

From Aliff to Ya: Exploring the Challenges of Jawi Literacy in Early Learners and How to Cope it

Azam Ghazali¹, Maizatul Akhmar Mat Yusoff², Amir Sobirin Suhaimi³, Haslinda Hasim⁴, Azwani Mansor @ Nordin⁵, Iliani Mohamed⁶, Sri Wiji Handayani⁷, & Zakiah Mohamad Ashari⁸

^{1*,2,4}Faculty of Management and Human Development, ³Faculty of Contemporary Islamic Studies, ⁵Center of Core Study, Sultan Ismail Petra International Islamic College University, Kelantan, Malaysia, ⁶Darulnaim College of Technology, Kelantan, Malaysia, ⁷Labschool Universitas Negeri Semarang, Sekaran, Central Java, Indonesia, & ⁸Faculty of Educational Sciences and Technology, University of Technology Malaysia, Malaysia

Corresponding Author Email: azamghazali03@gmail.com

To Link this Article: <http://dx.doi.org/10.6007/IJARPED/v14-i2/25396> DOI:10.6007/IJARPED/v14-i2/25396

Published Online: 09 May 2025

Abstract

Historically, Jawi functioned as the primary writing system across the Malay Archipelago, stemming from Arabic script. However, modern educational trends indicate a decline in Jawi literacy, as young learners perceive it as complex, leading to reduced participation and inadequate proficiency. This conceptual research examined multiple factors contributing to early learners' challenges in acquiring Jawi literacy skills. The study synthesized findings from language acquisition, script recognition, and cultural education to explore how script complexity, limited exposure to trained educators, and the decline in societal use of Jawi collectively hinder learning. Additionally, the paper critically analyzed modern educational methodologies, highlighting disparities between traditional classroom approaches and contemporary learner needs. This research developed a culturally responsive, child-centered framework, incorporating phonological awareness techniques, digital resources, and narrative-based instruction to enhance Jawi literacy acquisition. The findings underscored the importance of adaptive teaching strategies, demonstrating that educators who address literacy barriers through innovative methods can create a more effective learning environment, ensuring the continued relevance of Jawi for future generations.

Keywords: Blended Learning, Cultural Preservation, Early Childhood Education, Jawi Literacy

Introduction

Jawi script represents an essential cultural and religious component of Malay civilization because it emerged from Arabic letters (Arslan, 2025; Badi, 2025; Hakim, 2025; Ibrahim, 2025; Tengku, 2025). Badi, 2025; Hakim, 2025; Ibrahim, 2025; Tengku, 2025). Jawi functions beyond simple communication software since it integrates deeply with Islamic traditions and Malay cultural identity while acting as a historical indicator of religious knowledge along with governance and literature (Razali & Baharum, 2023; Yusuff & Saidi, 2025). Yusuff & Saidi,

2025). Despite its decline in everyday usage, Jawi continues to be an essential component in the national education system, primarily taught through the Islamic Education and Malay Language curricula (Malik et al., 2024; Shapii et al., 2020; Tamyis et al., 2021). Yet, current educational practices face notable obstacles in promoting Jawi literacy among early learners, prompting the urgent need for academic exploration into this domain.

Early childhood Jawi literacy studies hold important value because they influence a range of aspects including identity growth and religious knowledge retention and cultural tradition preservation. The ongoing impact of globalization and digitalization threatens to disconnect younger generations from their historical script which separates them from their cultural roots. Children who receive early education in Jawi literacy (Ahamd et al., 2024; Mohd Rashid & Md Noor, 2023) will maintain an equalighted linguistic identity because they learn both contemporary communication methods and historic script systems. Those who master Jawi can gain access to classical Malay documents as well as Quranic exegesis and historical records which contribute to intellectual and spiritual expansion (Hussin, 2013). Learning Jawi literacy demands cultural attention because understanding the difficulties students face in mastering this skill preserves both educational and cultural aspects.

The significance of this investigation increases due to observed difficulties young students face when they attempt to recognize and apply Jawi script. Young learners begin their Jawi studies by mastering basic letters Alif to Ya while also learning supplementary characters such as چ (ca), غ (nga), ف (pa), گ (ga), و (va), and ن (nya) (Ghazali et al., 2025). Teaching Jawi requires students to achieve phonetic abilities and precise spelling skills along with familiarity with diacritical marks, yet most learners face such challenges because of minimal Jawi exposure and traditional teaching techniques. Studies indicate children view Jawi writing as hard-to-learn while perceiving it as irrelevant to their everyday linguistic activities because Rumi script predominates (Rahman et al., 2025; Zamri & Mazmuzidin, 2021; Rizki, 2020).

This research delivers essential value to educators alongside curriculum developers and language policymakers and cultural preservation advocates. The study explores particular difficulties early learners experience and introduces effective teaching methods using new learning approaches. Interactive phonetic games combined with Islamic story-based learning through digital tools create an engaging age-appropriate process for Jawi instruction (Atma et al., 2021; Høstmælingen, 2025). A properly trained teaching method (Haarala-Muhonen et al., 2023) enables educators to deliver proficient instruction which enhances learner language skills while developing cultural understanding.

