that users have input. These patterns then generate outputs that users will receive. The difference in this study lies in the master data and system analysis methods. Furthermore, the application of Artificial Intelligence Markup Language (AIML) for analyzing guided writing errors is more complex due to using a more diverse language interface, namely Indonesian as the system or notification language and Arabic as the input language.

The application of Artificial Intelligence Markup Language (AIML) for analyzing guided writing errors is effective in analyzing guided writing errors made by students. The Artificial Intelligence Markup Language (AIML) application has many areas that can be further developed, especially in language learning, which involves four skills: listening, reading, writing, and speaking, of which only writing analysis has been successfully demonstrated by the researcher. In the future, it is hoped that the Artificial Intelligence Markup Language (AIML) application can be further developed for use in speech analysis, thereby contributing to the field of education, particularly language education.

E-Muhadastah

Developing an E-Muhadathah kit or an AI-based interactive Arabic conversation simulation model for smartphones requires a framework or design that can be used as a reference for researchers, such as its development following the ADDIE Instructional Design Model.²⁹ The ADDIE model, which stands for Analyze, Design, Development, Implementation, and Evaluation, outlines five stages of the procedure: analysis, design, development, implementation, and evaluation. A comprehensive approach with iterative evaluation at each stage makes this model systematic and suitable for developing teaching modules or models.³⁰ In addition, the main concepts of AI adapted in the design of the E-Muhadathah model kit include machine learning and deep learning, which encompass text processing, writing, spoken conversation, or text-to-speech with a speech recognition system.

Artificial intelligence technology plays an important role in strengthening Arabic online. It can disseminate Arabic content on the internet so that it can be used by all age groups, from children to adults. Furthermore, this supports shahrir argument that Arabic is not just a language specific to Muslims but has a wider application in professional and international communication.³¹ As suggested by Khalati and Al-Romany in their study on the importance of expanding Arabic on the internet, only 1% of online content is in Arabic, despite Arabic being spoken by 5% of the world's population.³² Furthermore, the use of

²⁸ Muhammad Febrilian Zulrahman, Hermawan Syahputra, and U N Medan, "Pemanfaatan Artificial Intelligence Markup Language (AIML) Dan Latent Semantic Analysis (LSA) Dalam Pengembangan Chatbot E-Education," *INTECOMS: Journal of Information Technology and Computer Science* 6, no. 1 (2023): 36–43.

²⁹ Allison Rossett, *Training Needs Assessment* (Educational Technology, 1987).

³⁰ Ahmad Tamizi Abu, Rabiatul Adawiah Ahmad Rashid, and Salmiza Saleh, "Pembinaan Modul Pengajaran Al-Quran (Al-Alaq) Dengan Menggunakan Model Instruksional ADDIE [The Development of Al-Quran Teaching Module (Al-Alaq) by Using ADDIE Instructional Model]," *BITARA International Journal of Civilizational Studies and Human Sciences (e-ISSN: 2600-9080)* 3, no. 3 (2020): 152–67.

³¹ M S Shahrir, "Kelebihan Kuasai Bahasa Arab," *Berita Harian*, 2016.

³² M M Khalatia and Tahseen Ali Hussein Al-Romanyb, "Artificial Intelligence Development and Challenges (Arabic Language as a Model)," *Artificial Intelligence* 13, no. 5 (2020): 83–105.

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this language is not limited to Arabic speakers alone; it needs to be expanded to non-Arabic speakers or foreign speakers, and even beyond that, such as in the context of classroom and extracurricular learning, as well as learning for specific purposes in the fields of business, banking, tourism, and others.

