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The Foundations of AI-Driven Arabic Learning Materials: Toward an Integrative Conceptual Framework

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Abstract

Artificial Intelligence (AI) has created new opportunities for developing Arabic learning materials that are more adaptive, personalized, and interactive. However, existing studies have primarily focused on technological applications, with limited attention to the theoretical foundations that should guide the development of AI-driven Arabic learning materials. This study aims to analyze the theoretical foundations underlying the development of Arabic learning materials in the era of artificial intelligence. Using a qualitative library research design, data were collected from scholarly books, journal articles, conference proceedings, and other relevant academic publications. The data were analyzed through content analysis, thematic analysis, and conceptual synthesis. The findings indicate that the development of AI-driven Arabic learning materials should be grounded in five interconnected foundations: philosophical, pedagogical, linguistic, psychological, and sociocultural. These foundations provide a comprehensive framework for integrating AI into Arabic language education while ensuring adaptability, personalization, interactivity, and cultural authenticity. This study contributes an integrative conceptual perspective that positions AI as an educational enabler rather than merely a technological tool.

Keywords: *Artificial Intelligence; Arabic Learning Materials; Educational Foundations; Integrative Framework; Personalized Learning*

Abstrak

Kecerdasan buatan (Artificial Intelligence/AI) membuka peluang baru dalam pengembangan bahan ajar bahasa Arab yang lebih adaptif, personal, dan interaktif. Namun, sebagian besar penelitian masih berfokus pada aplikasi teknologi, sementara kajian mengenai landasan teoritis pengembangan bahan ajar bahasa Arab berbasis AI masih terbatas. Penelitian ini bertujuan menganalisis landasan-landasan teoritis yang mendasari pengembangan bahan ajar bahasa Arab di era kecerdasan buatan. Penelitian menggunakan pendekatan kualitatif dengan desain penelitian kepustakaan. Data diperoleh dari buku, artikel jurnal, prosiding, dan publikasi akademik terkait, kemudian dianalisis menggunakan *content analysis*, *thematic analysis*, dan sintesis konseptual. Hasil penelitian menunjukkan bahwa pengembangan bahan ajar bahasa Arab berbasis AI perlu dibangun di atas lima landasan utama, yaitu filosofis, pedagogis, linguistik, psikologis, dan sosiokultural. Kelima landasan tersebut membentuk kerangka konseptual yang memungkinkan integrasi AI secara adaptif, personal, interaktif, dan tetap menjaga autentisitas budaya. Penelitian ini menawarkan perspektif konseptual integratif yang memposisikan AI sebagai *enabler* pendidikan, bukan sekadar alat teknologi.

Kata Kunci: *Kecerdasan Buatan; Bahan Ajar Bahasa Arab; Landasan Pendidikan; Kerangka Integratif; Pembelajaran Personal*

Introduction

The advancement of education demands transformative approaches to the development of innovative learning materials, including those used in Arabic language instruction. Although learning materials play a strategic role in bridging instructional objectives and learners' educational experiences,[1] numerous studies indicate that Arabic learning materials continue to face several limitations.[2] Many existing materials remain primarily focused on content delivery and the mastery of linguistic rules, thereby providing insufficient support for the development of communicative competence. Furthermore, they are often standardized in nature and fail to accommodate learners' diverse abilities, needs, and learning preferences. As a result, the learning

[1] Hasanah, Mamluatul, Ahmad Mubaligh, Risna Rianti Sari, Alfiatus Syarofah, and Agung Prasetyo. "ARABIC PERFORMANCE CURRICULLUM DEVELOPMENT: RECONSTRUCTION BASED ON ACTFL AND DOUGLAS BROWN PERSPECTIVE." *Ijaz Arabi Journal of Arabic Learning* 4, no. 3 (October 2021). https://doi.org/10.18860/ijazarabi.v4i3.11900.

[2] Anggeraini, Yentri. "LANGUAGE TEACHING IN THE DIGITAL AGE: TEACHERS` VIEWS AND ITS CHALLENGES." *Research and Innovation in Language Learning* 3, no. 3 (October 2020): 163. https://doi.org/10.33603/rill.v3i3.3444.

process tends to be less adaptive and has not fully embraced the principles of differentiated and personalized learning.[3]

In addition, Arabic learning materials in certain educational contexts often lack contextual relevance, as they employ themes and communicative situations that are disconnected from learners' realities and do not adequately incorporate contemporary issues or digital literacy.[4] From a design perspective, instructional materials are still predominantly presented in static print formats, with learning activities largely confined to reading, memorization, and written exercises. Consequently, they are less effective in fostering interactive, collaborative, and exploratory learning experiences.[5] Assessment and feedback mechanisms also remain limited, preventing learners from obtaining meaningful insights into their learning progress. These challenges indicate that Arabic learning materials continue to struggle in meeting the demands of twenty-first-century education, which emphasizes personalization, interactivity, flexibility, and active learner engagement.[6]

At the same time, rapid advances in digital technology have generated a range of innovations capable of addressing many of these limitations. One of the most influential innovations in contemporary education is Artificial Intelligence (AI).[7] In recent years, AI has emerged

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[3] Ritonga, Mahyudin, Hendro Widodo, Munirah Munirah, and Talqis Nurdianto. "Arabic Language Learning Reconstruction as a Response to Strengthen Al-Islam Studies at Higher Education." *International Journal of Evaluation and Research in Education (IJERE)* 10, no. 1 (March 2021): 355. https://doi.org/10.11591/ijere.v10i1.20747.

[4] Ulhaq, Nadia, and Lahmuddin Lubis. "Penyusunan Materi Ajar Dalam Rangka Meningkatkan Keterampilan Berbicara Bahasa Arab Pada Siswa." *Journal of Education Research* 4, no. 3 (August 2023): 1202–11. https://doi.org/10.37985/jer.v4i3.361.

[5] Nur'aini, Rara, and Mohamad Zaka al Farisi. "The Observation of Arabic Language Differentiation in the 2013 Curriculum and the 'Merdeka' Curriculum." *Abjadia : International Journal of Education* 8, no. 1 (July 2023): 62–78. https://doi.org/10.18860/abj.v8i1.22359.

[6] Rahman, Rifqi Aulia, and Indah Kumalasari. "The Dynamics of Arabic Language Curriculum at Arabic Education Department of UIN Sunan Kalijaga Yogyakarta." *LISANIA: Journal of Arabic Education and Literature* 4, no. 2 (December 2020): 140–62. https://doi.org/10.18326/lisania.v4i2.140-162.

