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Arabic Orthography Instruction and Writing Accuracy among Madrasah Students: Insights for AI-Assisted Language Learning

Rifka Emiyiati[1], Kamalia[2]
[1,2] *Universitas Islam Negeri Sumatera Utara, Indonesia*
Corresponding E-mail: rifkaemiyiati17@gmail.com

Abstract

The growing use of AI-assisted language learning highlights the importance of foundational writing competencies in Arabic language education. This study aims to investigate the implementation of Arabic writing instruction, identify students' writing difficulties, and examine its relevance to AI-assisted language learning. Using a qualitative descriptive approach, the study was conducted at MTs Darul Irsyadiyah Labuhanbatu involving seventh-grade students and an Arabic language teacher. Data were collected through observations, interviews, and documentation and analyzed descriptively. The findings reveal that writing instruction was implemented systematically to improve students' orthographic accuracy. However, students continued to experience difficulties in distinguishing visually similar Arabic letters, applying harakat accurately, and writing independently. Limited instructional time and insufficient writing practice were identified as major challenges. The study suggests that orthographic competence remains a fundamental prerequisite for effective Arabic writing, even in AI-assisted learning environments where automated feedback and writing support are increasingly available.

Keywords: *Arabic Writing Skills; Orthographic Accuracy; Arabic Orthography Instruction; Arabic Language Learning; AI-Assisted Language Learning*

Abstrak

Perkembangan AI-assisted language learning semakin menegaskan pentingnya kompetensi dasar menulis dalam pembelajaran bahasa Arab. Penelitian ini bertujuan untuk menganalisis implementasi pembelajaran keterampilan menulis bahasa Arab, mengidentifikasi kesulitan yang

dihadapi siswa, serta mengkaji relevansinya dalam konteks AI-assisted language learning. Penelitian menggunakan pendekatan kualitatif deskriptif yang dilaksanakan di MTs Darul Irsyadiyah Labuhanbatu dengan melibatkan siswa kelas VII dan guru bahasa Arab. Data dikumpulkan melalui observasi, wawancara, dan dokumentasi, kemudian dianalisis secara deskriptif. Hasil penelitian menunjukkan bahwa pembelajaran keterampilan menulis telah dilaksanakan secara sistematis untuk meningkatkan ketepatan ortografis siswa. Namun, siswa masih mengalami kesulitan dalam membedakan huruf-huruf yang memiliki kemiripan bentuk, menggunakan harakat secara tepat, dan menulis secara mandiri. Keterbatasan waktu pembelajaran dan rendahnya intensitas latihan menjadi tantangan utama. Penelitian ini menegaskan bahwa kompetensi ortografis tetap menjadi fondasi penting dalam pengembangan keterampilan menulis bahasa Arab, termasuk dalam lingkungan pembelajaran yang didukung oleh teknologi AI.

Kata Kunci: *Keterampilan Menulis Bahasa Arab; Ketepatan Ortografis; Pembelajaran Ortografi Bahasa Arab; Pembelajaran Bahasa Arab; AI-Assisted Language Learning*

Introduction

Writing skills constitute a fundamental component of Arabic language learning, as they are directly associated with learners' ability to express ideas accurately and coherently in written form.[1] In Arabic language education, writing extends beyond the construction of words and sentences; it also requires precision in writing Arabic letters, the correct use of diacritical marks (harakat), proper word connectivity, and adherence to Arabic orthographic conventions.[2] Therefore, writing skills serve as a crucial foundation for Arabic language proficiency, closely linked to both linguistic accuracy and learners' literacy development.[3]

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[1] Izzuddin, Izzuddin, Asep Maulana, Titin Nurhayati Ma'mun, and Hashim Saleh Mannaa. "The Curriculum Development of Arabic Instruction to Improve Student's Writing Skills." *Universal Journal of Educational Research* 8, no. 9 (September 2020): 4261–72. https://doi.org/10.13189/ujer.2020.080952.

[2] Siregar, Sri Dewi Priwarti, Mohamad Zaka al Farisi, Asep Sopian, Nurul Isra Hardin, Mennatallah Mohamed Hassan El-Sabagh, and Ramadhan Safrudin. "Arabic Writing Skills Teaching Materials Based on Graphemics for Autistic Students." *Asian Education and Development Studies* 14, no. 3 (May 2025): 495–517. https://doi.org/10.1108/AEDS-08-2024-0171.

[3] Aljenobi, Abdullah Ahmad R. "The Interplay of Academic Writing Skills and Attitudes Toward Classical Arabic Among Graduate Students." *Journal of Language Teaching and Research* 16, no. 3 (May 2025): 948–56. https://doi.org/10.17507/jltr.1603.25.

The teaching of writing skills is not merely intended to train students to copy texts or compose simple sentences. Rather, it aims to develop visual accuracy and orthographic awareness, enabling learners to recognize letter forms and understand the structural characteristics of Arabic script.[4] Through systematic and repetitive writing practice, students are expected to produce accurate and comprehensible Arabic texts. Consequently, writing instruction plays a pivotal role in establishing students' fundamental competence in Arabic writing.[5]

Despite its importance, the implementation of writing instruction in madrasahs continues to face several challenges. In practice, writing activities are often integrated with other Arabic language components, such as reading, vocabulary acquisition, and grammar, resulting in limited instructional time devoted specifically to writing practice. As a result, students receive insufficient opportunities to develop writing accuracy effectively.[6] Furthermore, low learning motivation, limited writing habits, and inadequate instructional media contribute to students' writing difficulties.

Preliminary observations conducted at MTs Darul Irsyadiyah Labuhanbatu revealed that seventh-grade students still encounter various challenges in Arabic writing. Common errors include inaccurate letter formation, incorrect use of harakat, and difficulties in distinguishing visually similar letters. Students also struggle with proper word segmentation and word connection. These findings indicate that students' writing abilities require further reinforcement through more intensive and systematic practice.

Meanwhile, the advancement of artificial intelligence (AI)-based educational technologies has begun to influence language learning,

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[4] Huda, Nurul, Isnaini Maulidia Annisa, and Muhammad Nuruzzaman Syam. "Writing Skills Teaching Methods for Elementary School Students: Scramble in Connecting Arabic Letters." *Alibbaa': Jurnal Pendidikan Bahasa Arab* 5, no. 2 (August 2024): 268–87. https://doi.org/10.19105/ajpba.v5i2.15084.

[5] Zaki, Mai. "Self-correction through Corpus-based Tasks: Improving Writing Skills of Arabic Learners." *International Journal of Applied Linguistics* 31, no. 2 (July 2021): 193–210. https://doi.org/10.1111/ijal.12312.

[6] Salameh-Matar, Abeer, Afnan Khoury Metanis, and Asaid Khateb. "Early Handwriting Performance among Arabic Kindergarten Children: The Effects of Phonological Awareness, Orthographic Knowledge, Graphomotor Skills, and Fine-Motor Skills." *Journal of Writing Research* 16, no. 1 (March 2024): 79–103. https://doi.org/10.17239/jowr-2024.16.01.03.

including Arabic language instruction.[7] AI-powered learning systems can support students' writing development through automated correction, digital feedback, and adaptive practice. Nevertheless, fundamental writing competence remains indispensable, as technology cannot fully replace learners' orthographic knowledge.[8] Students with weak writing skills may become overly dependent on automated correction systems without developing a deeper understanding of Arabic orthographic structures. Therefore, strengthening writing skills remains highly relevant in the context of AI-assisted language learning.

Arabic writing skills and orthographic accuracy have attracted considerable attention in international scholarship. A study by Ahmad Zubaidi et al. demonstrated that ChatGPT-assisted learning can enhance Arabic writing performance by providing faster and more structured feedback.[9] Their findings emphasize that linguistic accuracy and writing competence remain essential foundations even when learning is supported by AI technologies. Similarly, Kirill Chirkunov et al. developed an Arabic writing support system capable of providing grammatical correction, writing assessment, and automated feedback for Arabic learners.[10] Their results suggest that writing development continues to depend on learners' fundamental understanding of Arabic structure and orthography. Comparable findings were reported by Gheith Abandah et al., who developed a machine-learning model for correcting Arabic orthographic errors.[11] Their study highlights that letter-writing errors and orthographic variations remain persistent challenges even within technology-enhanced learning environments.

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[7] Humairoh, Sitti Wardatul, Nurul Hadi, and Umi Hanifah. "The AI Revolution in Arabic Language Learning: An Analysis of ChatGPT's Role in Autonomous Learning." *Alibbaa': Jurnal Pendidikan Bahasa Arab* 7, no. 1 (January 2026): 1–19. https://doi.org/10.19105/ajpba.v7i1.22479.

[8] NAYAK, NANAVATH KIRAN SINGH. "Importance of Academic Writing Skills for Students & Research Scholars with Respect to English Language While Writing Research Paper." In *WRITING SKILLS FOR ACADEMIC RESEARCH*, 158–77. Royal Book Publisher, 2021. https://doi.org/10.26524/royal.55.10.

[9] Zubaidi, Ahmad, Abdul Munip, Sembodo Ardi Widodo, and Taha Zerrouki. "Enhancing Arabic Writing Skills Using Chat GPT-Based AI Learning Models: A Tridimensional Human-AI Collaboration Framework." *Indonesian Journal of Applied Linguistics* 15, no. 1 (May 2025): 87–101. https://doi.org/10.17509/ijal.v15i1.75378.

[10] Chirkunov, Kirill, Bashar Alhafni, Chatrine Qwaider, Nizar Habash, and Ted Briscoe. *ARWI: Arabic Write and Improve*. April 16, 2025.

[11] Abandah, Gheith A., Ashraf Suyyagh, and Mohammed Z. Khedher. *Correcting Arabic Soft Spelling Mistakes Using BiLSTM-Based Machine Learning*. August 2, 2021.

At the same time, the growing integration of artificial intelligence in language education has expanded scholarly discussions concerning the importance of foundational writing competence. Lukešová et al. found that ChatGPT can facilitate language development through automated feedback; however, its effectiveness remains dependent on learners' cognitive engagement and existing competencies.[12] Furthermore, a bibliometric study by Safrudin et al., which analyzed Scopus-indexed publications on Arabic writing skills, identified orthographic accuracy and digital language learning as emerging research trends in recent years.[13] Unlike these studies, which primarily focus on technological innovation, AI integration, or the effectiveness of digital learning systems, the present study examines the implementation of writing instruction and the orthographic difficulties experienced by madrasah students as a foundational issue in the era of AI-assisted language learning. Accordingly, this study seeks to address a research gap concerning the role of basic orthographic competence as a prerequisite for the effective utilization of AI technologies in Arabic language education.

Based on these concerns, this study aims to analyze the implementation of writing instruction among seventh-grade students at MTs Darul Irsyadiyah Labuhanbatu, identify the writing difficulties they encounter, and examine the relevance of these findings within the context of AI-assisted language learning. The study is expected to contribute to the development of more effective and adaptive writing instruction strategies in response to the ongoing advancement of educational technologies.

[12] Lukešová, Alice, and Petra Juna Jennings. "AI-Assisted Language Learning: ChatGPT's Impact on Mastering English Tenses at the University Level." *Social Sciences & Humanities Open* 13 (June 2026): 102532. https://doi.org/10.1016/j.ssaho.2026.102532.