In the context of Arabic language education in Malaysia, the integration of AI concepts also needs to be enhanced in developing educational software, such as E-Muhadathah kits. As with the application of machine learning, deep learning, and neural networks in research El Naqa and Murphy,³³ exploration of this field needs to be developed so that it can be adapted to other Arabic language skills such as Maharat al-Istima' (listening skills), Maharat al Qira'ah (reading skills), and Maharat al-Kitabah (writing skills). Although there are various issues and challenges in developing Arabic language software with AI technology or specifically ANLP, such as the study by Khalati & Al-Romany,³⁴ these issues and challenges need to be addressed by researching the problems together with experts in the fields of AI and computer-assisted language learning (CALL), the field of innovation and Arabic language education technology, and others, to find solutions to issues and challenges in the development of AI-based Arabic language education software.

GAFE (Google Form) and Chat GPT

As a platform, Google Forms has a variety of uses in data collection. In addition, Google Forms has a quiz feature that assesses answers to questionnaires. With this feature, questionnaires become a supporting tool in the learning process. Teachers or trainers can use Google Forms to conduct quizzes or tests for students or train participants through their devices, such as smartphones, tablets, or laptops.

Chat GPT technology can also be applied in various fields, including education. With its highly advanced capabilities, Chat GPT can assist in the learning process by helping teachers provide short and accurate answers to students' questions.

Both of the above applications can also evaluate Arabic language learning. Evaluation in learning is one of the main components of the overall learning system. As an important part of the learning process, evaluation or assessment generally serves as feedback to assess the success of learning in both process and results. In Arabic language learning, evaluation can be done through various methods, both tests and non-tests. The tests commonly used in Arabic language learning evaluation include written and oral tests. By combining these two applications, teachers can automatically create written test questions.

Google Suite for Education is an integrated service Google provides for business or educational purposes. It includes Gmail, Docs, Drive, Calendar, Google Meet, and other applications.³⁵ This service was first introduced to the public in 2006 under the name Google Apps and has been available to users since then. As part of Google's commitment to supporting the education sector, they released an update to Google Apps for Education specifically for educational purposes at the

³³ Issam El Naqa and Martin J Murphy, "What Is Machine Learning?," in *Machine Learning in Radiation Oncology: Theory and Applications* (Springer, 2015), 3–11.

³⁴ Khalatia and Al-Romanyb, "Artificial Intelligence Development and Challenges (Arabic Language as a Model)."

³⁵ Lawrence J Awuah, "Supporting 21st-Century Teaching and Learning: The Role of Google Apps for Education (GAFE).," *Journal of Instructional Research* 4 (2015): 12–22.

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Educase event in Dallas. Over time, the name of this service was changed to G Suite on September 29, 2016.

GAFE is a collection of applications that enable real-time synergy and collaboration between students, lecturers, and staff on campus, accessible via PCs, notebooks, tablets, and even smartphones. With these applications' availability and ease of use in learning, it is hoped that teachers' skills will improve and a school culture that is open to the use of technology will be created. GAFE offers a context-appropriate, constructive, and open approach to learning. Additionally, GAFE is highly constructive and can be used for various learning models. GAFE's features include Google Classroom, Google Meet, Gmail, Drive, Calendar, Google Forms, and Google Office.

Powtoon

Powtoon is an online application program available on the internet that functions as a video presentation creator and learning media.³⁶ According to Thamrin,³⁷ Powtoon is a web-based software for creating presentations with animation features, including handwriting animation, cartoon animation, and more vivid transition effects, as well as easy timeline settings.³⁸ Powtoon is a SaaS (Software as a Service) animated presentation media processing software that can be accessed online via the website www.powtoon.com and can be used as a presentation tool for teachers in conducting the learning process in the classroom.³⁹ The "Powtoon" learning media is an online service for creating presentations with animation features that are very attractive, including handwritten animation, cartoon animation, and more vivid transition effects, as well as very easy timeline settings.

Advantages of Powtoon Learning Media: 1. Covers all aspects of the senses 2. Practical to use 3. Collaborative 4. It can be used in large groups or individually 5. More varied 6. Can provide feedback 7. Motivates students. The disadvantages of Powtoon as an educational tool are: 1. Dependent on the availability of technological support 2. Must be adapted to existing systems and conditions 3. Reduces creativity and the use of other types of educational media 4. Requires professional human resources to operate. The use of Powtoon in education can be considered a new web application that is not yet widely known.

