



Sandpaper Letters: An Alternative Method for Teaching the Quran to Children with Intellectual Disabilities

Fegia Rahma Dyta¹, Arisul Mahdi¹, Irdamurni¹, Fathiyah Mohd Fakhruddin², Endang Sri Handayani¹

¹Universitas Negeri Padang, Indonesia

²Universiti Putra Malaysia, Malaysia

✉ rahmadyta729@gmail.com *

Article Information:

Received January 15, 2024

Revised February 8, 2024

Accepted March 19, 2024

Keywords: *Sandpaper letters, hijaiyah letters, intellectual disability*

Abstract

The ability to recognize *Hijaiyah* letters is an important initial stage in Quranic learning for children with intellectual disabilities. This study aims to determine the effectiveness of sandpaper letters as an alternative method of Quranic learning in improving the ability to recognize *Hijaiyah* letters in children with mild intellectual disabilities. This study used a quantitative method with a Single Subject Research (SSR) A-B-A design. Data sources were obtained through observation, interviews, and tests of a subject with mild intellectual disabilities at a school in Indonesia. All data were analyzed using (state the analysis tool) with visual graphic analysis techniques. The results of the analysis of 13 meetings showed that the data obtained in each condition, namely at baseline (A1), was carried out in 3 meetings with scores of 35%, 35%, and 35%. During the observation of the intervention condition (B), 7 meetings were held with percentages of 50%, 60%, 75%, 80%, 95%, 95%, and 95%. Finally, observations conducted during the baseline condition (A2) were carried out in 3 sessions with percentages of 90%, 90%, and 90%. Thus, sandpaper letters are effective as an alternative for multisensory-based Quran learning for children with mild intellectual disabilities.

INTRODUCTION

Islamic Education is a subject that plays an important role in shaping the character and Islamic values of students, one of which is through the ability to recognize Hijaiyah letters as the basis for reading the Quran. The Hijaiyah alphabet is a group of letters used in Arabic writing that forms the basis for the skill of reading the Quran (Sari et al., 2024). This skill needs to be possessed by all students, including children with mild intellectual disabilities, because it is a fundamental part of learning the Quran (Mindani et al., 2022; Zulkifli et al., 2022).

Children with mild intellectual disabilities have an IQ between 50 and 70 and experience limitations in intellectual function and adaptive behavior that impact their ability to think abstractly and solve problems (Amran & Suminar, 2020; Dyta et al., 2025). They generally require concrete and multisensory learning approaches and media to make it easier for them to understand the material (Ainun & Martias Z, 2020). This disability often arises in learning the *Hijaiyah* alphabet because students find it difficult to distinguish between similar letters and remember them consistently.

How to cite:

Dyta, F. R., Mahdi, A., Irdamurni, I., Fakhruddin, F. M., & Handayani, E. S. (2024). Sandpaper Letters: An Alternative Method for Teaching the Quran to Children with Intellectual Disabilities. *Khalifa: Journal of Islamic Education*, 8(1), 56–63.

E-ISSN:

2549-4783

Published by:

Islamic Studies and Development Center Universitas Negeri Padang

Observations conducted by the author at a special school showed that a fifth-grade student with a mild intellectual disability had difficulty recognizing *Hijaiyah* letters. When asked to name the letter ت (tsa), the student instead named the letter ن (nun). Based on an interview with a Islamic education teacher, the learning process follows the *Merdeka* Curriculum, targeting Phase C achievement, which focuses on understanding connected *Hijaiyah* letters. However, the student's ability remains at Phase A, as the student is still unable to distinguish between similar *Hijaiyah* letters despite repeated instruction. The assessment results show that the student is able to recognize only nine *Hijaiyah* letters, with a score of 30%, indicating that the Islamic education learning outcomes have not yet been achieved.

Children with mild intellectual disabilities require special learning services that are tailored to their mental development and cognitive abilities. Learning principles such as demonstration, repetition, individualization, and continuity are essential for a more meaningful learning process (Widiastuti & Winaya, 2019). According to (Yogantari et al., 2023), their characteristics include limitations in understanding abstract concepts, limited memory, and difficulties in expressing emotions and focusing attention. The causes can be primary, such as heredity, chromosomal abnormalities, or prematurity, and secondary, such as infection and environmental factors (Ar-Rasily & Dewi, 2016).

In the context of Islamic Religious Education, students are taught Islamic principles derived from the Quran and *Sunnah* to be applied in their daily lives (Komalasari & Yakubu, 2023). Reading the Quran is a major part of this learning, and recognizing *Hijaiyah* letters is a very important first step (Helmalia et al., 2024). This ability not only affects reading skills but also the development of children's language and religious understanding. Therefore, learning media is needed to help children with intellectual disabilities recognize *Hijaiyah* letters more effectively.