[7] Allaithy, Ahmed, and Mai Zaki. "Evaluation of AI-Generated Reading Comprehension Materials for Arabic Language Teaching." *Computer Assisted Language Learning*, March 6, 2025, 1–33. https://doi.org/10.1080/09588221.2025.2474037.

as a major driver of global educational transformation due to its capacity to provide more personalized, adaptive, and data-driven learning experiences. Technologies such as adaptive learning systems, learning analytics, intelligent tutoring systems, and automated feedback have been increasingly utilized to enhance instructional effectiveness and expand learners' access to educational resources tailored to their individual needs.[8]

The application of AI has also expanded significantly in the field of language learning. The integration of technologies such as Natural Language Processing (NLP), speech recognition, machine translation, and conversational chatbots has enabled the creation of more dynamic and responsive language learning environments.[9] These technologies not only provide learners with immediate feedback but also facilitate more flexible learning processes that accommodate individual proficiency levels and learning paces. Consequently, AI is widely regarded as a transformative technology with the potential to revolutionize the ways languages are taught, learned, and assessed.

the context of Arabic language learning, the potential of AI becomes even more significant given the unique linguistic complexity of Arabic, encompassing phonological, morphological, syntactic, and sociocultural dimensions. AI offers new opportunities for the development of Arabic learning materials that are more personalized, adaptive, and contextually relevant. Through various AI-driven technologies, instructional materials can be tailored to individual learner needs, provide diverse learning activities, deliver automated feedback, and support more effective language skill development.[10] Therefore, AI should not be viewed merely as a technological tool but as a potential paradigm shift in the development of Arabic learning materials that are better aligned with the demands of contemporary education.

Several studies have demonstrated the significant impact of AI on the transformation of language learning, including the development

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[8] Muchsinul Khuluq, Moh. Ainin, Abdul Wahab Rosyidi, and Nurul Imamah. "The Development of Reading Skill Teaching Materials Based on Prezi Artificial Intelligence." *Arabiyatuna: Jurnal Bahasa Arab* 9, no. 1 (June 2025): 327–46.

[9] Sarwadi, Sarwadi. "Artificial Intelligence Integration in Second Language Pronunciation Training." *Pioneer: Journal of Language and Literature* 17, no. 1 (June 2025): 80. https://doi.org/10.36841/pioneer.v17i1.6329.

[10] Akmaliyah, Akmaliyah, Yasir Hudzaifah, Nisrina Ulfah, and Muhammad Ibnu Pamungkas. "Child-Friendly Teaching Approach for Arabic Language in Indonesian Islamic Boarding School." *International Journal of Language Education*, March 30, 2021, 501–14. https://doi.org/10.26858/ijole.v5i1.15297.

of Arabic learning materials. Allaithy's study revealed that the use of AI in Arabic language education fosters learning environments that are more adaptive, interactive, and learner-centered.[11] The study highlighted how technologies such as chatbots, intelligent learning systems, and learning analytics can facilitate more personalized learning experiences tailored to individual learner needs. Similar findings were reported by Rahman et al., whose bibliometric analysis of AI-related language learning publications from 2017 to 2023 identified personalized learning, adaptive learning, Natural Language Processing (NLP), and intelligent tutoring systems as the dominant trends driving the advancement of AI-supported language education across diverse educational settings.[12]

Furthermore, Abdelhalim et al. found that both learners and educators responded positively to the integration of AI in language learning, citing its ability to enhance motivation, engagement, and learner autonomy.[13] Another relevant study by Alkaabi examined the implementation of Generative AI in Arabic language education and concluded that AI could support content development, assessment, and learning facilitation in a more flexible manner, despite challenges related to dialectal variation and cultural sensitivity.[14] Meanwhile, Adawiyah's research demonstrated that the implementation of AI in Arabic language learning faces obstacles associated with digital literacy, institutional readiness, and pedagogical integration, thereby highlighting the need for a more comprehensive developmental framework.[15] While these studies

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[11] Allaithy, Ahmed, and Mai Zaki. "Evaluation of AI-Generated Reading Comprehension Materials for Arabic Language Teaching." *Computer Assisted Language Learning*, March 6, 2025, 1–33. https://doi.org/10.1080/09588221.2025.2474037.

[12] Rahman, Abdur, Antony Raj, Prajeesh Tomy, and Mohamed Sahul Hameed. "A Comprehensive Bibliometric and Content Analysis of Artificial Intelligence in Language Learning: Tracing between the Years 2017 and 2023." *Artificial Intelligence Review* 57, no. 4 (April 2024): 107. https://doi.org/10.1007/s10462-023-10643-9.

[13] Abdelhalim, Safaa M., Asma A. Alsahil, and Zainab A. Alsuhaibani. "Artificial Intelligence Tools and Literary Translation: A Comparative Investigation of ChatGPT and Google Translate from Novice and Advanced EFL Student Translators' Perspectives." *Cogent Arts & Humanities* 12, no. 1 (December 2025). https://doi.org/10.1080/23311983.2025.2508031.

[14] Alkaabi, Mozah H., and Asma Saeed Almaamari. "Generative AI Implementation and Assessment in Arabic Language Teaching." *International Journal of Online Pedagogy and Course Design* 15, no. 1 (January 2025): 1–18. https://doi.org/10.4018/IJOPCD.368037.

[15] Adawiyah, Rabiatul. "Implementing AI in Arabic Language Learning: Challenges and Insights from Islamic Higher Education." *AL-ISHLAH: Jurnal*

primarily focus on technological implementation, application effectiveness, or the challenges associated with AI adoption in language learning, research specifically addressing the theoretical foundations that should underpin the development of AI-driven Arabic learning materials remains limited. Yet, the development of learning materials extends beyond technological considerations and must also incorporate fundamental dimensions such as philosophical, pedagogical, linguistic, psychological, and sociocultural foundations. The limited integration of these dimensions within the context of emerging AI technologies reveals a conceptual gap that warrants further scholarly attention.

Against this background, the present study aims to analyze the theoretical foundations that should guide the development of Arabic learning materials in the era of artificial intelligence. Specifically, it seeks to address the following research question: What theoretical foundations should guide the development of Arabic learning materials in the era of artificial intelligence? Through this inquiry, the study endeavors to formulate a conceptual framework that integrates educational principles with the capabilities of AI technologies, thereby providing a foundation for the development of Arabic learning materials that are more adaptive, personalized, and responsive to the demands of twenty-first-century learning.

Method

This study employed a qualitative approach using a library research design.[16] The research focused on reviewing and synthesizing various theoretical perspectives, conceptual frameworks, and previous studies related to the development of Arabic learning materials in the era of Artificial Intelligence (AI). This approach was chosen because the objective of the study was not to evaluate the effectiveness of a particular application or technology, but rather to develop a comprehensive conceptual understanding of the foundations that should guide the development of Arabic learning materials within contemporary digital learning environments.

The data sources consisted of scholarly books, peer-reviewed journal articles, conference proceedings, and other academic

Pendidikan 17, no. 3 (July 2025): 3729–39. https://doi.org/10.35445/alishlah.v17i3.7390.

[16] George, Mary W. *The Elements of Library Research*. Princeton University Press, 2008. https://doi.org/10.1515/9781400830411.

publications addressing Arabic language education, learning material development, educational technology, Artificial Intelligence in Education (AIEd), Computer-Assisted Language Learning (CALL), adaptive learning, and personalized learning. To ensure the relevance and currency of the analysis, the study primarily drew upon publications published between 2016 and 2025 from both national and international sources.

Data were collected through documentation techniques involving the identification, selection, classification, and critical review of literature relevant to the research focus. The selected literature was subsequently analyzed to identify key concepts, theoretical patterns, and the relationships between the foundations of learning material development and the application of artificial intelligence in language learning.

Data analysis was conducted using content analysis and thematic analysis[17]. Content analysis was employed to identify ideas, concepts, and arguments emerging from the literature, while thematic analysis was used to categorize the findings into five major dimensions: philosophical, pedagogical, linguistic, psychological, and sociocultural foundations. Through this process, the study sought to uncover the interrelationships between the fundamental principles of learning material development and the opportunities offered by artificial intelligence technologies.

To enhance the depth of analysis, the study adopted a conceptual synthesis approach by integrating educational theories, language learning theories, and recent research findings on artificial intelligence in education. Through this synthesis, the study aimed to formulate a conceptual framework that can serve as a foundation for developing Arabic learning materials that are adaptive, personalized, interactive, and aligned with the demands of twenty-first-century learning.

[17] Assarroudi, Abdolghader, Fatemeh Heshmati Nabavi, Mohammad Reza Armat, Abbas Ebadi, and Mojtaba Vaismoradi. "Directed Qualitative Content Analysis: The Description and Elaboration of Its Underpinning Methods and Data Analysis Process." *Journal of Research in Nursing* 23, no. 1 (February 2018): 42–55. https://doi.org/10.1177/1744987117741667.

Results and Discussion

Philosophical Foundations

The development of Arabic learning materials cannot be separated from the philosophical foundations that determine the direction, objectives, and orientation of instruction. In the traditional paradigm, learning materials are generally designed as instruments for knowledge transmission, positioning teachers as the primary source of information and learners as passive recipients of knowledge. Such an orientation tends to promote teacher-centered learning and provides limited opportunities for learners to construct knowledge independently.[18] However, with the emergence of constructivist learning theories, learning is increasingly understood as an active process in which learners become the central agents in constructing knowledge through experience, interaction, and reflection.

This philosophical transformation has gained further momentum with the emergence of Artificial Intelligence (AI). A concrete example can be found in the use of Large Language Models (LLMs), such as ChatGPT[19], Gemini[20], and Claude, in language learning. Unlike conventional learning materials that present content in a linear and standardized manner, AI-powered systems enable learners to ask questions, request additional explanations, obtain new examples, and receive feedback tailored to their individual learning needs. In Arabic language learning, for instance, learners can seek explanations of specific grammatical rules, request contextualized vocabulary examples, or engage in simulated Arabic conversations according to their proficiency level.[21]

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[18] Mazzolini, Alexander P. *Lessons Learned and Unlearned: A Lifelong Journey with 'Active Learning' as a Constant Companion*. 2024. https://doi.org/10.1007/978-3-031-48667-8_1.

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

[20] Zaimah, Nely Rahmawati, Risti Kamila Wening Estu, Syarifatul Fitri Hidayah, Syamsul Hadi, and Aiden Button. "Harnessing Gemini for Arabic Mastery: Educators' and Learners' Views." *Alibbaa': Jurnal Pendidikan Bahasa Arab* 5, no. 2 (July 2024): 166–88. https://doi.org/10.19105/ajpba.v5i2.14808.

[21] Lu, Dunming (Jason), and Yutian Zeng. "Exploring the Use of ChatGPT-Generated Model Texts as a Feedback Instrument: EFL Students' Text Quality and

These developments demonstrate that AI functions not merely as a technological tool but also as a catalyst for reshaping the way knowledge is constructed within educational settings. Baskara's findings indicate that the integration of AI in language education can foster learning environments that are more adaptive, interactive, and learner-centered.[22] Similarly, Rahman et al. (2024) emphasized that personalized learning is one of the most significant contributions of AI to language education, as it enables instructional content and learning activities to be tailored to the needs of individual learners.[23] These findings suggest that AI is driving a shift from standardized instructional approaches toward more personalized and flexible learning experiences.

Furthermore, AI contributes to the advancement of twenty-first-century educational goals, including critical thinking, creativity, problem-solving, and lifelong learning. For example, learners can utilize AI-powered chatbots to explore alternative responses, compare different linguistic structures, and reflect on their learning outcomes. Such activities not only enhance language proficiency but also foster higher-order thinking skills, which are among the primary objectives of contemporary education.[24]

Based on this analysis, it can be argued that the philosophical foundation of Arabic learning material development in the age of artificial intelligence extends beyond the mere transmission of content. Instead, it emphasizes the creation of learning environments that enable learners to construct knowledge actively, independently, and continuously. From this perspective, AI serves as an enabler that strengthens the implementation of constructivist principles, personalized

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Perceptions." *Innovation in Language Learning and Teaching*, July 3, 2025, 1–21. https://doi.org/10.1080/17501229.2025.2525341.

[22] Baskara, Risang, and Mukarto Mukarto. "Exploring the Implications of ChatGPT for Language Learning in Higher Education." *IJELTAL (Indonesian Journal of English Language Teaching and Applied Linguistics)* 7, no. 2 (April 2023): 343. https://doi.org/10.21093/ijeltal.v7i2.1387.

[23] Rahman, Abdur, et al. "A Comprehensive Bibliometric and Content Analysis of Artificial Intelligence in Language Learning: Tracing between the Years 2017 and 2023."

[24] Liu, Zhaoyang, Wenlan Zhang, and Panpan Yang. "Can AI Chatbots Effectively Improve EFL Learners' Learning Effects?—A Meta-Analysis of Empirical Research from 2022–2024." *Computer Assisted Language Learning*, February 8, 2025, 1–27. https://doi.org/10.1080/09588221.2025.2456512.

learning, and learner-centered education.[25] Therefore, the development of AI-driven Arabic learning materials should be directed toward fostering learning experiences that are adaptive, reflective, and meaningful in accordance with the demands of twenty-first-century education.

Pedagogical and Linguistic Foundations

Pedagogical and linguistic foundations constitute two inseparable components in the development of Arabic learning materials. From a pedagogical perspective, learning materials should be systematically designed, sequenced progressively, and aligned with intended learning outcomes. Content organization should adhere to the principles of sequencing, continuity, and appropriateness to learners' developmental levels.[26] From a linguistic perspective, learning materials must account for the characteristics of the Arabic language, including its phonology, vocabulary, morphology, syntax, and the four language skills of listening, speaking, reading, and writing.[27] Consequently, effective Arabic learning materials require the integration of sound pedagogical principles and linguistic considerations.

The rapid advancement of artificial intelligence has created new opportunities for implementing these principles more effectively. One notable example can be found in AI-powered learning platforms such as Duolingo Max, Khanmigo (Khan Academy), and ALEKS, which are capable of adapting instructional sequences according to learners' levels of mastery.[28] When learners encounter difficulties in understanding a

[25] Song, Chuanxiang, Seong-Yoon Shin, and Kwang-Seong Shin. "Optimizing Foreign Language Learning in Virtual Reality: A Comprehensive Theoretical Framework Based on Constructivism and Cognitive Load Theory (VR-CCL)." *Applied Sciences* 13, no. 23 (November 2023): 12557. https://doi.org/10.3390/app132312557.

[26] Perkins, Kyle, and Lawrence Jun Zhang. "The Effect of First Language Transfer on Second Language Acquisition and Learning: From Contrastive Analysis to Contemporary Neuroimaging." *RELC Journal* 55, no. 1 (April 2024): 162–78. https://doi.org/10.1177/00336882221081894.

[27] Aflisia, Noza, Hendrianto, and Kasmantoni. "Teaching Balaghah for the Purpose of Appreciation of Al-Quran Language." *Lughawiyyat: Jurnal Pendidikan Bahasa Dan Sastra Arab* 4, no. 2 (June 2022): 156–72. https://doi.org/10.38073/lughawiyyat.v4i2.537.

[28] Loewen, Shawn, Dustin Crowther, Daniel R. Isbell, Kathy Minhye Kim, Jeffrey Maloney, Zachary F. Miller, and Hima Rawal. "Mobile-Assisted Language Learning: A Duolingo Case Study." *ReCALL* 31, no. 3 (September 2019): 293–311. https://doi.org/10.1017/S0958344019000065.

grammatical concept, the system can automatically provide additional explanations, remedial exercises, or simplified examples before advancing to subsequent topics. Conversely, learners who demonstrate higher levels of proficiency can be directed toward more challenging tasks without being required to follow a uniform instructional sequence. This capability makes learning materials significantly more adaptive than conventional materials, which are typically organized in the same manner for all learners.

From a linguistic standpoint, developments in Natural Language Processing (NLP) have opened new possibilities for Arabic learning material development. NLP technologies enable systems to understand, analyze, and generate human language automatically.[29] For example, AI-powered chatbots such as ChatGPT can explain Arabic grammatical rules (*nahw* and *sarf*), provide contextualized vocabulary examples, and assist learners in understanding sentence structures. In addition, speech recognition technologies allow learners to practice speaking skills and receive immediate feedback on their pronunciation. These features demonstrate that AI can expand the role of learning materials from being mere sources of information to becoming interactive and responsive learning tools.[30]

Previous studies further support this potential. Al-Yahya found that AI-based electronic learning materials enable learners to receive faster and more accurate feedback in Arabic language learning.[31] Their study demonstrated that AI integration enhances the effectiveness of language practice by allowing learners to identify and correct errors without having to wait for teacher feedback.

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[29] Kundu, Arnab, and Tripti Bej. "AI in School EFL Learning: A Systematic Review of Impact Pathways for Engagement, Achievement, and Satisfaction." *Journal of Language and Education* 11, no. 4 (December 2025): 131–48. https://doi.org/10.17323/jle.2025.22083.

[30] Bogach, Natalia, Elena Boitsova, Sergey Chernonog, Anton Lamtev, Maria Lesnichaya, Iurii Lezhenin, Andrey Novopashenny, et al. "Speech Processing for Language Learning: A Practical Approach to Computer-Assisted Pronunciation Teaching." *Electronics* 10, no. 3 (January 2021): 235. https://doi.org/10.3390/electronics10030235.

[31] Al-Yahya, Maha. "A Comparative Study of Machine Learning Methods for Genre Identification of Classical Arabic Text." *Computers, Materials & Continua* 60, no. 2 (2019): 421–33. https://doi.org/10.32604/cmc.2019.06209.

Nevertheless, the effectiveness of AI in Arabic learning material development remains dependent on the quality of the pedagogical design underlying its implementation. Technology cannot replace the importance of defining learning objectives, selecting appropriate content, or designing instructional activities that align with learners' characteristics.[32] AI can only deliver optimal benefits when integrated into learning materials grounded in robust pedagogical principles and a thorough understanding of the linguistic characteristics of Arabic. Therefore, AI should not be regarded as a substitute for teachers or curricula, but rather as a means of strengthening the implementation of pedagogical and linguistic principles in the development of Arabic learning materials.

Based on the foregoing analysis, it can be concluded that AI integration enables the development of Arabic learning materials that are more adaptive, interactive, and responsive to learners' needs. However, the success of such integration ultimately depends on the ability of instructional designers and educators to combine technological capabilities with the pedagogical and linguistic foundations that constitute the core of Arabic language education.

Psychological Foundations and Personalized Learning

Psychological foundations constitute one of the fundamental aspects of learning material development, as learners possess diverse characteristics, needs, abilities, interests, motivations, and learning styles. From the perspective of educational psychology, the effectiveness of learning materials is determined not only by the quality of their content but also by their ability to accommodate learners' psychological conditions. Therefore, the development of Arabic learning materials should take into account factors such as individual differences, learning motivation, cognitive engagement, and learners' readiness to receive and process information.[33]

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[32] Silvia, Neng, Asep Ahmad Saepudin, Nuril Mufidah, and Abdul Malik Karim Amrullah. "Manajemen Perencanaan Dan Pengorganisasian Pembelajaran Bahasa Arab." *Alibbaa': Jurnal Pendidikan Bahasa Arab* 4, no. 1 (January 2023): 108–23. https://doi.org/10.19105/ajpba.v4i1.7497.

[33] Mahmudah, Menik, Nurhanifansyah Nurhanifansyah, and Syarif Muhammad Syaheed bin Khalid. "Psycholinguistic Approaches to Enhancing Arabic Speaking Proficiency through Comic Strips." *Arabiyatuna: Jurnal Bahasa Arab* 8, no. 2 (November 2024): 805–26. https://doi.org/10.29240/jba.v8i2.11349.

One of the major challenges in Arabic language learning is the heterogeneity of learners' abilities. Within a single classroom, learners often come from diverse linguistic backgrounds and possess varying levels of prior knowledge of Arabic. As a result, standardized learning materials frequently fail to meet the needs of all learners effectively. Learners with limited proficiency may struggle to keep pace with instruction, while more advanced learners may lose motivation because the content is perceived as insufficiently challenging. This situation highlights the importance of developing learning materials capable of accommodating individual differences in a more flexible manner.[34]

The advancement of artificial intelligence offers a promising solution to this challenge through the implementation of personalized learning. AI-powered learning platforms such as Duolingo Max, Quizlet AI, and various adaptive learning systems can analyze learners' learning patterns, identify their levels of mastery, and adjust instructional activities according to individual needs.[35] For example, when learners experience difficulties in understanding specific vocabulary items or sentence structures, the system can automatically provide content repetition, additional exercises, or simplified explanations. Conversely, learners who have already mastered a particular competency can be directed toward more advanced materials without being required to follow the same instructional sequence as their peers.

In addition to supporting differentiated instruction, AI also has the potential to enhance learner motivation. Many contemporary learning platforms employ AI technologies to provide immediate feedback, gamified rewards, personalized learning recommendations, and learning

[34] Paradis, Johanne, Adriana Soto-Corominas, Xi Chen, and Alexandra Gottardo. "How Language Environment, Age, and Cognitive Capacity Support the Bilingual Development of Syrian Refugee Children Recently Arrived in Canada." *Applied Psycholinguistics* 41, no. 6 (November 2020): 1255–81. https://doi.org/10.1017/S014271642000017X.

[35] Xiao, Ting, Sisi Yi, and Shamim Akhter. "AI-Supported Online Language Learning: Learners' Self-Esteem, Cognitive-Emotion Regulation, Academic Enjoyment, and Language Success." *The International Review of Research in Open and Distributed Learning* 25, no. 3 (August 2024): 77–96. https://doi.org/10.19173/irrodl.v25i3.7666.

goals tailored to individual progress.[36] In the context of Arabic language learning, learners can receive automated corrections of vocabulary usage, grammatical structures, and pronunciation errors without waiting for teacher evaluation. The availability of continuous and immediate feedback enables learners to monitor their progress while simultaneously increasing their confidence in using Arabic.

Nevertheless, the use of AI in the development of Arabic learning materials should not be viewed merely as a process of instructional automation. Excessive reliance on AI systems may reduce social interaction and diminish the pedagogical role of teachers in guiding learners' development. Furthermore, not all psychological dimensions can be accurately identified through the data analytics employed by AI systems.[37] Therefore, AI should be positioned as a supportive tool that assists teachers in understanding learners' needs more effectively rather than as a replacement for the teacher's role in the educational process.