[13] Safrudin, Ramadhan, Siti Sanah, and Sri Dewi Priwarti Siregar. "Research Trends on Writing Skill in Arabic Language; A Bibliometric Analysis." *Aphorisme: Journal of Arabic Language, Literature, and Education* 5, no. 2 (August 2024): 94–114. https://doi.org/10.37680/aphorisme.v5i2.5442.

Method

The study employed a qualitative descriptive approach.[14] A qualitative approach was chosen because the research sought to gain an in-depth understanding of the process of Arabic writing instruction, students' responses, and the challenges encountered during its implementation in the madrasah context. A descriptive design was adopted as the study focused on portraying learning phenomena as they naturally occurred in the field without introducing any intervention or treatment to the participants.

The research was conducted at MTs Darul Irsyadiyah Labuhanbatu, involving seventh-grade students and an Arabic language teacher as research participants. The site was selected due to the persistent challenges students faced in Arabic writing skills, particularly in the accurate formation of Arabic letters, the proper use of harakat, and the construction of Arabic words and sentences. Furthermore, the study considered the fact that writing instruction remained integrated with other Arabic language components, making it an important area for further investigation.

The data sources consisted of both primary and secondary data. Primary data were collected directly through classroom observations and interviews with the Arabic language teacher and seventh-grade students at MTs Darul Irsyadiyah Labuhanbatu. These data provided information regarding the implementation of writing instruction, instructional strategies employed by the teacher, students' responses during the learning process, and the difficulties they encountered in Arabic writing. Secondary data were obtained from written sources, including books, scholarly articles, journals, and other relevant documents related to Arabic writing instruction and the development of AI-assisted language learning.

Data were collected through observations, interviews, and documentation. Observations were conducted to examine classroom writing activities, instructional practices, and student engagement during the learning process. Semi-structured interviews were employed to obtain deeper insights into students' learning experiences, the challenges they faced, and the teacher's perspectives on the implementation of writing instruction. Documentation was used to complement the data through the collection of instructional materials, students' learning records, and other supporting documents relevant to the study.

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[14] Merriam, Sharan B. *Qualitative Research: A Guide to Design and Implementation*. Jossey-Bass, 2009.

Data analysis was carried out through three stages: data reduction, data display, and conclusion drawing.[15] Data reduction involved selecting and simplifying observation, interview, and documentation data relevant to the research objectives. The data were then presented in a descriptive narrative form to facilitate interpretation and understanding of the findings. Finally, conclusions were drawn based on the patterns, relationships, and meanings identified across the collected data.

To ensure the trustworthiness of the findings, the study employed both source triangulation and methodological triangulation. Source triangulation was conducted by comparing information obtained from teachers and students, while methodological triangulation involved cross-checking data collected through observations, interviews, and documentation. These procedures enhanced the credibility of the findings and provided a more objective and comprehensive understanding of Arabic writing instruction. In addition, the study positioned the development of AI-assisted language learning as a relevant pedagogical context for understanding the continuing importance of strengthening Arabic writing skills in the digital learning era.

Results and Discussion

The findings indicate that Arabic writing instruction at MTs Darul Irsyadiyah Labuhanbatu remains primarily oriented toward strengthening students' basic orthographic accuracy, particularly in the mastery of letter forms, the use of harakat, and the ability to write words and sentences accurately. Although the instructional process has been systematically implemented through various writing activities, the findings reveal a considerable gap between the objectives of writing instruction and students' actual orthographic competence. This issue is particularly significant because accurate writing serves not only as a fundamental component of Arabic language learning but also as an essential foundation for navigating the growing landscape of AI-assisted language learning.

[15] Matthew B. Miles, A. Michael Huberman, and Johnny Saldaña. *Qualitative Data Analysis: A Methods Sourcebook*. 3rd ed. Thousand Oaks, CA: SAGE Publications, 2014.