Learning media serves as an intermediary between teachers and students to convey material in a more interesting and efficient way (Tafonao, 2018). One type of media that is suitable for children with special needs is sandpaper letters, which are educational tools made of sandpaper attached to boards or cards. This medium was developed based on the Montessori method, which combines visual and tactile elements so that children can feel and recognize the shape of letters (Yunidar et al., 2025). Its use follows the three-period lesson method, which is introducing the name of the letter, pointing to the letter, and repeating the letter (Buwani & Priyanti, 2022). Sandpaper letters engage the senses of sight and touch simultaneously, helping long-term memory, developing fine motor skills, and increasing motivation to learn (Ciptadi, 2019; Sriyanto & Hartati, 2022).

Various studies have supported the effectiveness of this medium. (Abdillah & Metafisika, 2021) showed that sandpaper letters increased the number of *Hijaiyah* letters memorized by early childhood students in Quran education center. (Laida & Sari, 2023) found this medium to be effective in improving the ability to recognize vowels in children with mild intellectual disabilities, while (Nurjanah et al., 2025) showed similar results in autistic children in recognizing the alphabet. However, there has not been much research on the use of sandpaper letters in the context of teaching *Hijaiyah* letters to children with mild intellectual disabilities in Islamic Education. Thus, this study attempts to fill this gap by examining the effectiveness of sandpaper letters as an alternative method of teaching the Quran that is suitable for the characteristics of students with special needs.

METHODS

The type of research used was experimental research in the form of single subject research (SSR) with a quantitative research approach. Experimental research aims to reveal research results in the form of the existence or absence of a causal relationship between the treatments given by the researcher to the subject (Egel et al., 2018; Kazdin, 2019, 2021; Widodo et al., 2021; Yulita et al., 2023). This study focused on improving children's ability to recognize *Hijaiyah* letters. This study used an A-B-A design, where A (Baseline 1) was the initial ability before treatment or intervention was given. B (Intervention) was the treatment phase or the condition in which the subjects received treatment. A (Baseline 2) was observing the subjects' abilities without giving any treatment (intervention).

The subjects of this study were boys in grade 5 with mild intellectual disabilities who had difficulty recognizing *Hijaiyah* letters. The data collection techniques used were observation, interviews, and tests. In this study, the data were described in graphical form to see the changes in each condition: baseline (A1), intervention (B), and baseline (A2). The procedure for analyzing the data was conducted by analyzing the conditions and analyzing between conditions, which showed the criteria for the children's success in each meeting, namely a significant improvement.

RESULT AND DISCUSSION

This study was conducted over 13 sessions with three conditions. First, the baseline condition (A1) was conducted over three sessions with a test consisting of 20 questions. The percentages obtained were 35%, 35%, and 35%, indicating that the subjects' ability to recognize *Hijaiyah* letters was still low. In the intervention condition (B), intervention was provided through sandpaper letters for seven meetings, with each session ending with an evaluation and a test consisting of 20 questions. The percentages obtained were 50%, 60%, 75%, 80%, 95%, 95%, and 95%, indicating an increase in the subjects' abilities after the intervention. The baseline condition (A2), without intervention, was conducted during three meetings with a 20-question test. The percentages obtained were 90%, 90%, and 90%, indicating stable results. The following is a recapitulation of the percentages in the three conditions: baseline (A1), intervention (B), and baseline (A2).

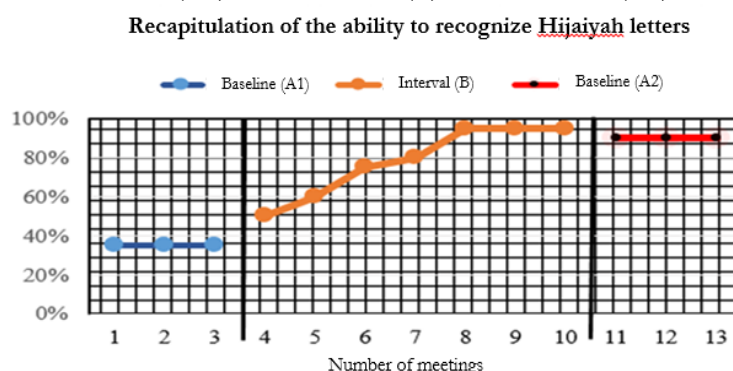


Fig 1. Recapitulation of the ability to recognize *Hijaiyah* letters

Based on the graph above, it can be seen that observations in the baseline condition (A1) were conducted three times, from the 1st to the 3rd meeting, with a percentage of 35%. Under the intervention condition (B), observations were conducted over seven meetings and stable data was obtained in the 8th to 10th meetings with a percentage result of 95%. After that, under the baseline condition (A2), observations were conducted over three meetings and stable data was obtained in the 11th to 13th meetings with a percentage result of 90%.

Table 1. Summary of analysis under the conditions

No	Condition	A1	B	A2
1	Condition length	3	7	3
2	Estimated directional trend	$(=)$	$(+)$	$(=)$
3	Stability trend	Stable	Unstable	Stable
4	Data trace trend	$(=)$	$(+)$	$(=)$
5	Stability level and range	Variable 35% - 35%	Variable 50% - 95%	Variable 90% - 90%
6	Level of change	35 - 35 = 0 $(=)$	95 - 50 = 45 $(+)$	90 - 90 = 0 $(=)$

There are six aspects of analysis in the conditions, namely condition length, directional trend estimation, stability trend, data trace trend, stability and range levels, and change levels. A1 has a condition length of three sessions, B has seven sessions, and A2 has three sessions. The directional trend estimation for A1 is flat, B is upward, and A2 is flat. The stability trend for A1 is 100%, B is 28.57%, and A2 is 100%. The data trace trend for A1 is $(=)$, B is $(+)$, and A2 is $(=)$. The stability level and range for A1 is 35%–35%, B is 50%–95%, and A2 is 90%–90%. Finally, the change level for A1 is 0%, B is 45%, and A2 is 0%.

Table 2. Overall Conditions

No	Condition	A1	B	A2
1.	Number of variables changed		1	
2.	Changes in directional trends and their effects	$(=)$	$(+)$	$(=)$
3.	Changes in stability trends	Stable	Unstable	Stable
4.	Level of change			
	a. Condition B/A1		50%-35%=15%	
	b. Condition B/A2		90% - 50% =40%	
5.	Condition			
	a. Condition A1/B		0%	
	b. Condition A2/B		42,85%	

The table above shows that only one variable was changed, namely the ability to recognize *Hijaiyah* letters. The change in directional tendency and its effect on A1 is said to be unchanged, so the directional tendency is flat. In condition B, the directional tendency increases. Furthermore, in A2 there is no change, so the directional tendency returns to flat. The change in stability tendency in A1 is stable, B is unstable, and A2 is stable. The level of change in condition B/A1 is 15%, in condition B/A2 is 40%, while the overlap condition for A1/B is 0% and for A2/B is 42.85%. Based on this description, it can be concluded that changes in the variable of the ability to recognize *Hijaiyah* letters have different effects on the directional tendency, stability, and level of change in each condition. The results of the study show that intervention with sandpaper letters can significantly improve the ability to recognize *Hijaiyah* letters.

Children with mild intellectual disabilities have an IQ of 50–70, so they have difficulty understanding abstract concepts and find it easier to understand concrete things. The research subject, a fifth-grade student with the initials MA, had difficulty recognizing *Hijaiyah* letters and was unable to name and point to *Hijaiyah* letters correctly. *Hijaiyah* letters are the basic letters in Arabic, starting from *alif* and ending with *ya'*, totaling 28 single letters or 30 letters if the double letters *lam-alif* and *hamzah* are included as separate letters (Rambe & Widodo, 2023).

This study focuses on learning *Hijaiyah* letters such as ث (Tsa), خ (Kho), ذ (Dzal), ر (Ra), ز (Za), س (Sin), ش (Syin), ص (Shod), ض (Dhod), and ظ (Dzo) using sandpaper letters. This medium takes the form of letter cards made of sandpaper, designed so that children can feel the shape of *Hijaiyah* letters through touch. Sandpaper letters are educational tools that use the Montessori method so that children can recognize symbols or letter shapes by touching their surfaces (Yunidar et al., 2025).

The improvement in the ability to recognize *Hijaiyah* letters was influenced by the intervention provided through sandpaper letters. The findings showed that children were more focused and motivated in learning. This was supported by the advantages of sandpaper letters, which can help students build long-term memory through sensory experiences, improve fine motor skills, and make learning more interesting and motivating (Sriyanto & Hartati, 2022).

This study is also related to the principles of learning for children with mild intellectual disabilities, one of which is the principle of demonstration. This principle emphasizes that learning for children with intellectual disabilities must be conveyed concretely and visually so that they can more easily understand and remember the material. By touching the surface of the letters on the sandpaper letter media, children not only see the shape of the letters but also feel them through touch, making learning more meaningful.

The results of this study are in line with the research by Hidayah & Majidun (2022); Lubis et al (2024), which shows that children find it easier to remember the shapes and names of *Hijaiyah* letters. Research by Frolova et al (2023); Whitbread et al (2021) also shows a significant increase in the ability of children with mild intellectual disabilities to recognize vowels. Meanwhile, research by Nurjanah et al (2025) found that children with autism can recognize letters of the alphabet and increase their interest in learning. Based on this discussion, it can be concluded that sandpaper letters are effective in improving the ability to recognize *Hijaiyah* letters in children with mild intellectual disabilities.

CONCLUSION

This study aims to determine the effectiveness of sandpaper letters in improving the ability of children with mild intellectual disabilities to recognize *Hijaiyah* letters. Data analysis shows that children's ability to recognize *Hijaiyah* letters improved after being given intervention through the use of sandpaper letters. Thus, this medium is effective and can be used as an alternative learning tool for introducing *Hijaiyah* letters to children with mild intellectual disabilities. The limitation of this study lies in the absence of audio and movement elements in the media used. Nevertheless, the results of this study can be used as a reference for further research to develop more interactive and multisensory learning media.

ACKNOWLEDGEMENT

We would like to express our deepest gratitude to everyone who contributed to the success of this research.

DECLARATIONS

Author Contribution

Fegia Rahma Dyta, Arisul Mahdi: Writing-Preparation of original manuscript, Conceptualization, **Fathiyah Mohd Fakhruddin:** Methodology, **Irdamurni:** Visualization, Improve Content, **Endang Sri Handayani:** Improve Language.

AI Statement

The data and language usage in this article have been validated and verified by English language experts and no AI-generated sentences are included in this article.

Funding Statement

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Conflict of Interest

The authors declare that this research was conducted without any conflict of interest in the research.

Ethical Clearance

The place or location studied has agreed to conduct research and is willing if the results of this study are published.

Publisher's and Journal's Note

Islamic Studies and Development Center Universitas Negeri Padang as the publisher and Editor of Khalifa: Journal of Islamic Education that there is no conflict of interest towards this article publication.

REFERENCES

- Abdillah, H., & Metafisika, K. (2021). Pemanfaatan Sandpaper Letter Hijaiyah' Sebagai Media untuk Menghafal Huruf Hijaiyah di Taman Pendidikan Al-Qur'an Amanah, Kota Surabaya. *COMSERVA Indonesian Journal of Community Services and Development*, 1(6), 204–208. <https://doi.org/10.59141/comserva.v1i6.31>
- Ainun, S. N., & Martias Z. (2020). Meningkatkan Keterampilan Vokasional Membuat Kue Brownies Melalui Metode Pembelajaran Langsung bagi Anak Tunarungu. *Ranah Research: Journal of Multidisciplinary Research and Development*, 3(1), 25–29. <https://doi.org/10.38035/rrj.v3i1.320>
- Amran, S. R., & Suminar, D. R. (2020). Penerapan Teknik Total Task Presentation untuk Meningkatkan Keterampilan Bina Diri Berpakaian pada Disabilitas Intelektual Berat. *Psychophytan: Jurnal Psikologi*, 4(1), 17–26. <https://doi.org/10.36341/psi.v4i1.1241>
- Ar-Rasily, O. K., & Dewi, P. K. (2016). Faktor Yang Mempengaruhi Tingkat Pengetahuan Orang Tua Mengenai Kelainan Genetik Penyebab Disabilitas Intelektual. *Jurnal Kedokteran Diponegoro (Diponegoro Medical Journal)*, 5(4), 1422–1433. <https://doi.org/https://doi.org/10.14710/dmj.v5i4.15599>
- Buwani, N. M. P., & Priyanti, N. (2022). Presentasi Menggunakan Metode Montessori Three Period Lesson Di Tk Putra Pertiwi Ciputat Timur. *Yaa Bunayya: Jurnal Pendidikan Anak Usia Dini*, 6(2), 1–11. <https://doi.org/10.24853/yby.6.2.1-11>
- Ciptadi, F. R. (2019). Pengaruh Penggunaan Media Sandpaper Letter Terhadap Kemampuan Mengenal Huruf Anak Usia 4-5 Tahun Di Taman Kanak-Kanak Islam Budi Mulia Padang. *Pedagogi: Jurnal Anak Usia Dini Dan Pendidikan Anak Usia Dini*, 5(2), 1. <https://doi.org/10.30651/pedagogi.v5i2.2754>
- