

Exploring the Issues of Primary School Students' Mastery of Jawi and the ICT Solution

Marliza Abdul Malik^{1*}, Salyani Osman¹, Suziyanti Marjudi², Haslinda Sutan Ahmad Nawi³, Suhaimi Mohd Noor¹, Doaa M. Bamasoud⁴

¹Computing Department, Faculty Communication Visual Art and Computing, Universiti Selangor, Malaysia; marliza@unisel.edu.my, salyani@unisel.edu.my, suhaimimn@unisel.edu.my

²Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn, Malaysia; suziyanti@uthm.edu.my

³Information Science & Computing Department, Faculty of Information Sciences and Engineering, Management and Science University, Malaysia; haslindasan@msu.edu.my

⁴Department of Information Systems, College of Computing and Information Technology, University of Bisha, Saudi Arabia; dbamasoud@ub.edu.sa

* correspondence author

To cite this article (APA): Abdul Malik, M., Osman, S., Marjudi, S., Ahmad Nawi, H. S., Mohd Noor, S., & Bamasoud, D. M. Exploring the issues of Primary School students' mastery of Jawi and the ICT solution. *Journal of ICT in Education*, 11(1), 115-126. <https://doi.org/10.37134/jictie.vol11.1.9.2024>

To link to this article: <https://doi.org/10.37134/jictie.vol11.1.9.2024>

Abstract

Jawi writing serves as the principal medium for Islamic education instruction in schools today. Possessing proficient Jawi writing skills enables students to effortlessly navigate the learning process and gain a comprehensive understanding of Islamic education content. This study aims to investigate the current state of mastering Jawi writing skills among primary school students in one of the most developed and progressive states in Malaysia. A comprehensive literature review and surveys of 33 parents were done. Apart from this, an interview was conducted with teachers from three different types of religious primary schools: Religious Primary Schools (Sekolah Rendah Agama), Integrated Religious Primary Schools (Sekolah Rendah Agama Integrasi), and Al-Quran and *Fardhu Ain* Integration Classes. The literature review, survey, and interview results clearly demonstrate that students face significant difficulties when learning to connect Jawi letters into words. The survey and interview responses highlighted the importance of providing adequate practice and reinforcement opportunities for students. Considering these findings, it is crucial to develop new teaching strategies and materials such as integration of Information and Communication Technology (ICT) tools such as educational software, interactive digital whiteboards, and customized learning apps specifically designed to support the learning and mastery of Jawi writing. These ICT solutions could provide engaging, interactive, and differentiated learning experiences tailored to student needs, thereby potentially improving proficiency in Jawi writing among primary students.

Keywords: Jawi writing, Jawi letters, religious primary schools, Fardhu Ain, integration classes

INTRODUCTION

Jawi (جاوي) is an Arabic alphabet used for writing the Malay language and several other languages in Southeast Asia. Jawi writing has gone through a glorious era and has been established for over 700 years in Malaysia (Naquiah & Jimain, 2016; Salehuddin, 2013; Khazriyati, 2012). Education in Malaysia has included Islamic education subjects that were taught in schools in Malaysia as early as Year One to Year Six. The Islamic Education textbooks were written in Jawi alphabets. The Jawi lesson is one of the areas of knowledge in the organizing of knowledge, skills, and values in Islamic education subjects, while Islamic education is one of the important components contained in the National Education system as well as the core subject in the National Curriculum of Ministry of Education Malaysia. Through Jawi lessons, pupils are provided with reading skills, reading, and writing Jawi letters, syllables, words, and texts (Naquiah & Jimain, 2016). These skills are in line with the objectives of Islamic education subjects that set the goal of reading, constructing, and writing sentences or texts in Jawi script and *khat* (calligraphy) and loving them as a cultural heritage. Hence, ensuring that the objectives are achieved, requires the delivery of knowledge, skills, and values effectively by teachers through the diversity of Jawi teaching strategies, approaches, methods, and techniques.