Based on this analysis, it can be argued that psychological foundations are closely intertwined with the application of AI in the development of Arabic learning materials. AI's capacity to facilitate personalized learning, enhance learner motivation, and provide continuous feedback makes it a promising means of accommodating the diverse characteristics of learners. However, its successful implementation ultimately requires a balance between technological sophistication and pedagogical approaches that prioritize the holistic development of human potential.

Sociocultural Foundations and Cultural Authenticity

Language is not merely a means of communication; it also serves as a representation of the values, culture, and social identity of its speakers.[38] Consequently, the development of Arabic learning materials

[36] Luo, Zhanni. "Gamification for Educational Purposes: What Are the Factors Contributing to Varied Effectiveness?" *Education and Information Technologies* 27, no. 1 (January 2022): 891–915. https://doi.org/10.1007/s10639-021-10642-9.

[37] A. Gazali, Nihayatur Rahmah, Roychan Yasin, Muhammad Ridwan, and Alya Raihana Sari. "Arabic for Specific Purposes in Islamic Higher Education: Systemic Learning Challenges among Non-Pesantren Students." *Alibbaa': Jurnal Pendidikan Bahasa Arab* 7, no. 1 (February 2026): 370–91. https://doi.org/10.19105/ajpba.v7i1.23592.

[38] Alsalim, Khalid. "Cross-Linguistic Perspectives on the Definite Article: Cognitive, Semantic, and Pragmatic Functions in English, French, and Arabic." Forum

cannot be separated from the sociocultural foundations that underpin the use of the language. In the context of Arabic language education, mastery of linguistic elements alone is insufficient for developing comprehensive communicative competence. Learners must also understand the social norms, cultural practices, interactional patterns, and values embedded within Arab societies and the Islamic tradition, both of which are closely associated with the Arabic language.[39]

Sociocultural foundations become particularly significant because Arabic occupies a unique position compared to many other foreign languages. In addition to serving as a means of communication, Arabic is the language of the Qur'an, Hadith, and a vast body of Islamic scholarship that has developed over centuries. Therefore, the development of Arabic learning materials should aim not only to foster language proficiency but also to introduce learners to the cultural and civilizational contexts associated with the language.[40] Consequently, learning materials should provide authentic, relevant content that reflects the sociocultural realities of Arabic-speaking communities.

In the era of artificial intelligence, opportunities to create authentic learning experiences have expanded considerably. Various AI technologies enable instructional designers to utilize more diverse and contextually rich language resources. For example, AI-powered chatbots can simulate conversations in a variety of social settings, including family interactions, schools, marketplaces, mosques, and educational institutions across the Arab world. Similarly, generative AI technologies facilitate the creation of dialogues, reading texts, and communicative exercises tailored to specific cultural contexts, enabling learners not only

for Linguistic Studies 7, no. 10 (September 2025). https://doi.org/10.30564/fls.v7i10.10562.

[39] Annafiri, Ahmad Zaki, Andi Suseno, Ilmah Fitrotul Azizah, Ahmad Mizaj el Kafoor, and Firda Saphira Azzahro. "Cultural Analysis of the Arabic Language Textbooks of Muhammadiyah Elementary School." *Alibbaa': Jurnal Pendidikan Bahasa Arab* 5, no. 1 (January 2024): 98–119. https://doi.org/10.19105/ajpba.v5i1.10989.

[40] Ayyad, Essam. "Re-Evaluating Early Memorization of the Qurʾān in Medieval Muslim Cultures." *Religions* 13, no. 2 (February 2022): 179. https://doi.org/10.3390/rel13020179.

to study linguistic structures but also to understand how language is used in real-life situations.[41]

This potential is supported by previous studies demonstrating that AI can expand learners' access to more contextualized and interactive learning experiences. Holandyah argued that the integration of AI into Arabic language education can create more flexible learning environments and support more intensive communicative practices.[42] Likewise, Alfiana et al. found that AI-based learning applications help learners engage in more enjoyable learning experiences and encourage active participation in language learning activities.[43] These findings suggest that AI has considerable potential to strengthen the communicative and contextual dimensions of Arabic learning material development.

Nevertheless, the integration of AI also presents several challenges that warrant careful consideration. Most AI models are trained on extensive and diverse datasets, which may not always represent Arab culture and Islamic values accurately. In some cases, AI systems may generate information that is culturally inappropriate or provide generalized representations that lack authenticity. Furthermore, excessive dependence on AI may encourage learners to rely more heavily on automated systems than on genuine social interaction, despite the fact that language learning is inherently a social and cultural activity.[44]

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[41] Vo, Thi Kim Anh, and Huong Nguyen. "Generative Artificial Intelligence and ChatGPT in Language Learning: EFL Students' Perceptions of Technology Acceptance." *Journal of University Teaching and Learning Practice* 21, no. 06 (April 2024). https://doi.org/10.53761/fr1rkj58.

[42] Holandyah, Muhamad, Dian Erlina, Lenny Marzulina, and Fitria Rembulan Ramadhani. "Grammar Instruction in Communicative Language Teaching Classrooms: Student Teachers' Perceptions." *Edukasi: Jurnal Pendidikan Dan Pengajaran*, June 30, 2021, 66–77. https://doi.org/10.19109/ejpp.v8i1.8510.

[43] Alfiana, Muhammad, Bayu Rima Aditya, Elis Hernawati, Pikir Wisnu Wijayanto, and Tedi Gunawan. "Usability Testing of the Canva Application As a Student Collaboration Design Media." *2023 8th International Conference on Information Technology and Digital Applications (ICITDA)*, November 17, 2023, 1–5. https://doi.org/10.1109/ICITDA60835.2023.10427037.

[44] Al-Zubeiry, Hameed Yahya Ahmed, and Mohammed Ahmed Mohammed Alzahrani. "Variation in Dispreferred Responses among Rural and Urban Saudi Arabic Speakers: A Socio-Pragmatic Analysis." Journal of Ethnic and Cultural Studies 11, no. 1 (March 2024): 229–48. https://doi.org/10.29333/ejecs/1986.

Therefore, the use of AI in the development of Arabic learning materials must remain grounded in clear pedagogical and ethical principles. Instructional designers should carefully select, verify, and adapt AI-generated content to ensure its alignment with Arab cultural characteristics and the Islamic values intended to be conveyed through the learning process.[45] In this regard, teachers and instructional designers continue to play a crucial role as curators and quality controllers of educational content.

Based on the overall analysis of the literature across the philosophical, pedagogical-linguistic, psychological, and sociocultural dimensions, it can be concluded that the development of Arabic learning materials in the age of artificial intelligence should not be driven solely by technological considerations. Rather, the integration of AI should be built upon a balanced synthesis of philosophical, pedagogical, linguistic, psychological, and sociocultural foundations. These five foundations collectively constitute a conceptual framework that guides the application of AI in producing learning materials that are adaptive, personalized, interactive, and culturally authentic. Accordingly, the primary contribution of this study lies in proposing an integrative perspective that bridges the principles of learning material development with the potential of artificial intelligence to support Arabic language education in the twenty-first century.

Discussion

The findings of the literature review indicate that the development of Arabic learning materials in the era of artificial intelligence should not be understood merely as a process of integrating technology into instruction. Rather, the adoption of AI requires a fundamental reconsideration of how learning materials are conceptualized and developed. To date, most discussions on AI in language education have focused primarily on technical aspects, such as the use of chatbots, adaptive learning systems, speech recognition technologies, and automated assessment tools. While these technologies have demonstrated significant benefits for teaching and learning, an excessively technology-centered approach risks overlooking the

[45] Hamsira M. Harad, and Benjier H. Arriola. "Implementation of Arabic Language and Islamic Values Education (ALIVE)." *THE American Journal of Humanities and Social Sciences Research (THE AJHSSR)* 5, no. 3 (2022): 47–57.

fundamental dimensions that have traditionally guided the development of instructional materials.[46]

The analysis conducted in this study demonstrates that the effectiveness of AI integration largely depends on the ability of instructional designers to align technological innovations with underlying educational principles. From a philosophical perspective, AI facilitates the transition from teacher-centered instruction to learner-centered learning. From pedagogical and linguistic perspectives, AI enables the development of more adaptive content, the provision of immediate feedback, and the creation of more interactive language learning experiences. From a psychological perspective, AI supports personalized learning by allowing learners to engage with content according to their individual needs and characteristics. Meanwhile, from a sociocultural perspective, AI provides opportunities to create more authentic and contextually relevant learning experiences while simultaneously requiring greater attention to cultural validity and the values embedded within instructional materials.

These findings suggest that the role of AI in the development of Arabic learning materials needs to be redefined. AI should not be regarded as the ultimate objective of instructional material development; rather, it should be viewed as a pedagogical instrument that supports the achievement of educational goals.[47] In other words, the success of AI-driven learning materials is determined not by the sophistication of the technology itself, but by the extent to which it enhances the quality of learners' educational experiences.[48] From this perspective, AI functions as an enabler that facilitates the more effective implementation of contemporary educational principles, rather than as a substitute for

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[46] Achruh, Achruh, Muhammad Rapi, Muhammad Rusdi, and Ridwan Idris. "Challenges and Opportunities of Artificial Intelligence Adoption in Islamic Education in Indonesian Higher Education Institutions." *International Journal of Learning, Teaching and Educational Research* 23, no. 11 (November 2024): 423–43. https://doi.org/10.26803/ijlter.23.11.22.

[47] Wang, Xinghua, Qian Liu, Hui Pang, Seng Chee Tan, Jun Lei, Matthew P. Wallace, and Linlin Li. "What Matters in AI-Supported Learning: A Study of Human-AI Interactions in Language Learning Using Cluster Analysis and Epistemic Network Analysis." *Computers & Education* 194 (March 2023): 104703. https://doi.org/10.1016/j.compedu.2022.104703.

[48] Albantani, Azkia Muharom, Ahmad Madkur, and Abd. Rozak. "Student Self Regulated Learning Strategy In Online Arabic Learning." *Ijaz Arabi Journal of Arabic Learning* 5, no. 1 (February 2022). https://doi.org/10.18860/ijazarabi.v5i1.13582.

teachers, curricula, or the educational foundations that underpin the learning process.

Based on the synthesis of the literature reviewed, this study proposes that the development of AI-driven Arabic learning materials should be grounded in five interrelated foundations: philosophical, pedagogical, linguistic, psychological, and sociocultural. These foundations do not operate independently; rather, they complement one another in forming a comprehensive conceptual framework for instructional material development. The philosophical foundation provides direction and educational purpose; the pedagogical foundation guides instructional strategies and learning design; the linguistic foundation ensures alignment with the characteristics of the Arabic language; the psychological foundation addresses learners' needs and individual characteristics; and the sociocultural foundation maintains the connection between language, culture, and the values that shape its use.

Within this framework, AI serves as a connecting mechanism that strengthens the implementation of each foundation simultaneously. Its capacity for personalized learning supports the psychological foundation; its language-processing capabilities through Natural Language Processing reinforce the linguistic foundation; its ability to provide automated feedback enhances the pedagogical foundation; and its capacity to generate diverse and contextually relevant content enriches the sociocultural dimension of learning. Consequently, AI should not be viewed as existing outside the framework of learning material development, but rather as an integral component of a broader educational system that operates in conjunction with other foundational principles.[49]

The primary contribution of this study lies in its attempt to formulate an integrative perspective that bridges advances in artificial intelligence with theories of Arabic learning material development. Unlike previous studies, which have generally treated AI as a topic within educational technology, this study positions AI as a component that must be integrated into a learning material development framework grounded in sound educational principles. This perspective underscores the notion that technological innovation alone cannot produce high-

[49] Muassomah, Muassomah, and Irwan Abdullah. "Learning with Technology: New Experiences for Indonesian Children During COVID-19." 2021. https://doi.org/10.2991/assehr.k.210421.120.

quality learning experiences without the support of strong theoretical foundations.

Accordingly, the development of Arabic learning materials in the age of artificial intelligence should be directed toward the creation of resources that are not only technologically advanced but also responsive to learners' needs, aligned with educational objectives, consistent with the characteristics of the Arabic language, and capable of preserving cultural authenticity and the values that constitute an integral part of Arabic language education. This perspective provides a foundation for the development of Arabic learning materials that are more effective, human-centered, and sustainable amid the rapid advancement of educational technologies.

Conclusion

This study examined the theoretical foundations that should guide the development of Arabic learning materials in the era of artificial intelligence. The findings indicate that the integration of AI into Arabic language education should not be approached merely as a technological innovation, but rather as an educational transformation that requires a strong theoretical foundation. The analysis revealed that the development of AI-driven Arabic learning materials needs to be grounded in five interconnected foundations, namely philosophical, pedagogical, linguistic, psychological, and sociocultural foundations. Each foundation contributes a distinct perspective in ensuring that learning materials remain educationally meaningful, linguistically appropriate, learner-centered, and culturally authentic.

The study further demonstrates that AI possesses significant potential to enhance the quality of Arabic learning materials through adaptive learning, personalized instruction, automated feedback, and interactive learning experiences. However, the effectiveness of AI depends not only on technological sophistication but also on how it is integrated within sound educational principles. Therefore, AI should be viewed as a pedagogical enabler that supports the achievement of learning objectives rather than as a substitute for teachers, curriculum, or educational values.

The main contribution of this study lies in proposing an integrative perspective that connects educational foundations with the emerging capabilities of artificial intelligence. Despite its contribution, this study is limited to a theoretical and literature-based analysis. Future research may empirically investigate how the proposed framework can

be implemented in the design, development, and evaluation of AI-driven Arabic learning materials across different educational contexts. Such studies are expected to enrich the understanding of how artificial intelligence can effectively support Arabic language learning while maintaining its pedagogical integrity and cultural authenticity.

REFERENCES

Abdelhalim, Safaa M., Asma A. Alsahil, and Zainab A. Alsuhaibani. "Artificial Intelligence Tools and Literary Translation: A Comparative Investigation of ChatGPT and Google Translate from Novice and Advanced EFL Student Translators' Perspectives." *Cogent Arts & Humanities* 12, no. 1 (2025). https://doi.org/10.1080/23311983.2025.2508031.