The application of Powtoon is not much different from PowerPoint for presenting teaching materials, but Powtoon is more attractive because it offers many animation options. Teachers face the problem of what kind of media makes

³⁶ Rio Ariyanto, Sri Kantun, and Sukidin Sukidin, "Penggunaan Media Powtoon Untuk Meningkatkan Minat Dan Hasil Belajar Siswa Pada Kompetensi Dasar Mendeskripsikan Pelaku-Pelaku Ekonomi Dalam Sistem Perekonomian Indonesia," *JURNAL PENDIDIKAN EKONOMI: Jurnal Ilmiah Ilmu Pendidikan, Ilmu Ekonomi Dan Ilmu Sosial* 12, no. 1 (2018): 122–27.

³⁷ Desma Yulia and Novia Ervinalisa, "Pengaruh Media Pembelajaran Powtoon Pada Mata Pelajaran Sejarah Indonesia Dalam Menumbuhkan Motivasi Belajar Siswa IIS Kelas X Di SMA Negeri 17 Batam Tahun Pelajaran 2017/2018," *HISTORIA: Jurnal Program Studi Pendidikan Sejarah* 2, no. 1 (2017).

³⁸ Ayu Nabilla Puteri, Yuyun Elizabeth Patras, and Dita Destiana, "Pengembangan Media Pembelajaran Video Berbasis Powtoon Pada Tema Kayanya Negeriku Subtema Pemanfaatan Kekayaan Alam Di Indonesia Pembelajaran 3," *Pendas: Jurnal Ilmiah Pendidikan Dasar* 8, no. 2 (2023): 3405–16.

³⁹ Syahrul Fajar, Cepi Riyana, and Nadia Hanoum, "Pengaruh Penggunaan Media Powtoon Terhadap Hasil Belajar Siswa Pada Mata Pelajaran Ilmu Pengetahuan Sosial Terpadu," *Jurnal Pengajaran MIPA* 3, no. 2 (2017): 101–14.

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it easy for students to understand the material. Powtoon makes it easier for teachers to deliver Arabic language material because it has many features that can make the media clearer.

Powtoon can be an effective learning medium because it is practical and helps students create learning experiences using engaging audio and visual elements. Arabic language learning using Powtoon combines images, text, audio, video, and animation into Arabic language learning materials in the form of PowerPoint presentations, PDFs, and videos, offering the following benefits: a) learning activities are not limited to the classroom; b) it can be used by teachers teaching the same subject and material; c) it provides several very interesting animations and videos that can increase students' enthusiasm for learning Arabic. This article is also expected to contribute to future researchers as a basis for developing learning media in general and specifically for Arabic language learning. Additionally, this article can be used as comparative literature by researchers with similar research objectives.

Alexa

AI can be used in learning as a virtual assistant, such as Google Search, Google Translate, chatGPT, and Alexa. The presence of AI in Arabic language learning has advantages such as reducing the potential for human error and assisting in problem-solving. AI can be integrated into a linguistic corpus.⁴⁰ Arabic linguistic corpora serve as the primary big data, and the AI system identifies words according to the commands input by the user. This facilitates users in identifying words in Arabic sentences quickly and accurately.

In grammar learning, AI is utilized to identify Arabic grammatical elements, such as i'rob. An AI system has been developed to identify the position of i'rob, word forms, and their categories using Breadth First Search. The results show that the system works effectively up to 95%.⁴¹ The use of AI can assist in the process of identifying the grammar of each Arabic word and translating Arabic.

AI can identify specific words within Arabic sentences on social media platforms such as Twitter, Instagram, and Facebook.⁴² AI can also be utilized in written translation from Arabic to Indonesian. The AI-assisted translation tool Google Translate greatly benefits students who are completing translation assignments.

The application of AI in translation can utilize Google Translate. This translation system continues to evolve and is categorized into three groups: rule-based MT (rule-based machine translation), statistical MT (statistical machine translation), and neural MT systems.⁴³ AI to assist in grammatical identification

⁴⁰ Eric Steven Atwell, "Classical and Modern Arabic Corpora: Genre and Language Change," in *Diachronic Corpora, Genre, and Language Change* (John Benjamins Publishing Company, 2018), 65–92.

⁴¹ Risalatul Muawanah and Aulia Faqih Rifa'i, "Analisis Kedudukan I'rab Kalimah Bahasa Arab Pada Kitab Al-Imrithi Menggunakan Algoritma Breadth First Search (BFS)," *JISKA (Jurnal Informatika Sunan Kalijaga)* 3, no. 1 (2018): 58–62.

⁴² Abdullah Y Muaad et al., "Artificial Intelligence-Based Approach for Misogyny and Sarcasm Detection from Arabic Texts," *Computational Intelligence and Neuroscience* 2022, no. 1 (2022): 7937667.

⁴³ Andi Agussalim and Haeriyah Haeriyah, "Semiotika Komputasional Aplikasi Mesin Penerjemahan," *Nady Al-Adab: Jurnal Bahasa Arab* 15, no. 2 (2018): 35–42.

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and Arabic translation still requires user involvement in cross-checking the results. This is due to the differences in Indonesian and Arabic language styles, where adjustments to the source and target language styles are necessary to ensure grammatical accuracy and stylistic consistency in the translation.

The use of AI in muhadatsah or spoken dialogue has increased significantly. This is evidenced by developing AI-based application systems designed to optimize students' competencies, such as ICSApp (I Can See Application), chatbots, and Nabiha. These AI applications aim to facilitate students in learning and practicing dialogue competencies. ICSApp can also be implemented to transcribe spoken language directly into text and vice versa.⁴⁴ ICSApp, which has been installed on Android 5.0, can scan images or text, and the system will then output speech or utterances in Arabic, Indonesian, and English. This application can also assist the visually impaired and illiterate access information easily. The application is installed on Android devices, allowing users to access it freely anytime and anywhere. Additionally, AI has been utilized to provide a platform for the hearing impaired to translate real-time Arabic videos into sign language.⁴⁵ Hand gestures that translate Arabic have an accuracy rate of up to 95%.⁴⁶

Furthermore, AI in Arabic language learning can utilize voice assistants similar to virtual mentors. Voice assistants are one of the most popular AI technologies today. Voice assistants include Google Assistant, Siri (Apple), and Cortana. Students can use voice assistants to search for information by simply speaking or mentioning keywords, such as question references, articles, books, etc. Several education platforms use voice assistant technology to help students find content and materials more quickly and efficiently.⁴⁷

Learning that uses AI media has the following advantages: 1. It facilitates the learning process and minimizes errors such as misidentification of meaning, word translation, and pronunciation errors. 2. The time required to find what the user wants is relatively short. 3. It allows users to access AI features 24 hours daily with consistent and accurate results.

AI in Arabic has drawbacks, including: 1. High initial installation and maintenance costs. 2. Tends to only complete repetitive tasks according to the inputted code, reducing creativity comparable to humans.

AI is one of the alternative solutions to enhance Arabic language learning competencies in translation and conversation for students. AI can minimize errors, provide unlimited time, make faster decisions, be permanent or persistent, offer numerous conveniences, and produce consistent and accurate results.⁴⁸ However, AI requires high costs, lacks creativity, and may make users

⁴⁴ Siti Ernawati, Risa Wati, and Ilham Maulana, "Penerapan Model Fountain Untuk Pengembangan Aplikasi Text Recognition Dan Text to Speech Berbasis Android Menggunakan Flutter," *Prosiding Snast*, 2021, 178–86.