However, according to Ramlie et al. (2021), there are Jawi spelling errors in students due to the confusion from the use of Jawi characters. Students' ability to grasp Jawi reading and writing is critical since it affects their understanding and aptitude in Islamic Studies (Naquiah & Jimain, 2016). If this trend continues, it will lead to the abandonment of the Jawi script amongst the younger generations. This study aims to address the knowledge gap by investigating the specific aspects or levels of Jawi learning that primary school students find challenging. Jawi, which is the Arabic script used to write the Malay language, holds great cultural and historical significance in Malaysia. However, many primary school students struggle to become proficient in this script. The purpose of this research is to identify the exact areas where students face difficulties in Jawi learning. By pinpointing these specific challenges, the study intends to assist educators and policymakers in developing targeted interventions and strategies. The ultimate intention is to improve the outcomes of Jawi learning, empowering students to effectively engage with and appreciate their cultural identity.

LITERATURE REVIEW

Jawi Education

In 1970, Jawi writing was reintroduced into the primary school curriculum. The curriculum topic is known as Jawi education, and it is one of the language components of Malay language subjects. The Jawi class began in Second Grade. The curriculum intends to ensure that students can read and write Jawi at the end of the program. Students should be able to spell, including Arabic spelling, read relevant Jawi literature, and write short essays in Jaw writing by the end of the Second Grade.

The proliferation of numerous Jawi manuscripts throughout the history of the Malay Archipelago is well documented. These encompass a diverse range of subjects such as *aqidah*, *fiqh*, *hadith*, historical recounts, and other forms of traditional Malay literature. Furthermore, specific works known as *Kitab-Kitab Jawi* (Books of Jawi) have also made substantial contributions to science and technology disciplines. The diffusion of Islamic teachings within local communities has been largely facilitated by Muslim scholars who utilized the Jawi script as their primary vehicle for communication (Sulaiman & Al-Edrus, 2012). Apart from its role in fostering scientific growth and technological breakthroughs, the Jawi script has played a pronounced part in religious discourse. Moreover, it holds significant importance in propagating knowledge and Islamic civilization throughout the ASEAN region (Ibrahim et al., 2019).

Amid a lack of Arabic comprehension, Jawi literature primarily serves the Malay Muslim community as a critical reference for understanding faith-based concepts, religious statutes, ethical principles, and more, as suggested by Bruinessen (1990). The transformative influences on the lives and worldview of Malay society can be largely attributed to these writings' catalytic role as highlighted by Badaruddin (2012). Reading materials transcending books are available which explore both religious and secular knowledge in the Jawi script. A study conducted by Abdullah and Salleh (2015) centered around economic themes impacting the Malay populace within various local newspapers such as *Saudara*, *Majalah Guru*, *Majlis*, *Al-Ikhwan*, and *Utusan Melayu* during the 1930s. Their analysis underscored how fundamental these news platforms were in articulating links between economic aspects and their primary demographic. The researchers advocated increased engagement of Muslims in small enterprises while espousing progressiveness and collectively for socio-economic enhancement at an individual level that translates into nationwide progression. Importantly, though they emphasize that Jawi inscriptions transcend solely spiritual domains extending comprehensively to capture wider facets of human wisdom.

The incorporation of the Jawi script into the Islamic education curriculum of the Malaysian Ministry of Education is a well-thought decision. This is because textbooks for Islamic religious studies are predominantly written in Jawi, and this academic agenda is further strengthened by the inclusion of the j-QAF program (Ibrahim et al., 2019). However, it is important to note that the relevance of Jawi writing is primarily confined to the Islamic educational sphere (Mesman et al., 2022). To promote wider acceptance and appreciation, efforts to enhance the understanding and use of Jawi penmanship should be actively pursued, especially within the framework of established Islamic study courses. As an integral part of school curricula across the country, due to its cultural significance, all textbooks and supplementary learning resources should aim to incorporate a more comprehensive utilization of this indigenous script.

Current Scenario of Jawi Education

According to Amrina et al. (2019), all parties, including the ministry, schools, parents, families, communities, and stakeholders, must address the issue of the importance of Jawi writing among students. Emri & Ibrahim (2020) state that students with a high mean score value have a positive attitude when the teacher does not ask them to write Jawi. This sentiment is commonly expressed by the majority of students who find relief when the teacher does not assign them to write Jawi. This feeling is shared among all students. Students demonstrate difficulty in writing Jawi and linking Jawi single letters. According to a Jawi analysis of mid-2018 tests for second-year students at Sekolah Kebangsaan Seksyen 19, 56 percent of 157 students could not detect and write linking and non-connecting characters (Suhaimi et al., 2020). This data indicates that some students are illiterate and inept at connecting in Jawi. According to Abd Hamid et al. (2016), mastery level Jawi reading and writing are at a moderate level, with reading coming before writing. The study's research reveals that mastery of Jawi should begin in early life and be practiced by all parties involved, including students, parents, and management or school leadership.