Jawi literacy extends beyond reading and writing skills because it serves to safeguard both a vital cultural legacy that fashion national identity and religious heritage. Early learners' current challenges require focused attention because sustained use of this script depends on their success. This research investigates multiple obstacles before providing contemporary instructional solutions which strengthen Jawi language's position within Malaysia's multilingual environment.

Literature Review

A New Narrative of Learning Jawi in Contemporary Education

Traditional scripts like Jawi disappear from mainstream education in a digital technology era and global language environment (Forkosh-Baruch et al., 2024; Timotheou et al., 2023; Zhou et al., 2024) (Alisoy, 2025; Irsara et al., 2024; Yunhua & Budiman, 2024). Jawi emerged from Arabic script to write Malay texts in the Malay Archipelago during earlier times and sustained its cultural and religious value according to Coluzzi (2022). Modern educational practices have reduced the importance of Jawi to negligible levels because students now consider it neither practical nor manageable. The current educational landscape requires an immediate change in Jawi representation which shows its present value as an essential part of cultural learning that incorporates new educational methods suited for modern-day students (Nahar et al., 2018).

Historically, Jawi functioned as more than an orthographic system before modern times because it served as an effective means for transmitting information and spreading religious doctrine and administering governance across the Malay realm. Classical Malay texts and religious commentaries together with legal codes and royal correspondences received their inscriptions through the use of Jawi as the writing system. The adoption of Romanised Malay script (Rumi) as a result of European colonial control caused Jawi to begin losing its popularity (Coluzzi, 2021). In the Malaysian educational system, Jawi is integrated into the curriculum as part of Islamic studies alongside the Malay language. However, studies by Nahar et al. (2022), Rahman et al. (2025), and Nasir & Ismail (2024) highlight persistent challenges, particularly students' lack of commitment and confidence in mastering the script.

The main obstacle in Jawi learning stems from difficulties of perception together with limited access to resources. Students view Jawi as complex due to its right-to-left writing style together with unfamiliar shapes and its resemblance to Arabic despite its unfamiliarity (Saimon & Takmad, 2023). The limited exposure to Jawi in everyday media as well as reading materials results in a distance among students. Jawi learns mainly through rote memorization methods in textbooks rather than meaningful student involvement and the collection of digital resources shows deficiencies in availability and usage. The teaching of Jawi has become a burdensome subject because learners fail to see it as an important heritage (Coluzzi, 2022). A new approach to Jawi learning requires establishing a modern perspective which presents it as educationally significant material with added student interest and comprehensive educational integration (Hamdzah & Surat, 2022; Tamyis et al., 2021). The essential starting point involves changing Jawi perception for the learning audience. Jawi should be presented as a script which enables exploration into historical literary and cultural traditions instead of traditional religious instructions. Students need to learn beyond simple rote memorization because teachers must provide genuine Jawi resources including historical documents together with folk stories and Islamic poetry written in this script. The texts inspire learners' curiosity along with pride when creating opportunities to develop literacy skills in both Jawi script and Malay Language or *Bahasa Melayu*.

This new approach needs technology to be its essential foundation according to Shadiev et al. (2023) and Yi et al. (2024). Educational technology such as interactive applications and gamified platforms and augmented reality enhancements creates an enjoyable and accessible way to learn Jawi scripts. Mobile games requiring decoding Jawi messages and

voice recognition apps for pronunciation instruction give digital-native students the motivation to become active participants (Ghazali et al., 2025; Husaini & Zaini, 2024). Integrating Jawi into multimedia entertainment formats like animated videos, music lyrics and storytelling videos will help students encounter Jawi script as part of their regular daily activities.

Teachers carry equal importance in the development of the narrative. Teachers need modern educational methods supported by cultural knowledge (Kelly et al. 2021 and Djalilova 2023) to teach Jawi which serves as both a language and an avenue for studying history while learning about identity and religion. Professional development programs enable teachers to create learning materials which focus on student-centered and inquiry-based and contextual learning methods (Lim et al., 2025). Jawi can demonstrate its educational worth beyond language boundaries when teachers integrate it within various interrelated subjects such as art, history and moral education.

Furthermore, the process of learning Jawi depends heavily on active family and community participation (Høholt, 2018; Joy et al., 2021; Rogoff, 2022). Household community members should be motivated to integrate Jawi writing into basic everyday labeling and note-making activities. The merger of community centers with mosques allows Jawi clubs or competitions facilitating Jawi's use as a living practice beyond its exclusive school-based instruction. Through community engagement the reinforcement of Jawi utilisation will help people maintain their interest and make Jawi usage a regular habit.

In conclusion, modern education needs to transform its Jawi approach beyond standardized syllabus modifications because it demands a total transformation of how people understand the topic. Educators can reestablish Jawi as an energetic valuable literacy by revamping teaching methods while adding technological resources while linking its relevance to present everyday activities and encouraging community involvement. A comprehensive innovative method guarantees future generations will understand the true value of Jawi beyond rote memorization because it becomes their living cultural heritage.

Analytical Review of Optimal Strategies for Jawi Learning: Insights from Multi-Educational Research

The research evaluates proven literacy acquisition strategies from global academic studies which focus on adaptable techniques for contemporary Jawi script education in Malaysian classrooms. The essential aspect of Malaysian linguistic heritage represented by Jawi script must be taught effectively using pedagogical approaches to develop children literacy skills and increase their engagement. The application of different worldwide language instruction methods to Jawi education continues to be a matter for investigation. This analysis studies ten evidence-based learning strategies by examining multiple education research (Table 1.1) while assessing their benefits and drawbacks for Jawi teaching in current classes.