⁴⁵ Bushra A Al-Mohimeed et al., "Dynamic Sign Language Recognition Based on Real-Time Videos," *International Journal of Online & Biomedical Engineering* 18, no. 1 (2022).

⁴⁶ Yaser Saleh and Ghassan Issa, "Arabic Sign Language Recognition through Deep Neural Networks Fine-Tuning," 2020.

⁴⁷ Jumhana Nurhamim, "N., & Mubarak, RH (2022)," *Ragam Media Pembelajaran Bahasa Arab Berbasis ICT. CV. Istana Agency*, 2022.

⁴⁸ Kelly Shiohira, "Understanding the Impact of Artificial Intelligence on Skills Development," *Education 2030* (2021).

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lazy, as it only follows pre-programmed instructions.⁴⁹ AI technology greatly assists students in enhancing their grammatical, translation, and conversation skills. Each student can also utilize AI features for self-directed learning and to gain more experience in Arabic language learning.

The author's analysis shows that the implementation of artificial intelligence (AI) in Arabic language learning has undergone a wide diversification of functions, ranging from natural language processing (NLP) to the application of machine learning techniques and neural networks. Specifically, using Artificial Intelligence Markup Language (AIML) to analyze and correct writing errors is one of the early innovations that can potentially improve Maharah al-Kitabah competencies. AIML not only transmits information statically but has been developed to perform contextual analysis of errors, enabling the implementation of automatic corrections alongside the development of cloud-based master data to facilitate multiplatform access and higher scalability.⁵⁰

Furthermore, interactive conversation systems such as E-Muhadathah, which uses the ADDIE instructional model (Analyze, Design, Development, Implementation, Evaluation), demonstrate that AI integration in Arabic language learning is not limited to writing aspects but also includes the development of conversational skills through text and speech processing. The deep learning approach applied in this system supports speech recognition and text-to-speech synthesis, thereby accommodating various language competencies, such as Maharat al-Istima' and Maharat al-Qira'ah. This approach confirms the importance of iterative system design and continuous evaluation involving experts in AI and CALL to address issues of technological complexity.⁵¹

In addition to interactive aspects, digital platforms such as Google Suite for Education (GAPE) and ChatGPT technology bridge the gap between evaluation and real-time feedback in Arabic language learning. The use of Google Forms equipped with quiz features as an evaluation tool, along with ChatGPT's ability to provide quick and accurate responses, serves as a concrete example of how AI can automate assessment and support learning quality improvement through integration with evaluative methods, thereby assisting teachers in managing and presenting materials adaptively.⁵²

Media such as Powtoon are also integrated as learning tools, highlighting visual and audio advantages by creating interactive presentation videos.

⁴⁹ Ahmet Gocen and Fatih Aydemir, "Artificial Intelligence in Education and Schools," *Research on Education and Media* 12, no. 1 (2020): 13–21.

⁵⁰ Nurul Auliani Husna et al., "Keefektifan Penggunaan Multimedia Interaktif Berbasis Game Based Learning Terhadap Hasil Belajar Peserta Didik Kelas III Di SDN Plamongansari 02 Semarang Nurul," *Jurnal Pendidikan Dan Konseling* 5 (2023): 1–6; Fitra Septia Nugraha, Muhammad Ja'far Shidiq, and Sri Rahayu, "Analisis Algoritma Klasifikasi Neural Network Untuk Diagnosis Penyakit Kanker Payudara," *Jurnal Pilar Nusa Mandiri* 15, no. 2 (2019): 149–56.