Jawi writing has been gradually marginalized in the mainstream education system, while its mastery among the Malay community began to decrease. Despite various government efforts to uphold Jawi texts, the methods implemented through the program rely heavily on the measures provided without new initiatives from the teachers. As a result, students fail to recognize and connect Jawi letters properly and are unable to understand the Qur'anic verses. It is imperative to foster awareness regarding the significance of Jawi among parents and guardians. This will equip them with the ability to nurture and instill an interest in Jawi within their children starting from a young age. In addition, it would be beneficial to specifically allot time for studying Jawi at the secondary school level, thus providing students with an opportunity to enhance their proficiency in Jawi under the guidance of expert teachers or invited specialists in this field.

RESEARCH METHODOLOGY

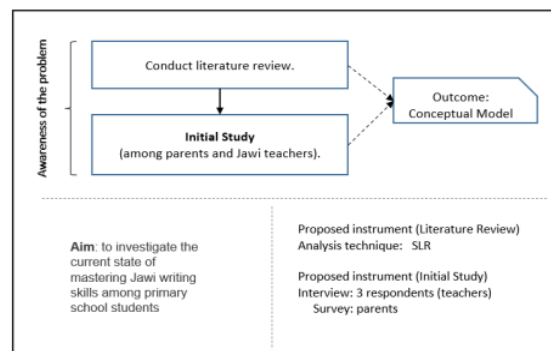


Figure 1: Major activities in the study

There are two major activities involved in this study as shown in Figure 1. First, a literature review was conducted to investigate the current state of Jawi education in primary school. Next, an initial study involved a survey with parents who have children taking Jawi education and an interview with Jawi teachers. The outcome of these steps is to get a conceptual model and to investigate the current state of mastering Jawi writing skills among primary students.

The search primarily revolves around various topics, including the progress of Jawi in Malaysia, the performance of students in Jawi, challenges encountered while learning Jawi, and strategies to enhance the learning experience and address any obstacles. Various search platforms, including Google Scholar, ACM Digital Library, ProQuest, Scopus, and IEEE, are utilized for research purposes.

An initial research process was undertaken, involving both parents and educators, as part of our commitment towards teacher empowerment and community engagement. Teacher empowerment, through the sustenance and enhancement of professional development via collaborative efforts, significantly improves teachers' ability to refine their pedagogical practices. This, in turn, enables them to more effectively address the diverse learning needs of students. Our initiative seeks to develop teachers' abilities consistently by providing necessary training, resources, and assistance for the application of evidence-based instructional strategies.

Our goal is to enrich the diversity of instructional approaches to meet the varied needs of students. By fostering community engagement through active participation from parents, local stakeholders, and cultural institutions, we strive to create a dynamic learning environment that extends beyond traditional classroom boundaries. By raising awareness and fostering an appreciation for Jawi writing, this initiative is designed to establish a powerful socio-cultural context that underscores its value and persistently supports students' academic pursuits.

Data Collection

A questionnaire set was distributed among parents who had children between seven to nine years old (Level One Primary School students) at Religious Primary Schools (SRA), Integrated Religious Primary Schools (SRAI), and Al-Quran and Fardu Ain Integration Classes (KAFAI). There are three parts to the questionnaire: Part A consists of eight questions under demographic, Part B has 11 questions for Jawi skills and Part C has nine questions to cover the effectiveness of teaching and learning process at home. The interview questions set have 3 parts as depicted in Table 1.

Table 1: Interview Questions

No	Part	Questions
1.	Demographics/Education Level/Experience	As an introduction, can you give some info on your age, education, college education, and practice as a teacher?
2.	Jawi Education (Reading and Writing)	i. Validating the following components is a key element in mastering Jawi reading. <ul style="list-style-type: none"> Recognize and pronounce the letters <i>hijaiyyah</i>/Jawi. Recognize and pronounce Jawi syllables. Recognize and pronounce the jawi word. Proficient in reading rewarding words and loan words. Proficient in reading sentences and phrases. Proficient in reading short passages of various kinds. ii. Validating the following components is a key element in mastering Jawi writing. <ul style="list-style-type: none"> Forms of writing <i>hijaiyyah</i>/jawi letters. Jawi letters match with Rumi. Match the letters by position. iii. Student's level of mastery in reading Jawi. iv. What mastery problems exist for the components of those skills: reading and writing? v. What are the techniques/methods to overcome those problems? vi. What are teaching aids that teachers use during teaching and learning sessions at school?
3	The effectiveness of the use of multimedia in the teaching process and home learning	i. Online learning is easy to learn. ii. Online learning makes it easier for me to prepare teaching materials. iii. Online learning makes my teaching aids more effective and attractive. iv. Online learning makes it easy for me to update teaching materials over time. v. Online learning makes it easy for me to submit assignments to students. vi. Online learning makes it easy for me to create assessments of students. vii. Online learning is more interesting than traditional learning. iii. I know how to use the learning material available on the internet such as YouTube for teaching from home. ix. I know how to use a learning management system such as Google Classroom, Zoom, or Meet as a tool for online learning. x. The use of technology allows students to be more active and interested.

Data Analysis

The process of data analysis for this study was conducted through three primary methods: literature review, survey, and interviews. The literature review involved a detailed examination of credible articles and studies pertinent to the topic. This step was crucial in summarizing key information into a cohesive document, such as a thesis or dissertation. It helped establish the study's rationale and provided a justification for the chosen research methodology.

For the survey data, a set of questions was designed and disseminated using Google Forms. After collecting all the responses, it was essential to analyze the data using the tools provided by Google Forms. These integrated tools allowed for professional and effective analysis, facilitating a clear comprehension of the gathered data and enabling the extraction of valuable insights crucial for informed decision-making.

The interview data analysis required a methodical approach to effectively organize, categorize, and interpret the information gathered from interviews with three teachers at a religious school. Two of these interviews were conducted in person, and one was carried out through an online platform. This approach ensured a comprehensive understanding of the interviewees' perspectives and experiences, enriching the research findings and contributing significantly to the overall study.

RESEARCH FINDINGS

Results from Literature Review

According to Suhana et al. (2016), proficiency in reading and writing Jawi is moderate, with reading typically developed before writing. The study suggests that mastery of Jawi should begin in early childhood and involve the concerted efforts of students, parents, and school leadership. Conversely, research by Rosila et al. (2007) indicates that Jawi skills among Form Two and Form Four students are still underdeveloped, with an average of 41.82 percent unable to correctly connect simple Jawi letters. These findings underscore the need for students to solidify their ability to connect Jawi letters during their primary school years.

Pupils can recognize all Jawi letters, yet they struggle to form words by correctly connecting related letters. Ahmad (2014) highlights that weaknesses, along with generally negative attitudes and motivation toward Jawi, are prevalent among students. Further compounding these challenges, Norhashisah (2018) found that 54% of pupils were unable to correctly connect letters using the closed syllable pattern, even after they had mastered individual letter connections. Additionally, 53.3% failed to recognize closed syllables when tested, and a significant 80% struggled with converting the Rumi script to Jawi. These findings suggest that socioeconomic and family backgrounds play a crucial role in students' proficiency levels in Jawi.

From the literature review, it is evident that primary school students face significant hurdles in mastering the critical skill of connecting Jawi letters to form words. This difficulty is a substantial obstacle that impedes their ability to learn Jawi effectively. Moreover, the observed lack of enthusiasm and motivation towards Jawi writing can negatively impact their broader educational experience. It is essential to address these challenges promptly. Innovative methods and engaging teaching strategies are needed to inspire and encourage students to improve their Jawi writing skills. Such efforts will not only enhance their cultural literacy but also contribute positively to their overall academic development.

Results from Survey

Table 2 summarizes responses from 50 parents whose children attend Levels One through Six at SRA/SRAI/KAFAI. The data reveals that students typically start with an average skill level in the initial competencies required for mastering Jawi. As they advance through their education, the proportion of students at an average skill level increases, eventually surpassing those who achieve proficiency in various complex skills such as reading remuneration and loan words, interpreting verses and sequences of words, reading short passages, writing sentences, crafting essays, and performing calligraphy.

The learning journey for students studying Jawi involves multiple stages. Initially, students focus on understanding and properly pronouncing *Hijaiyyah*/Jawi letters. They then move on to identifying and pronouncing Jawi syllables accurately. Progressing further, students work on recognizing and articulating Jawi words and achieving proficiency in reading compound words and loanwords. Advanced stages include mastering the reading of sentences and phrases, becoming adept at interpreting various types of short passages, enhancing sentence writing abilities, honing essay writing skills, and excelling in calligraphy. This structured progression is essential for students to effectively build and refine their Jawi reading and writing skills.

Table 2: Data from the survey conducted

No.	Items in the survey	Excellent	Good	Average	Poor	Very Poor
1.	Recognize and pronounce <i>Hijaiyyah</i> /Jawi letters	20	18	10	2	0
2.	Recognize and pronounce Jawi syllable	10	25	13	2	0
3.	Recognize and pronounce Jawi word	10	26	11	2	1
4.	Proficient in reading remuneration and loan words	8	15	24	2	1
5.	Proficient in reading verses and verse phrases/sequences of words	8	10	27	4	1
6.	Proficient in reading in reading short passages of various kinds	6	10	30	3	1
7.	Proficient in writing sentences	6	10	28	5	1
8.	Proficient in writing essays	6	8	30	5	1
9.	Proficient in writing calligraphy	3	10	29	6	2

Results from Interview

For this study, a purposive sampling approach was utilized to select three experienced Jawi teachers for interviews. As shown in Table 3, these respondents, each hailing from a different school, have more than five years of experience in teaching Jawi.

Table 3: Profile of the respondents

Respondent	Education Level	Teaching experience
R1	Bachelor in Syariah and Law Diploma in Islamic Education	22 years
R2	Diploma in Islamic Education	8 years
R3	Bachelor in Islamic Studies	20 years

Table 4: Elements essential for mastering Jawi as identified by respondents

Respondent	Elements of Mastery in Jawi	
	Reading Jawi	Writing Jawi
R1	i. Recognize and pronounce the letters <i>hijaiyyah</i> /Jawi. ii. Recognize and pronounce Jawi syllables. iii. Recognize and pronounce Jawi words. iv. Proficient in reading remuneration words and loan words. v. Proficient in reading verse and verse phrases/sequences of words. vi. Proficient in reading sentences and/or sequences of words. vii. Proficient in reading short passages of various kinds.	i. Forms of writing <i>hijaiyyah</i> /jawi letters. ii. Jawi letters match with Rumi. iii. Match the letters by position. iv. Connecting Letters. v. Matching Jawi-Rumi-Arabic/English.
R2	i. Recognize and pronounce the letters <i>hijaiyyah</i> /Jawi. ii. Recognize and pronounce Jawi syllables. iii. Recognize and pronounce Jawi words. iv. Proficient in reading remuneration words and loan words. v. Proficient in reading verse and verse phrases/sequence of words vi. Proficient in reading sentences and/or sequences of words vii. Proficient in reading short passages of various kinds.	i. Forms of writing <i>hijaiyyah</i> /jawi letters. ii. Jawi letters match with Rumi. iii. Match the letters by position.
R3	i. Recognize and pronounce the letters <i>hijaiyyah</i> /Jawi. ii. Recognize and pronounce Jawi syllables. iii. Recognize and pronounce Jawi words. iv. Proficient in reading remuneration words and loan words. v. Proficient in reading verse and verse phrases/sequences of words. vi. Proficient in reading sentences and/or sequences of words. vii. Proficient in reading short passages of various kinds.	i. Forms of writing <i>hijaiyyah</i> /jawi letters. ii. Jawi letters match with Rumi. iii. Match the letters by position. iv. The nature of the letters. v. Methods of writing.

As presented in Table 4, respondent R1 identified eight elements essential for reading Jawi and five for writing it. Respondent R2 noted seven and three necessary elements for each skill, respectively, while R3 highlighted eight and five elements for mastering reading and writing Jawi. There is

consensus among the respondents on the first seven elements critical for reading mastery in Jawi and three elements for writing mastery.

R1 emphasized the importance of students understanding letter matching across Jawi, Rumi, Arabic, and English for both reading and writing Jawi, highlighting the necessity of knowing how to connect letters to form words. R2 highlighted three key aspects essential for mastering Jawi writing: understanding the forms of Hijaiyyah/Jawi letters, ensuring Jawi letters correspond with Rumi, and matching letters by their positions. R3 pointed out that, in learning to read and write Jawi, students must grasp the characteristics of Jawi letters and the methods for writing them.

From the interviews, it is evident that students are proficient in recognizing hijaiyah letters and in translating words from Roman script to Jawi. However, they face significant challenges in seamlessly connecting Jawi letters. This difficulty largely stems from their need to thoroughly understand and master how Jawi letters appear when connected.

DISCUSSION

The findings from the literature review, survey, and interviews underline a significant challenge faced by students in learning Jawi: the difficulty of connecting letters into words. This challenge primarily stems from the calligraphic nature of the Jawi script, which often changes the appearance of letters when they are connected. Students particularly struggle to differentiate between similar-looking letters, such as "ba" and "ta", highlighting a critical area for instructional focus. Furthermore, the lack of proper instructional materials and teaching methods was identified as a contributing factor to this challenge. Most students reported relying on outdated textbooks or poorly designed worksheets that did not effectively guide them in connecting the letters.

Further complicating this issue is the reliance on outdated or poorly designed instructional materials. Many students reported that the existing textbooks and worksheets do not effectively aid in understanding the nuances of connected Jawi letters. This gap in effective instructional tools underscores the need for revised teaching methods that cater to the visual and practical aspects of learning Jawi.

The survey and interview responses also highlighted the importance of providing adequate practice and reinforcement opportunities for students. Many students expressed the need for more hands-on activities, interactive learning tools, and opportunities to apply their knowledge in real-life situations. The introduction of Information and Communication Technology (ICT) could address these needs by providing dynamic and engaging platforms for learning. For instance, digital tools and resources, such as interactive tutorials and mobile applications, can offer visual aids and practice opportunities that are critical in mastering the Jawi script.

CONCLUSION

The study clearly demonstrates that mastering Jawi writing, particularly the connection of letters into words, poses a significant challenge for students. The traditional methods and materials used in teaching Jawi are inadequate, as they fail to accommodate the visual learning styles necessary for understanding such a complex script. It is evident that new teaching strategies and materials that address these specific challenges are required. This may include designing visually appealing instructional materials that emphasize the variations in letter appearance, providing ample opportunities for practice and reinforcement, and incorporating interactive learning tools such as online tutorials or mobile applications.

Based on the findings, it becomes evident that the development of new teaching strategies and materials is of utmost importance to effectively address the specific challenges associated with learning. One viable approach could be the integration of ICT in the creation of visually captivating instructional materials that highlight the different variations in letter appearance. The development of visually engaging instructional materials that delineate letter variations, combined with the accessibility and interactive capabilities of digital applications, could significantly improve student engagement and understanding. Such ICT tools not only facilitate a more interactive learning experience but also provide the essential practice and reinforcement needed to master the complexities of Jawi writing. Additionally, it is crucial to provide students with ample opportunities for practice and reinforcement to solidify their knowledge and skills. Incorporating interactive learning tools, such as online tutorials or mobile applications, further fosters engagement and enables students to take a more active role in their learning process. Through the integration of these innovative techniques, educators can enhance overall learning outcomes, ensuring that students are better equipped to overcome the challenges they may encounter.

In conclusion, embracing ICT solutions will not only make learning Jawi more effective but also more enjoyable and accessible for students. This approach promises a substantial improvement in the proficiency of Jawi writing among students, ultimately contributing to better educational outcomes in Islamic education studies.

REFERENCES

- Abdullah, Z. & Abdul Aziz, A.Y. (2020). Peminggiran tulisan Jawi sebagai lambang jati diri melayu: Satu kajian tinjauan. *Jurnal Sultan*.
- Abdullah, A. R. T., & Salleh, A. R. (2015). Akhbar Melayu dan isu ekonomi masyarakat Melayu dekad 1930-an. *Jurnal Komunikasi Borneo*.
- Abd Hamid, S., Mohamad, A. M., & Ahmad, A. (2016). Statistik penguasaan Jawi dalam kalangan murid sekolah rendah agama. *International Journal of Humanities Technology and Civilization*, 1(2), 50–63.
- Ahmad, M. (2014). Penguasaan kemahiran membaca dan menulis Jawi d kalangan murid Tahun 2. *International Journal of Humanities Technology and Civilization*.
- Amrina, R. K., Nik, M.S.A., & Nik, A. (2019). Penulisan Jawi dalam mata pelajaran pendidikan Al-Quran dan Al-Sunnah di peringkat menengah: Isu dan cabaran. *Jurnal KIAS*, 14 (1), 1-30.
<http://www.ejournals.kias.edu.my/index.php/jurnalkias/article/view/155>.
- Badaruddin, F.H. (2012). Peranan kitab jawi tasawuf sebagai medium transmisi ilmu