Firstly, the practice of play-based learning generates widespread acceptance as an optimal strategy to advance engagement and motivation in early childhood education (Whitebread & Basilio, 2019). This approach promotes students to discover while engaging with one another, which helps them build literacy skills in relaxed educational settings. Two significant issues emerge when play-based activities lack structured implementation because they transition

from effective teaching practices to basic entertainment. Jawi students can benefit from interactive letter-matching games along with digital puzzles since these activities enhance skill development in letter recognition and writing and keep students interested.

The second essential element of phonics instruction consists of decoding language structures by using systematic letter-sound relationships (Ehri 2020). The effectiveness of phonics for reading fluency development does not guarantee students will reach sufficient levels of comprehension and meaning-making skills. A structured phonics approach delivering formal connections between phonemes and graphemes in Jawi instruction will boost the students' ability to read Jawi script along with their writing confidence.

Table 1.1
Analytical Analysis from Multi-Educational Research

No.	Author/s & Year	Article Name	Journal & Bibliographic Database	Best Practices
1.	Whitebread, D., & Basilio, M. (2019)	The role of play in children's language development.	Early Childhood Research Quarterly (Scopus)	Play-Based Learning
2.	Ehri, L. C. (2020)	Findings from a meta-analysis.	Reading Research Quarterly (Web of Science/WoS)	Phonics Instruction
3.	Sun, H., Toh, W., & Steinkrauss, R. (2020).	Instructional strategies and linguistic features of kindergarten teachers' shared book reading.	Applied Psycholinguistics (Scopus)	Shared Book Reading
4.	Isbell, R., Sobol, J., Lindauer, L., & Lowrance, A. (2021).	The effects of storytelling and story reading on the oral language complexity and story comprehension of young children.	Early Childhood Education Journal (Scopus)	Interactive Storytelling
5.	Pallas, A. M., & Neuman, S. B. (2022).	Multisensory approaches to early literacy instruction.	Journal of Early Childhood Literacy (WoS)	Multisensory Learning
6.	Li, W., Zhang, Y., & Shadiev, R. (2024).	Exploring the impact of technology on early language learning.	Educational Technology Research and Development (Scopus)	Technology-Assisted-Assisted Learning
7.	Moreno, S., & Bidelman, G. M. (2023).	The role of music in early childhood language development.	Developmental Science (WoS)	Music and Language Acquisition
8.	Chow, J. C., Broda, M. D., Granger, K. L., Deering, B. T., & Dunn, K. T. (2021).	Language skills and friendships in kindergarten classrooms: A social network analysis.	School Psychology (WoS)	Peer Interaction and Language Growth
9.	García, O., & Lin, A. M. Y. (2021).	Culturally sustaining pedagogy in early language education.	Language and Education (JSTOR)	Culturally Responsive Teaching
10.	Joy, A., Law, F., McGuire, L., & Mathews, C. (2021).	Understanding parents' roles in children's language learning.	Frontiers in Psychology (Scopus)	Parental Involvement

The interactive discussions in shared book reading enable both linguistic development and comprehension growth (Sun, Toh, & Steinkrauss, 2020). The beneficial method needs

appropriate scaffolding to help students who are struggling. Parent-led reading of Jawi storybooks during classroom activities would help students understand the material better by allowing them to practice Jawi vocabulary and sentence writing skills.

Storytelling practices help students develop advanced oral language abilities as well as better understand what they hear (Isbell et al., 2021). Written literacy development through this method alone proves insufficient because students require additional instructional methods. The utilisation of digital storytelling via animated tales in Jawi education would revolutionise learning into an interactive experience that improves students' text engagement and retention of Jawi material.

The approach of multisensory learning combines senses of touch and hearing with vision which boosts reading acquisition abilities (Pallas & Neuman, 2022). Its practical application demands further resources even though it proves effective. Educational activities that promote Jawi lessons should include sand letter tracing combined with audio pronunciation modules as well as visual techniques to sharpen both letters writing techniques and phonetic distinctions.

Through technological advancements the education system has developed appealing digital tools which assist students in their literacy progress (Li, Zhang, & Shadiev, 2024). The integration process needs to be meaningful because passive screen time only creates valueless presentations without benefiting educational progress. Educational online tools with Jawi handwriting recognition features alongside AI spelling correction systems create interactive platforms for Jawi literacy teaching which provide customized student assistance. Music helps students remember information better which leads to enhanced linguistic progress because of the rhythmic pattern reinforcement (Moreno & Bidelman, 2023). The approach fails to provide specific instruction related to linguistic rules. The incorporation of songs and rhythmic chants which teach Jawi phoneme sounds improves letter recognition and pronunciation skills in a more interesting manner for starting learners.

The combination of peers creates dynamic learning environments because it boosts student engagement along with motivation and promotes collaborative approaches (Chow et al., 2021). There is no alternative to teacher oversight when it comes to managing academic integrity in classroom discussions. The Jawi buddy system along with similar peer-learning methods in Jawi education lets students practice writing and reading together which promotes both peer assistance and improved language ability.