Writing instruction was implemented through lesson planning tailored to students' initial abilities. The teacher considered students' diverse educational backgrounds, particularly because not all learners had prior exposure to Arabic language learning in earlier educational stages. Consequently, instruction began with basic activities, such as writing simple words, before progressing to more complex sentence construction. In practice, the teacher employed various writing activities, including copying texts, listening-and-writing exercises, and guided writing based on teacher-provided models. Writing instruction was given greater emphasis than speaking activities, as writing was regarded as a foundational skill for mastering Arabic letters and language structures.

One of the major findings of this study is the low level of students' orthographic accuracy in Arabic writing. Most students experienced difficulties distinguishing visually similar letters, such as ش and س, ط and ت, and د and ذ. In addition, errors in the use of harakat were frequently observed, particularly in word formation and simple sentence construction. These findings suggest that students' writing performance is influenced not only by vocabulary knowledge but also by their visual recognition abilities and orthographic awareness, which remain insufficiently developed. This condition highlights the need for more intensive writing practice to strengthen students' visual accuracy and orthographic competence.

Students' difficulties were also evident when they were asked to write without directly viewing a text. Some students struggled to reproduce words or sentences they had heard, resulting in incomplete or inaccurate written outputs. Furthermore, students reported difficulties when writing longer and more complex words, as these tasks required higher levels of concentration and accuracy. These findings indicate that many students continue to rely on short-term visual memorization and have not yet internalized Arabic orthographic structures at a deeper level. In the context of AI-assisted language learning, this condition presents a significant challenge, as learners may become overly dependent on automated correction systems without possessing adequate foundational orthographic competence.

Students' responses to writing instruction reflected varying levels of engagement and motivation. Some students demonstrated enthusiasm toward writing activities because they believed such activities helped

them become more familiar with Arabic letters and vocabulary. However, others reported feelings of confusion and low self-confidence, particularly when required to distinguish similar letters or write independently without direct examples. Limited writing practice outside the classroom further contributed to students' difficulties in producing accurate and consistent written texts.

The study also found that the implementation of writing instruction faced several pedagogical challenges. One of the primary constraints was limited instructional time, as writing activities were integrated with other Arabic language components, including reading, vocabulary learning, and grammar instruction. As a result, opportunities for intensive writing practice were restricted and insufficient to optimally reinforce students' orthographic competence. Furthermore, differences in students' proficiency levels required teachers to continuously adapt instructional materials and teaching strategies to accommodate diverse learning needs.

To address these challenges, teachers implemented several strategies aimed at improving students' writing skills. These included providing motivation through rewards, incorporating educational games, and conducting regular review sessions to increase students' engagement in learning activities. Teachers also offered additional writing models and listening-and-writing exercises to improve students' understanding of letter forms and the accurate use of harakat. Quizzes and formative assessments were further utilized to monitor students' writing development throughout the instructional process. Although these strategies contributed positively to student engagement, the findings suggest that students' Arabic writing skills still require more intensive support, particularly in terms of orthographic accuracy and independent writing ability within increasingly technology-supported and AI-enhanced learning environments.

Discussion

The findings suggest that Arabic writing instruction at MTs Darul Irsyadiyah Labuhanbatu functions not merely as a routine writing exercise but as a process of developing students' orthographic competence. Through activities such as text copying, listening-and-writing exercises, and gradual word and sentence production, instruction was directed toward strengthening students' ability to recognize letter forms, understand written structures, and produce accurate Arabic texts. These findings demonstrate that Arabic writing skills involve interconnected visual, linguistic, and cognitive dimensions.[16] Therefore, writing competence should not be viewed solely as a mechanical ability to reproduce written forms but also as a process of developing orthographic awareness, which serves as a crucial foundation for Arabic language proficiency.[17]

The study further reveals that many students continue to struggle with distinguishing visually similar letters, including ش and ط ,س and ت, and د and ذ. Errors in the use of harakat were also commonly observed. These findings indicate that the primary challenges in Arabic writing instruction extend beyond vocabulary acquisition and involve students' visual discrimination and orthographic processing abilities.[18] Within language learning contexts, the ability to differentiate similar visual symbols is essential for developing orthographic memory and linguistic accuracy. When these abilities are insufficiently developed, students are more likely to experience difficulties in producing accurate and consistent written texts.[19]

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[16] Khoury-Metanis, Afnan, and Asaid Khateb. "Exploring the Writing-Reading Connection among Arabic-Speaking Kindergarten Children: The Role of Fine Motor Skills and Orthographic Knowledge." *Reading and Writing* 35, no. 7 (September 2022): 1525–47. https://doi.org/10.1007/s11145-021-10235-5.

[17] Dinata, Rahmat Satria, Singgar Mantahari Dalimunthe, Syafrimen Syafrimen, and Abdurrahman Assayyid Abdul Ghafar Balah. "The Gaps of Students' Writing Skills in Arabic Thesis Writing." *Jurnal Al Bayan: Jurnal Jurusan Pendidikan Bahasa Arab* 15, no. 1 (June 2023): 1–17. https://doi.org/10.24042/albayan.v15i1.14134.

[18] Salsabila, Novita Maula, and R. Umi Baroroh. "Assessment Of Arabic Writing Skills In Differentiated Learning Based On Project-Based Learning." *Ijaz Arabi Journal of Arabic Learning* 7, no. 2 (June 2024). https://doi.org/10.18860/ijazarabi.v7i2.25429.

[19] Boumaraf, Assia, Sonia Bekal, and Joël Macoir. "The Orthographic Ambiguity of the Arabic Graphic System: Evidence from a Case of Central Agraphia Affecting the Two Routes of Spelling." *Behavioural Neurology* 2022 (November 2022): 1–11. https://doi.org/10.1155/2022/8078607.

Students' difficulties in writing without direct textual support further suggest that many learners remain dependent on short-term visual memorization and have not fully internalized Arabic orthographic structures. This finding highlights the importance of repetitive and sustained practice in helping learners establish stronger connections between sounds, letter forms, and word structures.[20] In other words, Arabic writing proficiency requires more than motor skills; it also involves complex cognitive processes such as concentration, visual memory, and symbolic language processing.[21]

The findings also indicate that writing instruction continues to face significant pedagogical constraints, particularly limited instructional time and insufficient writing practice. Because writing activities remain integrated with other Arabic language components, students have limited opportunities to reinforce their orthographic competence. Effective development of Arabic writing skills requires repetitive exposure and continuous practice to enable learners to recognize orthographic patterns and apply harakat accurately. These findings suggest that writing instruction should provide more intensive and focused practice opportunities to facilitate the development of students' orthographic competence.[22]

In addition to pedagogical factors, student motivation also plays an important role in the development of writing skills. While some students expressed interest in Arabic writing activities, they simultaneously reported confusion and a lack of confidence when required to write independently. Difficulties in distinguishing similar letters and fear of making mistakes contributed to experiences of writing anxiety.[23] Limited writing habits outside the classroom further reinforced

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[20] Saiegh-Haddad, Elinor, and Rachel Schiff. "Diglossic and Orthographic Features of Reading Comprehension in Standard Arabic: The Primacy of the Spoken Language." *Reading Research Quarterly* 60, no. 1 (January 2025). https://doi.org/10.1002/rrq.598.

[21] Hermena, Ehab W., Eida J. Juma, and Maryam AlJassmi. "Parafoveal Processing of Orthographic, Morphological, and Semantic Information during Reading Arabic: A Boundary Paradigm Investigation." *PLOS ONE* 16, no. 8 (August 2021): e0254745. https://doi.org/10.1371/journal.pone.0254745.

[22] Almusawi, Hashemiah. "Factors Affecting the Writing Performance in Hearing and Deaf Children: An Insight into Regularities and Irregularities of the Arabic Orthographic System." *Language and Speech* 66, no. 1 (March 2023): 246–64. https://doi.org/10.1177/00238309221097714.

[23] Masrai, Ahmed. "Phonological and Orthographic Vocabulary Knowledge and Processing Speed of L2 Written Text: The Case of Native Arabic EFL Learners."

these challenges. Therefore, instructional strategies such as educational games, rewards, material reinforcement, and formative assessments play an important role in maintaining student engagement and motivation.

The findings are particularly relevant in the context of AI-assisted language learning. Although artificial intelligence technologies can facilitate language learning through automated correction, predictive writing tools, and immediate digital feedback[24], the study demonstrates that foundational writing competence remains indispensable. Students who lack adequate orthographic accuracy may become dependent on automated correction systems without developing a deeper understanding of Arabic orthographic structures. As a result, writing proficiency may develop only superficially, with learners relying on technological corrections rather than building independent orthographic awareness.[25]

Therefore, Arabic writing instruction in the AI era should not aim to replace learning processes with technology but rather to strengthen students' foundational competencies so that they can utilize technological tools more critically and effectively. Digital technologies and AI should function as supportive tools that enhance writing practice, increase learning intensity, and provide timely feedback. Nevertheless, the development of orthographic accuracy, visual recognition skills, and understanding of Arabic writing structures still requires systematic and repetitive direct practice. Accordingly, strengthening Arabic writing skills remains a fundamental requirement for developing Arabic language instruction that is responsive to contemporary educational technologies.

Cognitive Processing 22, no. 1 (February 2021): 37–46. https://doi.org/10.1007/s10339-020-00989-1.

[24] Qasim, Sarah Salman, and Safa Hussein Oleiwi. "Advancing Arabic Handwritten Digit Recognition with AI-Enhanced Neural Network Architectures." *Babylonian Journal of Artificial Intelligence* 2024 (November 2024): 146–57. https://doi.org/10.58496/BJAI/2024/016.

[25] Güvendir, Emre, and Kutay Uzun. "L2 Writing Anxiety, Working Memory, and Task Complexity in L2 Written Performance." *Journal of Second Language Writing* 60 (June 2023): 101016. https://doi.org/10.1016/j.jslw.2023.101016.

Conclusion

This study demonstrates that Arabic writing instruction at MTs Darul Irsyadiyah Labuhanbatu has been implemented through various forms of practice aimed at improving students' orthographic accuracy. The instructional process was conducted progressively by taking students' initial abilities into consideration and focusing on the mastery of letter forms, the accurate use of harakat, and the correct writing of Arabic words and sentences. Nevertheless, the findings reveal that students continue to experience difficulties in distinguishing visually similar letters, applying harakat accurately, and writing independently without relying on a text. In addition, limited instructional time, insufficient practice intensity, and the heterogeneity of students' abilities emerged as the main challenges in developing writing skills. To address these challenges, teachers employed various strategies, including material reinforcement, model-based instruction, educational games, rewards, and evaluative exercises designed to enhance student engagement and writing performance.

These findings provide important insights for the development of Arabic language instruction in the era of AI-assisted language learning. The study highlights that orthographic accuracy is not merely a technical skill but a fundamental competence that determines the quality of students' writing performance in increasingly digitalized learning environments. Although AI-based technologies can provide automated correction and instant feedback, the findings suggest that students who have not mastered basic orthographic competence are at risk of becoming dependent on technological assistance without developing a deeper understanding of Arabic writing structures. Therefore, strengthening writing skills should remain a primary priority before AI technologies are more broadly integrated into Arabic language instruction. However, this study is limited to a single madrasah context and does not directly examine the use of AI in the learning process. Future research is therefore recommended to explore the relationship between orthographic competence, writing skills, and the use of AI technologies through broader and more diverse research designs, with the aim of developing Arabic language learning models that are more adaptive to the advancement of educational technologies.

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