Achruh, Achruh, Muhammad Rapi, Muhammad Rusdi, and Ridwan Idris. "Challenges and Opportunities of Artificial Intelligence Adoption in Islamic Education in Indonesian Higher Education Institutions." *International Journal of Learning, Teaching and Educational Research* 23, no. 11 (2024): 423–43. https://doi.org/10.26803/ijlter.23.11.22.

Adawiyah, Rabiatul. "Implementing AI in Arabic Language Learning: Challenges and Insights from Islamic Higher Education." *AL-Ishlah: Jurnal Pendidikan* 17, no. 3 (2025): 3729–39. https://doi.org/10.35445/alishlah.v17i3.7390.

Aflisia, Noza, Hendrianto, and Kasmantoni. "Teaching Balaghah for the Purpose of Appreciation of Al-Quran Language." *Lughawiyyat: Jurnal Pendidikan Bahasa dan Sastra Arab* 4, no. 2 (2022): 156–72. https://doi.org/10.38073/lughawiyyat.v4i2.537.

Akmaliyah, Akmaliyah, Yasir Hudzaifah, Nisrina Ulfah, and Muhammad Ibnu Pamungkas. "Child-Friendly Teaching Approach for Arabic Language in Indonesian Islamic Boarding School." *International Journal of Language Education* 5, no. 1 (2021): 501–14. https://doi.org/10.26858/ijole.v5i1.15297.

Al-Yahya, Maha. "A Comparative Study of Machine Learning Methods for Genre Identification of Classical Arabic Text." *Computers, Materials & Continua* 60, no. 2 (2019): 421–33. https://doi.org/10.32604/cmc.2019.06209.

Albantani, Azkia Muharom, Ahmad Madkur, and Abd. Rozak. "Student Self Regulated Learning Strategy in Online Arabic Learning." *Ijaz Arabi Journal of Arabic Learning* 5, no. 1 (2022). https://doi.org/10.18860/ijazarabi.v5i1.13582.

Alfiana, Muhammad, Bayu Rima Aditya, Elis Hernawati, Pikir Wisnu Wijayanto, and Tedi Gunawan. "Usability Testing of the Canva Application as a Student Collaboration Design Media." In *2023 8th International Conference on Information Technology and Digital Applications (ICITDA)*, 1–5. IEEE, 2023. https://doi.org/10.1109/ICITDA60835.2023.10427037.

Alkaabi, Mozah H., and Asma Saeed Almaamari. "Generative AI Implementation and Assessment in Arabic Language Teaching." *International Journal of Online Pedagogy and Course Design* 15, no. 1 (2025): 1–18. https://doi.org/10.4018/IJOPCD.368037.

Allaithy, Ahmed, and Mai Zaki. "Evaluation of AI-Generated Reading Comprehension Materials for Arabic Language Teaching." *Computer Assisted Language Learning* (2025): 1–33. https://doi.org/10.1080/09588221.2025.2474037.

Alsalim, Khalid. "Cross-Linguistic Perspectives on the Definite Article: Cognitive, Semantic, and Pragmatic Functions in English, French, and Arabic." *Forum for Linguistic Studies* 7, no. 10 (2025). https://doi.org/10.30564/fls.v7i10.10562.

Al-Zubeiry, Hameed Yahya Ahmed, and Mohammed Ahmed Mohammed Alzahrani. "Variation in Dispreferred Responses among Rural and Urban Saudi Arabic Speakers: A Socio-Pragmatic Analysis." *Journal of Ethnic and Cultural Studies* 11, no. 1 (2024): 229–48. https://doi.org/10.29333/ejecs/1986.

Anggeraini, Yentri. "Language Teaching in the Digital Age: Teachers' Views and Its Challenges." *Research and Innovation in Language Learning* 3, no. 3 (2020): 163–74. https://doi.org/10.33603/rill.v3i3.3444.

Annafiri, Ahmad Zaki, Andi Suseno, Ilmah Fitrotul Azizah, Ahmad Mizaj El Kafoor, and Firda Saphira Azzahro. "Cultural Analysis of the Arabic Language Textbooks of Muhammadiyah Elementary School." *Alibbaa': Jurnal Pendidikan Bahasa Arab* 5, no. 1 (2024): 98–119. https://doi.org/10.19105/ajpba.v5i1.10989.

Assarroudi, Abdolghader, Fatemeh Heshmati Nabavi, Mohammad Reza Armat, Abbas Ebadi, and Mojtaba Vaismoradi. "Directed Qualitative Content Analysis: The Description and Elaboration of Its Underpinning Methods and Data Analysis Process." *Journal of Research in Nursing* 23, no. 1 (2018): 42–55. https://doi.org/10.1177/1744987117741667.

Ayyad, Essam. "Re-Evaluating Early Memorization of the Qurʾān in Medieval Muslim Cultures." *Religions* 13, no. 2 (2022): 179. https://doi.org/10.3390/rel13020179.

Baskara, Risang, and Mukarto Mukarto. "Exploring the Implications of ChatGPT for Language Learning in Higher Education." *IJELTAL (Indonesian Journal of English Language Teaching and Applied*

Linguistics) 7, no. 2 (2023): 343–58. https://doi.org/10.21093/ijeltal.v7i2.1387.

Bogach, Natalia, Elena Boitsova, Sergey Chernonog, Anton Lamtev, Maria Lesnichaya, Iurii Lezhenin, Andrey Novopashenny, et al. "Speech Processing for Language Learning: A Practical Approach to Computer-Assisted Pronunciation Teaching." *Electronics* 10, no. 3 (2021): 235. https://doi.org/10.3390/electronics10030235.

Gazali, A., Nihayatur Rahmah, Roychan Yasin, Muhammad Ridwan, and Alya Raihana Sari. "Arabic for Specific Purposes in Islamic Higher Education: Systemic Learning Challenges among Non-Pesantren Students." *Alibbaa': Jurnal Pendidikan Bahasa Arab* 7, no. 1 (2026): 370–91. https://doi.org/10.19105/ajpba.v7i1.23592.

George, Mary W. *The Elements of Library Research*. Princeton, NJ: Princeton University Press, 2008. https://doi.org/10.1515/9781400830411.

Hamsira M. Harad, and Benjier H. Arriola. "Implementation of Arabic Language and Islamic Values Education (ALIVE)." *The American Journal of Humanities and Social Sciences Research* 5, no. 3 (2022): 47–57.

Hasanah, Mamluatul, Ahmad Mubaligh, Risna Rianti Sari, Alfiatus Syarofah, and Agung Prasetyo. "Arabic Performance Curriculum Development: Reconstruction Based on ACTFL and Douglas Brown Perspective." *Ijaz Arabi Journal of Arabic Learning* 4, no. 3 (2021). https://doi.org/10.18860/ijazarabi.v4i3.11900.

Holandyah, Muhamad, Dian Erlina, Lenny Marzulina, and Fitria Rembulan Ramadhani. "Grammar Instruction in Communicative Language Teaching Classrooms: Student Teachers' Perceptions." *Edukasi: Jurnal Pendidikan dan Pengajaran* 8, no. 1 (2021): 66–77. https://doi.org/10.19109/ejpp.v8i1.8510.

Kundu, Arnab, and Tripti Bej. "AI in School EFL Learning: A Systematic Review of Impact Pathways for Engagement, Achievement, and Satisfaction." *Journal of Language and Education* 11, no. 4 (2025): 131–48. https://doi.org/10.17323/jle.2025.22083.

Liu, Zhaoyang, Wenlan Zhang, and Panpan Yang. "Can AI Chatbots Effectively Improve EFL Learners' Learning Effects?—A Meta-Analysis of Empirical Research from 2022–2024." *Computer*

Assisted Language Learning (2025): 1–27. https://doi.org/10.1080/09588221.2025.2456512.

Loewen, Shawn, Dustin Crowther, Daniel R. Isbell, Kathy Minhye Kim, Jeffrey Maloney, Zachary F. Miller, and Hima Rawal. "Mobile-Assisted Language Learning: A Duolingo Case Study." *ReCALL* 31, no. 3 (2019): 293–311. https://doi.org/10.1017/S0958344019000065.

Lu, Dunming (Jason), and Yutian Zeng. "Exploring the Use of ChatGPT-Generated Model Texts as a Feedback Instrument: EFL Students' Text Quality and Perceptions." *Innovation in Language Learning and Teaching* (2025): 1–21. https://doi.org/10.1080/17501229.2025.2525341.

Luo, Zhanni. "Gamification for Educational Purposes: What Are the Factors Contributing to Varied Effectiveness?" *Education and Information Technologies* 27, no. 1 (2022): 891–915. https://doi.org/10.1007/s10639-021-10642-9.

Mahmudah, Menik, Nurhanifansyah Nurhanifansyah, and Syarif Muhammad Syaheed bin Khalid. "Psycholinguistic Approaches to Enhancing Arabic Speaking Proficiency through Comic Strips." *Arabiyatuna: Jurnal Bahasa Arab* 8, no. 2 (2024): 805–26. https://doi.org/10.29240/jba.v8i2.11349.

Mazzolini, Alexander P. *Lessons Learned and Unlearned: A Lifelong Journey with "Active Learning" as a Constant Companion*. Cham: Springer, 2024. https://doi.org/10.1007/978-3-031-48667-8_1.

Muassomah, Muassomah, and Irwan Abdullah. "Learning with Technology: New Experiences for Indonesian Children During COVID-19." In *Advances in Social Science, Education and Humanities Research*, 2021. https://doi.org/10.2991/assehr.k.210421.120.

Muchsinul Khuluq, Moh., Moh. Ainin, Abdul Wahab Rosyidi, and Nurul Imamah. "The Development of Reading Skill Teaching Materials Based on Prezi Artificial Intelligence." *Arabiyatuna: Jurnal Bahasa Arab* 9, no. 1 (2025): 327–46.

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

Nur'aini, Rara, and Mohamad Zaka Al Farisi. "The Observation of Arabic Language Differentiation in the 2013 Curriculum and the 'Merdeka' Curriculum." *Abjadia: International Journal of*

Education 8, no. 1 (2023): 62–78. https://doi.org/10.18860/abj.v8i1.22359.

Paradis, Johanne, Adriana Soto-Corominas, Xi Chen, and Alexandra Gottardo. "How Language Environment, Age, and Cognitive Capacity Support the Bilingual Development of Syrian Refugee Children Recently Arrived in Canada." *Applied Psycholinguistics* 41, no. 6 (2020): 1255–81. https://doi.org/10.1017/S014271642000017X.

Perkins, Kyle, and Lawrence Jun Zhang. "The Effect of First Language Transfer on Second Language Acquisition and Learning: From Contrastive Analysis to Contemporary Neuroimaging." *RELC Journal* 55, no. 1 (2024): 162–78. https://doi.org/10.1177/00336882221081894.

Rahman, Abdur, Antony Raj, Prajeesh Tomy, and Mohamed Sahul Hameed. "A Comprehensive Bibliometric and Content Analysis of Artificial Intelligence in Language Learning: Tracing between the Years 2017 and 2023." *Artificial Intelligence Review* 57, no. 4 (2024): 107. https://doi.org/10.1007/s10462-023-10643-9.

Rahman, Rifqi Aulia, and Indah Kumalasari. "The Dynamics of Arabic Language Curriculum at Arabic Education Department of UIN Sunan Kalijaga Yogyakarta." *LISANIA: Journal of Arabic Education and Literature* 4, no. 2 (2020): 140–62. https://doi.org/10.18326/lisania.v4i2.140-162.

Ritonga, Mahyudin, Hendro Widodo, Munirah Munirah, and Talqis Nurdianto. "Arabic Language Learning Reconstruction as a Response to Strengthen Al-Islam Studies at Higher Education." *International Journal of Evaluation and Research in Education (IJERE)* 10, no. 1 (2021): 355–63. https://doi.org/10.11591/ijere.v10i1.20747.

Sarwadi. "Artificial Intelligence Integration in Second Language Pronunciation Training." *Pioneer: Journal of Language and Literature* 17, no. 1 (2025): 80–92. https://doi.org/10.36841/pioneer.v17i1.6329.

Silvia, Neng, Asep Ahmad Saepudin, Nuril Mufidah, and Abdul Malik Karim Amrullah. "Manajemen Perencanaan dan Pengorganisasian Pembelajaran Bahasa Arab." *Alibbaa': Jurnal Pendidikan Bahasa Arab* 4, no. 1 (2023): 108–23. https://doi.org/10.19105/ajpba.v4i1.7497.

Song, Chuanxiang, Seong-Yoon Shin, and Kwang-Seong Shin. "Optimizing Foreign Language Learning in Virtual Reality: A

Comprehensive Theoretical Framework Based on Constructivism and Cognitive Load Theory (VR-CCL)." *Applied Sciences* 13, no. 23 (2023): 12557. https://doi.org/10.3390/app132312557.

Ulhaq, Nadia, and Lahmuddin Lubis. "Penyusunan Materi Ajar dalam Rangka Meningkatkan Keterampilan Berbicara Bahasa Arab pada Siswa." *Journal of Education Research* 4, no. 3 (2023): 1202–11. https://doi.org/10.37985/jer.v4i3.361.

Vo, Thi Kim Anh, and Huong Nguyen. "Generative Artificial Intelligence and ChatGPT in Language Learning: EFL Students' Perceptions of Technology Acceptance." *Journal of University Teaching and Learning Practice* 21, no. 6 (2024). https://doi.org/10.53761/fr1rkj58.

Wang, Xinghua, Qian Liu, Hui Pang, Seng Chee Tan, Jun Lei, Matthew P. Wallace, and Linlin Li. "What Matters in AI-Supported Learning: A Study of Human-AI Interactions in Language Learning Using Cluster Analysis and Epistemic Network Analysis." *Computers & Education* 194 (2023): 104703. https://doi.org/10.1016/j.compedu.2022.104703.

Xiao, Ting, Sisi Yi, and Shamim Akhter. "AI-Supported Online Language Learning: Learners' Self-Esteem, Cognitive-Emotion Regulation, Academic Enjoyment, and Language Success." *The International Review of Research in Open and Distributed Learning* 25, no. 3 (2024): 77–96. https://doi.org/10.19173/irrodl.v25i3.7666.

Zaimah, Nely Rahmawati, Risti Kamila Wening Estu, Syarifatul Fitri Hidayah, Syamsul Hadi, and Aiden Button. "Harnessing Gemini for Arabic Mastery: Educators' and Learners' Views." *Alibbaa': Jurnal Pendidikan Bahasa Arab* 5, no. 2 (2024): 166–88. https://doi.org/10.19105/ajpba.v5i2.14808.