Culturally responsive pedagogy places accent on students' identity and heritage when teaching (García & Lin, 2021). The educational method aims to achieve relevance but needs to strike a proper equilibrium between traditional practices and present-day learning requirements. Culturally embedded Jawi heritage lectures should be promoted as essential components of languages to develop student appreciation thus strengthening their participation in Jawi study.

The literacy development of children receives major influence from what their parents do (Joy et al., 2021). The implementation methods might differ according to household literacy capabilities. The implementation of parent-child reading sessions as well as family literacy

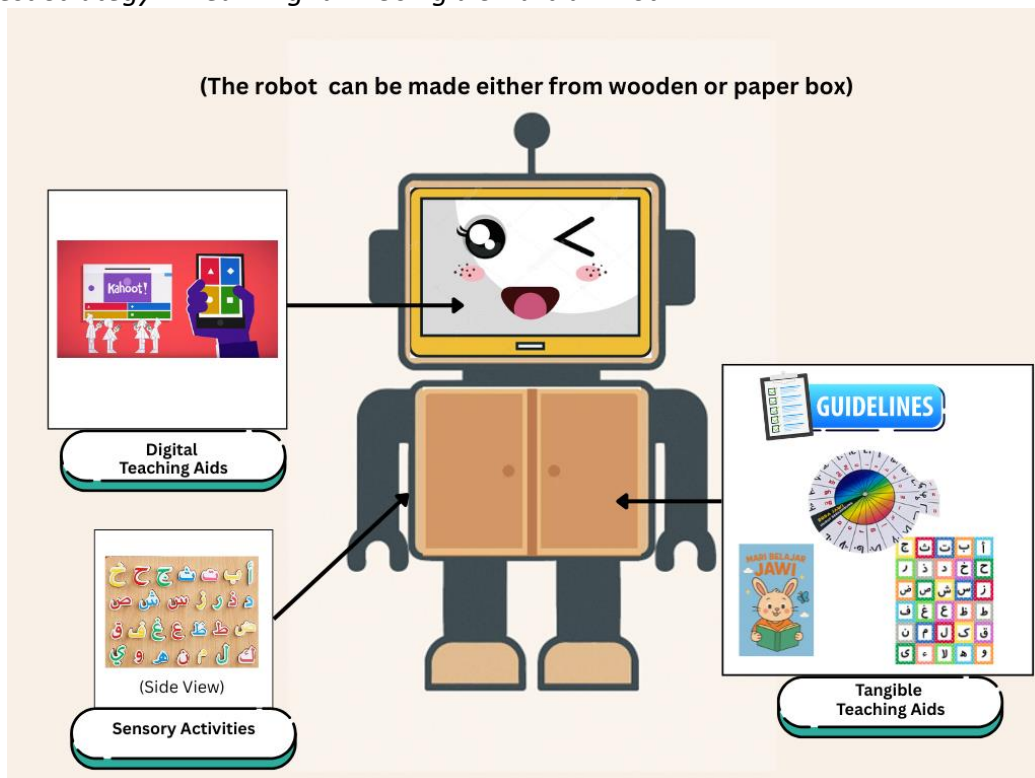
workshops in Jawi learning provides additional reinforcement for students to interact with Jawi script regularly after school hours.

The study demonstrates how evidence-based approaches work for Jawi education by reframing literacy teaching and student participation enhancement. The combination of play-based learning and phonics instruction and shared reading and storytelling along with multisensory approaches and technology makes up a complete system for teaching Jawi in modern times. Valuable ongoing support comes from cultural alignment and peer interaction together with parental commitment which strengthens meaningful learning opportunities. Educational models for Jawi instruction will become more effective through the application of established literacy strategies that maintain the preservation of linguistic heritage within modern educational environments.

Recommended Intervention for the Best Strategy in Learning Jawi for Young Children Based on Analytical Review

The researchers performed an initial study by referring to Ghazali et al. (2025) which showed that SmartJawi application development is essential for enhancing Jawi literacy alongside children's learning motivation. The proposed strategy combines hands-on instruction with digital learning through blended learning which can be executed through SmartJawiBot as illustrated in Figure 1.1. An educational framework which combines child-to-child contact along with virtual instruction defines blended learning. The method utilizes conventional teaching methods through digital technology to deliver superior learning results. Graham (2005) explains blended learning blends face-to-face instruction with online lessons as an educational strategy to enhance effectiveness.

Table 2.1
The Best Strategy in Learning Jawi Using a SmartJawiBot



The production capabilities of SmartJawiBot generate the 10 best practices according to analytical review findings documented by researchers in Table 1.1. Multiple studies confirm that Play-based Learning serves as an effective method to activate self-motivated behavior while building mental abilities (Gee, 2005). Children accept learning activities more effectively via game-based approaches which create dynamic and immersive educational environments. SmartJawiBot utilizes interactive quizzes with storytelling features along with word-based challenges to create an enjoyable learning experience for acquiring Jawi literacy. Children develop positive language learning connections due to reward-based tasks and personalized learning pathways that foster their intrinsic motivation.