⁵¹ Rizka Anugrah, "ISTIKHDAM AL-LU'BAH AL-LUGHOWIYAH AL-AUROQ AL-MUMAZZAQOH LITARQIYAH KAFA'AH AT-TOLIBAT FI MAHARAH AL-QIRO'AH FI AL-FASL AL-IBTIDA'I BIMA'HAD DARU AL-LUGHAH WA AD-DA'WAH BANGIL PASURUAN," *Jurnal Tarbiyatuna: Jurnal Kajian Pendidikan, Pemikiran Dan Pengembangan Pendidikan Islam* 4, no. 1 (2023): 53–76; Mohammad Robihul Mufid et al., "Design MicroServer Framework Library with Swoole for Real-Time Application Development," *Jurnal Teknologi Informasi Dan Terapan (J-TIT)* 11, no. 2 (2024).

⁵² Anugrah, "ISTIKHDAM AL-LU'BAH AL-LUGHOWIYAH AL-AUROQ AL-MUMAZZAQOH LITARQIYAH KAFA'AH AT-TOLIBAT FI MAHARAH AL-QIRO'AH FI AL-FASL AL-IBTIDA'I BIMA'HAD DARU AL-LUGHAH WA AD-DA'WAH BANGIL PASURUAN"; Nugraha, Shidiq, and Rahayu, "Analisis Algoritma Klasifikasi Neural Network Untuk Diagnosis Penyakit Kanker Payudara."

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Powtoon, with its dynamic animation features and easy timeline setup, offers a more engaging alternative to traditional presentation media, significantly enhancing students' motivation and understanding of Arabic language material.⁵³ The existence of these tools also provides room for creativity in delivering material, although, in practice, they also face obstacles such as dependence on infrastructure and high maintenance costs.

On the other hand, the use of virtual assistants such as Alexa expands the scope of AI applications by utilizing large linguistic corpora for quick and accurate word and grammar identification. The application of this technology in identifying grammatical elements, such as i'rob and neural machine translation-based translation, provides a competitive advantage in overcoming potential human error and accelerating the learning process. However, limitations such as a limited role in creativity and a tendency to complete repetitive tasks indicate that the role of teachers and human interaction is still very much needed to cross-check and contextualize the results produced by technology.⁵⁴

Overall, this descriptive analysis highlights the advantages of AI application in Arabic language learning, including reduced human error, improved evaluation efficiency, and consistent quality of results. However, several challenges, such as high costs, limitations in ideal machine creativity, and the need for supporting infrastructure, must also be considered in its implementation. The integration of various AI applications such as AIML, E-Muhadathah, GAFE, Powtoon, and Alexa indicates that Arabic language learning is shifting toward a more digital and adaptive approach, which not only optimizes mastery of grammatical aspects, translation, and conversation but also opens opportunities for further research to address existing challenges.

D. Conclusion

There are many challenges faced by students and teachers in achieving Arabic language learning outcomes, particularly in terms of grammar, translation, speaking, writing, and listening to Arabic dialogues. Additionally, teachers find it challenging to create learning models and interactive media. AI offers an alternative solution to address these challenges for students. Learning experiences through AI as a medium and learning tool are challenging for users. However, the success of learning is not solely due to the use of AI itself but rather depends on sincerity, dedication, perseverance, patience, consistency, and high enthusiasm for learning so that students can master Arabic language skills perfectly. Therefore, artificial intelligence is provided as a learning support tool and to assist teachers in creating learning media, such as Artificial Intelligence Markup Language (AIML), E-Muhadastah, GAFE (Google Forms), Chat GPT, Powtoon, Alexa, and others.

⁵³ Nugraha, Shidiq, and Rahayu, "Analisis Algoritma Klasifikasi Neural Network Untuk Diagnosis Penyakit Kanker Payudara."

⁵⁴ Anugrah, "ISTIKHDAM AL-LU'BAH AL-LUGHOWIYAH AL-AUROQ AL-MUMAZZAQOH LITARQIYAH KAFA'AH AT-TOLIBAT FI MAHARAH AL-QIRO'AH FI AL-FASL AL-IBTIDA'I BIMA'HAD DARU AL-LUGHAH WA AD-DA'WAH BANGIL PASURUAN"; Mufid et al., "Design MicroServer Framework Library with Swoole for Real-Time Application Development."

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