- Islam kepada masyarakat Melayu Nusantara. *International Journal of Islamic Thought*, 1(19).
- Bruinessen, M. van. (1990). Kitab kuning: Books in Arabic script used in the pesantren milieu: KITLV Library. *Bijdragen tot de Taal-, LandenVolkenkunde*. 146. (2/3), 226-269.
- Emri, A., & Ibrahim, A. (2020). Stages and factors affecting the authorisation of Jawi writing in six years students of the Seri Duyong National School of Malaysia. *Jurnal Tatsqif*, 18(1), 97–110. <https://doi.org/10.20414/jtq.v18i1.2542>
- Ibrahim, R., Embong, R., Abdul Kadir, F. K. & Hashim, H.A. (2019). Pemerkasaan tulisan Jawi dahulu dan kini. *BITARA International Journal of Civilizational Studies and Human Sciences*, 2(1): 29-37.
- Ismail, Aziah (2000). *Penguasaan Tulisan Jawi di Kalangan Pelajar UPM*. [Master's thesis, Universiti Putra Malaysia]. Universiti Putra Malaysia Institutional Repository. <http://psasir.upm.edu.my/id/eprint/9915/>
- Khazriyat, S. (2012). Penilaian ke atas kerumitan kognitif dalam proses membaca Jawi. *Journal of Language Studies*, 12(4).
- Suhana, A.H., Ahamad, M., & Azman, A. (2016). Statistik penguasaan Jawi dalam kalangan murid sekolah rendah agama. *International Journal of Humanities Technology and Civilization*. 2, 50–63. Retrieved from <https://journal.ump.edu.my/ijhtc/article/view/814>
- Mesman, N. S., Majid, Z. A., & Harun, D. M. (2022). Cabaran dan peranan ibu bapa dalam memperkasakan pembelajaran Jawi semasa pandemik Covid-19. *Jurnal Dunia Pendidikan*, 4(2), 1–12. <https://doi.org/10.55057/jdpd.2022.4.2.1>
- Naquiah, N., & Jimain, S. (2016). Amalan pengajaran Jawi dalam pendidikan masa kini: Suatu tinjauan. *Tinta Artikulasi Membina Ummah*, 2(2), 70–85.
- Ramlie, H. @ A., Mohd Nor, N. M., Abang Muis, A. M. R., Othman, I. W., Ationg, R., Yusoff, M. S., & Jamal, M. B. (2021). The issue of the introduction of Jawi script and khat in sekolah jenis kebangsaan (SJK) from undergraduates' perception. *International Journal of Education, Psychology and Counseling*, 6(39), 235–255. <https://doi.org/10.35631/ijepc.6390016>
- Rosila, N., & Yaacob, N (2007). Penguasaan Jawi dan hubungannya dengan minat. *Pendidik Dan Pendidikan*, 22, 161–172.
- Salehuddin, K. (2013). Arabic script of written Malay: Innovative transformations towards a less complex reading process. *Pertanika Journal of Social Science and Humanities*, 21(SUPPL), 63–76.
- Suhaimi, S., Yatim, N. A. B. M., Wahab, M. H. A., Idrus, S. Z. S., & Suhaimi, S. Bin. (2020). Jawi-AR Apps: Single Jawi character connecting method to single words using AR technology. *Journal of Physics: Conference Series*, 1529(3). <https://doi.org/10.1088/1742-6596/1529/3/032001>
- Sulaiman, A., & al-Edrus, S. M. D. (2012). Kitab Jawi dan karya Sains: Wacana ketamadunan dan jati diri orang Melayu. *Journal of Techno Social*, 4(2), 89-102. <https://publisher.uthm.edu.my/ojs/index.php/JTS/article/view/1432>