Phonics-based education is crucial for developing reading proficiency as it aids pupils in word recognition and accurate pronunciation (Ehri, 2017). SmartJawiBot utilizes artificial intelligence to provide phonics instruction that adheres to a systematic progression for teaching Jawi sound-letter associations. Children get real-time audio information from the application which helps them recognize and rectify pronunciation problems to develop their phonemic understanding skills. Sound-letter correspondences taught by SmartJawiBot create a solid linguistic base which learners need to excel in Jawi reading and writing.

When children cooperate in their reading activities their fluency development together with comprehension performance shows maximum progress (Vygotsky, 1978). SmartJawiBot implements child-led discussions that combine reading activities during physical storybook time for children. Shared reading enables learners to implement dialogic reading methods through joint questioning followed by predictive interpretations and meaning derivation from the text. SmartJawiBot contains an educational buying system that both distributes helpful reading resources and offers materials to improve readers' Jawi content understanding.

According to Bruner (1990), storytelling delivers an effective way for cognitive processes while creating lasting language retention in children (1990). SmartJawiBot uses artificial intelligence to create animated stories which deliver captivating digital stories to children. SmartJawiBot employs a narrative-driven design to cultivate critical thinking and enhance contextual comprehension among children, while fostering profound emotional connections to the Jawi language. The system's interactive story elements assist children in enhancing their comprehension of narratives and language proficiency by providing exposure to significant cultural content.

The combination of different senses in educational delivery enables children to keep information in memory and fully grasp conceptual ideas according to Felder and Silverman (1988). SmartJawiBot provides children with motor development lessons through robotic manipulatives consisting of adjustable arms connected to letter blocks for developing hand coordination skills with precision motor control functions. The activities train finger muscles which enhance both pencil grip and steady handwriting skills which are fundamental for Jawi literacy mastery.

Learning adaptivity employs technology to create instruction at personalized levels by adjusting content through tracking individual children' learning progress (Woolf 2010). SmartJawiBot uses AI-based assessment features and personal feedback tools that enable

children to move through lessons independently of each other. The system tracks errors in real-time while providing guidance to children that deliver individualized learning support to prevent typical problems faced when learning literacy. The integration of machine learning algorithms within SmartJawiBot helps detect learning deficiencies so it provides customized instructional materials which maximize child achievement.

Through music-based instruction one can improve phonetic awareness alongside developing rhythmic recognition abilities and fostering better vocabulary memory (Patel, 2008). The language learning system SmartJawiBot presents Jawi-themed songs together with rhymes along with chants which create active and long-lasting learning experiences for children. The connection of sounds to musical notes enables children to sharpen their listening abilities which strengthens their ability to connect words with proper pronunciation. Repetitive music activities function as a critical instrument to improve language understanding while enabling children to develop their literacy skills which continue with continuity.

Through cooperative engagement children can acquire language skills in social learning environments (Swain, 2000). SmartJawiBot provides its users with collaborative writing features alongside peer exchange systems as well as storytelling competitions to create an interconnected learning environment. Learning groups composed of children engage in discussions to develop their vocabulary and oral communications skills which actively nurture Jawi written and oral literacy skills. Integrating culturally relevant content enhances child engagement and contextual understanding (Gay, 2010). SmartJawiBot embeds historical narratives, traditional Malay folktales, and Jawi script-based heritage texts, ensuring that learners develop a deep cultural connection to the language. Through interactive cultural storytelling exercises, children gain insight into the historical evolution of Jawi, fostering cultural pride and linguistic appreciation.

Beyond traditional school boundaries the achievement of literacy development heavily depends on parental involvement (Epstein, 2011). SmartJawiBot enables parents to access tracking applications alongside digital learning exercises which they can perform at home, so they stay involved in their child's educational development. SmartJawiBot enhances language instruction beyond conventional classrooms by offering family-oriented learning activities that facilitate ongoing exposure to the target language.

In conclusion, the implementation of SmartJawiBot shows blended learning techniques provide updated Jawi literacy education methods which maintain cultural authenticity. SmartJawiBot executes ten best research-focused practices through which it establishes interactive learning spaces that support collaborative work and adaptable content delivery to build child engagement and learning outcomes. The educational endeavor depends on technology-based interventions similar to SmartJawiBot for maintaining accessible and dynamic Jawi literacy and cultural preservation.

Conclusion

Studies on Jawi literacy education for young children reveal a necessity to develop new educational approaches that maintain traditional culture while using contemporary teaching methods. By using SmartJawiBot as an example we can observe how merged learning

methods evolve traditional Jawi literacy education through contemporary methods while protecting its cultural value. Through its implementation of ten best research-focused practices SmartJawiBot establishes interactive educational spaces that let children learn interactively and adaptively while boosting their learning drive. The evolution of education depends on technology-based solutions such as SmartJawiBot which maintain Jawi literacy accessible for children in modern learning situations. The combination of traditional teaching methods with AI-based adaptability improves both learning retention and fine motor skills and phonetic accuracy which strengthens fundamental literacy abilities in young children.

The progression of Jawi education in literacy necessitates the integration of cultural pedagogies with digital advances for future development. The integration of interactive storytelling with phonics instruction and multilevel learning provided by SmartJawiBot demonstrates the efficacy of blended education in preserving and enhancing Jawi literacy. This methodology establishes a sustainable approach to rejuvenate Jawi education by safeguarding linguistic history and effectively addressing modern literacy challenges through the incorporation of technology into educational activities.

Acknowledgements

The researchers express their sincere gratitude to Sultan Ismail Petra International Islamic College University (KIAS) for its generous financial support under the KIAS Research Grant (KIAS/40312/KRG25/044). The funding and resources provided were instrumental in the successful execution of this study, enabling meaningful advancements in research on Jawi literacy development.

References

- Alisoy, H. (2025). Multilingualism: Cognitive, social, and educational dimensions in a globalized world. *Journal of Azerbaijan Language and Education Studies*, 2(2), 45-67. <https://doi.org/10.69760/jales.2025001008>
- Ahmad, M. R., Wahid, F. N., & Mohamed Zabid, M. (2024). *Designing a Jawi alphabet gamification for preschool students*. *Al-Qanatir: International Journal of Islamic Studies*, 33(3), 186–192.
- Arslan, A. T. (2025). The integration of science and technology in Malay civilization. *International Journal of Islamic Products and Malay Civilization*, 14(2), 145-167.
- Atma, B. A., Azahra, F. F., & Mustadi, A. (2021). Teaching style, learning motivation, and learning achievement: Do they have significant and positive relationships? *Jurnal Prima Edukasia*, 9(1), 12-34.
- Badi, J. A. (2025). Islamic thought and Malay civilization: A comparative analysis. *International Journal of Islamic Products and Malay Civilization*, 14(1), 102-125.
- Bruner, J. (1990). *Acts of meaning*. Harvard University Press.
- Chow, J. C., Broda, M. D., Granger, K. L., Deering, B. T., & Dunn, K. T. (2021). Language skills and friendships in kindergarten classrooms: A social network analysis. *School Psychology*, 36(4), 451-467. <https://doi.org/10.1037/spq0000451>
- Coluzzi, P. (2022). Jawi, an endangered orthography in the Malaysian linguistic landscape. *International Journal of Multilingualism*, 19(4), 630–646. <https://doi.org/10.1080/14790718.2020.1784178>

- Djalilova, Z. O. (2023). Adapting teaching methods to modern educational trends: Pedagogical aspects. *International Journal of Pedagogics*, 3(10), 72–77. <https://doi.org/10.37547/ijp/Volume03Issue10-14>
- Ehri, L. C. (2017). Orthographic mapping in the acquisition of sight word reading, spelling memory, and vocabulary learning. *Scientific Studies of Reading*, 21(5), 357-379.
- Ehri, L. C. (2020). Systematic phonics instruction: Findings from a meta-analysis. *Reading Research Quarterly*, 55(1), 1-30. <https://doi.org/10.1002/rrq.302>
- Epstein, J. L. (2011). *School, family, and community partnerships: Preparing educators and improving schools* (2nd ed.). Routledge.
- Felder, R. M., & Silverman, L. K. (1988). Learning and teaching styles in engineering education. *Engineering Education*, 78(7), 674-681.
- Forkosh-Baruch, A., Voogt, J., & Knezek, G. (2024). Moving forward to new educational realities in the digital era: An international perspective. *Technology, Knowledge and Learning*, 29, 1685–1691. <https://doi.org/10.1007/s10758-024-09785-8>
- García, O., & Lin, A. M. Y. (2021). Culturally sustaining pedagogy in early language education. *Language and Education*, 35(4), 289-305. <https://doi.org/10.1080/09500782.2021.1874567>
- Gay, G. (2010). *Culturally responsive teaching: Theory, research, and practice* (2nd ed.). Teachers College Press.
- Gee, J. P. (2005). *Why video games are good for your soul: Pleasure and learning*. Common Ground Publishing.
- Ghazali, A., Mat Yusoff, M. A., Suhaimi, A. S., Hasim, H., Mansor @ Nordin, A., & Mohamed, I. (2025). Comparative analysis of digital learning applications in Jawi literacy development among Malaysian preschoolers. *International Journal of Academic Research in Progressive Education and Development*, 14(1), 23-45.
- Graham, C. R. (2005). Blended learning systems: Definition, current trends, and future directions. In C. J. Bonk & C. R. Graham (Eds.), *Handbook of blended learning: Global perspectives, local designs* (pp. 3-21). Pfeiffer.
- Haarala-Muhonen, A., Myyry, L., Pyörälä, E., Kallunki, V., Anttila, H., Katajavuori, N., & Kinnunen, P. (2023). The impact of pedagogical and ICT training in teachers' approaches to online teaching and use of digital tools. *Frontiers in Education*, 8, Article 1223665. <https://doi.org/10.3389/educ.2023.1223665>
- Hakim, A. (2025). The evolution of Malay civilization: Historical perspectives and contemporary relevance. *International Journal of Islamic Products and Malay Civilization*, 14(1), 23-45.
- Hamzah, M. E., & Surat, S. (2022). Pemupukan minat terhadap Jawi dalam kalangan murid sekolah rendah (Fostering interests in Jawi among primary school students). *Jurnal Personalia Pelajar*, 23(2), 103-109.
- Høholt, C. (2018). Children's perspectives and learning communities. In M. Hedegaard, K. Aronsson, C. Høholt, & O. S. Ulvik (Eds.), *Children, childhood, and everyday life: Children's perspectives* (pp. 93–111). IAP Information Age Publishing.
- Høstmælingen, A., Bjørnebekk, G., Olseth, A. R., & Sørli, M.-A. (2025). Individual differences in students' approach and avoidance sensitivity as predictors of academic progression during elementary school. *Journal of Educational Psychology*, 117(2), 245-267. <https://doi.org/10.1037/edu0000947>

- Husaini, M. H., & Zaini, S. H. (2024). The use of ICT in mastering Jawi among Orang Asli students. *AIP Conference Proceedings*, 2750(1), 040007. <https://doi.org/10.1063/5.0149253>
- Hussin, h. (2013). *Early Development of Quranic exegesis in Malaysia*. Universiti Kebangsaan Malaysia.
- Ibrahim, H. A. (2025). Leadership and ethics in Malay civilization: A historical review. *International Journal of Islamic Products and Malay Civilization*, 14(1), 189-210.
- Irsara, M., Lazzeretti, C., & Gatti, M. C. (2023). Challenges and opportunities of globalized English language education. *Iperstoria*, 21, 1-18. <https://doi.org/10.13136/2281-4582/2023.i21.1268>
- Isbell, R., Sobol, J., Lindauer, L., & Lowrance, A. (2021). The effects of storytelling and story reading on the oral language complexity and story comprehension of young children. *Early Childhood Education Journal*, 49(3), 345-356. <https://doi.org/10.1007/s10643-021-01147-8>
- Joy, A., Law, F., McGuire, L., & Mathews, C. (2021). Understanding parents' roles in children's language learning. *Frontiers in Psychology*, 12, Article 635839. <https://doi.org/10.3389/fpsyg.2021.635839>
- Joy, A., Law, F., McGuire, L., Mathews, C., Hartstone-Rose, A., Winterbottom, M., Rutland, A., Fields, G. E., & Mulvey, K. L. (2021). Understanding parents' roles in children's learning and engagement in informal science learning sites. *Frontiers in Psychology*, 12, Article 635839. <https://doi.org/10.3389/fpsyg.2021.635839>
- Karakaya, K., & Karakaya, O. (2024). The impact of song lyrics on language acquisition and student engagement: A systematic review. *Journal of Language and Education Research*, 12(1), 45-67. <https://doi.org/10.1080/JLER.2024.1823205>
- Kelly, L. B., Wakefield, W., Caires-Hurley, J., Kganetso, L. W., Moses, L., & Baca, E. (2021). What is culturally informed literacy instruction? A review of research in P-5 contexts. *Journal of Literacy Research*, 53(1), 75-99. <https://doi.org/10.1177/1086296X20986602>
- Landrum, R. E., Brakke, K., & McCarthy, M. A. (2019). The pedagogical power of storytelling. *Scholarship of Teaching and Learning in Psychology*, 5(3), 247-253. <https://doi.org/10.1037/stl0000152>
- Li, W., Zhang, Y., & Shadiev, R. (2024). Exploring the impact of technology on early language learning. *Educational Technology Research and Development*, 73(1), 35-58. <https://doi.org/10.1007/s11423-024-10412-7>
- Lim, S. H., Lim, L., Lye, C. Y., & Lim, W. Y. R. (2025). Personalised professional development in teaching and learning in higher education. *Trends in Higher Education*, 4(2), Article 16. <https://doi.org/10.3390/higheredu4020016>
- Malik, M. A., Osman, S., Marjudi, S., Nawi, H. S. A., Noor, S. M., & Bamasoud, D. M. (2024). Exploring primary school students' mastery of Jawi and ICT-based solutions. *Journal of ICT in Education*, 11(1), 123-145.
- Mohd Rashid, N. A., & Md Noor, N. (2023). Enhancing pre-schoolers' learning motivation in Jawi subject through game-based learning application. In *Proceedings of the 17th European Conference on Games Based Learning* (pp. 1-8). <https://doi.org/10.34190/ecgbl.17.1.1908>
- Moreno, S., & Bidelman, G. M. (2023). The role of music in early childhood language development. *Developmental Science*, 26(2), Article e13245. <https://doi.org/10.1111/desc.13245>

- Nahar, N., Safar, J., Hehsan, A., & Junaidi, J. (2018). The implementation of the 21st-century pedagogical elements in Jawi teaching: A review study. *Asian Social Science*, 14(11), 41-50. <https://doi.org/10.5539/ass.v14n11p41>
- Nahar, N., Safar, J., Hehsan, A., & Junaidi, J. (2022). Astery learning as an effective medium for Jawi teaching within the framework of teacher competency development: A case study. *Jurnal Teknikal dan Sains Sosial*, 17(1), 61-74. <https://doi.org/10.1088/1742-6596/2312/1/012020>.
- Nasir, N. M., & Ismail, H. (2024). Challenges and innovations in Jawi literacy among Malaysian secondary students: A pedagogical review. *Journal of Southeast Asian Educational Studies*, 18(2), 201-225. <https://doi.org/10.1080/SEAES.2024.1823205>
- Pallas, A. M., & Neuman, S. B. (2022). Multisensory approaches to early literacy instruction. *Journal of Early Childhood Literacy*, 22(1), 89-105. <https://doi.org/10.1177/14687984211045678>
- Ploetzner, R., Berney, S., & Bétrancourt, M. (2021). When learning from animations is more successful than learning from static pictures: Learning the specifics of change. *Instructional Science*, 49(4), 497-514. <https://doi.org/10.1007/s11251-021-09541-w>
- Rahman, A. H., Ali, A. M., Abdullah, F., Kadir, F. K. A., Adam, F., & Ismail, D. (2025). Methods of learning and writing Jawi scripts within the Malay community: Past and present experiences. *World Research Library Proceedings*, 1006(1), 12-34.
- Rahman, S. K. A., Ampuan Hj Tengah, A. H. B., & Makmun, R. (2025). The role of education in the development of Jawi in Brunei Darussalam. *Journal of Asian Traditions*, 17(2), 45-67. <https://doi.org/10.22452/JAT.vol17no2.2>
- Patel, A. D. (2008). *Music, language, and the brain*. Oxford University Press.
- Razali, A. N., & Baharum, A. S. (2023). Comparative research on borrowed Arabic words between the Arabic and Jawi writing systems in sermon texts. *Asian Journal of Civilizational Studies*, 5(3), 24-45. Available here.
- Rizki, S. (2020). Nurturing Jawi through education: Mirroring Jawi education in Aceh and Malaysia. *IKAT: The Indonesian Journal of Southeast Asian Studies*, 3(2), 217-230.
- Rogoff, B., & Mejía-Arauz, R. (2022). The key role of community in Learning by Observing and Pitching In to family and community endeavors. *Journal for the Study of Education and Development*, 45(3), 494-548. <https://doi.org/10.1080/02103702.2022.2086770>
- Saimon, A., & Takmad, N. H. (2023). Perception of Kulliyah of Languages and Management students, IIUM, towards Jawi writing. *LSP International Journal*, 10(1), 45-67. <https://doi.org/10.11113/lspi.v10.19673>
- Shadiev, R., Wen, Y., Uosaki, N., & Song, Y. (2023). Future language learning with emerging technologies. *Journal of Computers in Education*, 10(1), 463-467. <https://doi.org/10.1007/s40692-023-00285-9>
- Shapii, A., Mahayuddin, Z. R., & Othman, S. (2020). Jom Jawi: Enhancing Jawi language mastery among primary school students using interactive media. *Jurnal Dunia Pendidikan*, 2(3), 45-67.
- Sun, H., Toh, W., & Steinkrauss, R. (2020). Instructional strategies and linguistic features of kindergarten teachers' shared book reading. *Applied Psycholinguistics*, 41(2), 427-456. <https://doi.org/10.1017/S0142716420000053>
- Swain, M. (2000). The output hypothesis and beyond: Mediating acquisition through collaborative dialogue. In J. P. Lantolf (Ed.), *Sociocultural theory and second language learning* (pp. 97-114). Oxford University Press.

- Tamyis, M. M., Suppian, Z., & Che Md. Ghazali, N. H. (2021). Jawi field in elementary school Islamic education curriculum: A literature analysis. *Jurnal Pendidikan Bitara UPSI*, 14(2), 89-112.
- Tarchi, C., Zaccoletti, S., & Mason, L. (2021). Learning from text, video, or subtitles: A comparative analysis. *Computers & Education*, 160, Article 104034. <https://doi.org/10.1016/j.compedu.2020.104034>
- Tengku, F. M. (2025). Cultural and ethnic studies in Malay civilization: A multidisciplinary approach. *International Journal of Islamic Products and Malay Civilization*, 14(2), 67-89.
- Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S. V., Giannoutsou, N., Cachia, R., Martínez Monés, A., & Ioannou, A. (2023). Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. *Education and Information Technologies*, 28, 6695–6726. <https://doi.org/10.1007/s10639-022-11431-8>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Whitebread, D., & Basilio, M. (2019). The role of play in children's language development. *Early Childhood Research Quarterly*, 48, 147-161. <https://doi.org/10.1016/j.ecresq.2019.03.002>
- Woolf, B. P. (2010). *Building intelligent interactive tutors: Student-centered strategies for revolutionizing e-learning*. Morgan Kaufmann.
- Yi, S., Li, W., Zhang, Y., & Shadiev, R. (2024). Exploring the impact of technology on foreign language learning: A multivariate meta–meta-analysis study. *Educational Technology Research and Development*, 73(1), 35–58. <https://doi.org/10.1007/s11423-024-10412-7>
- Yunhua, D., & Budiman, A. (2024). Embracing linguistic diversity: Global Englishes language teaching for anti-racist education. *Frontiers in Education*, 9, Article 1413778. <https://doi.org/10.3389/feduc.2024.1413778>
- Yusuff, N. A., & Saidi, S. B. (2025). Acceptance of Arabic and direction of Jawi script: An outlook from youth perspective. *Journal of Language Studies and Generic Development*, 12(1), 67-89.
- Zamri, A. A. M., & Mazmuzidin, M. Z. (2021). Mengenal Jawi: The effectiveness of augmented reality application for Jawi learning. *Journal of Computing Technologies and Creative Content*, 6(2), 45-67
- Zhou, X., Smith, C. J. M., & Al-Samarraie, H. (2024). Digital technology adaptation and initiatives: A systematic review of teaching and learning during COVID-19. *Journal of Computing in Higher Education*, 36, 813–834. <https://doi.org/10.1007/s12528-023-09376-z>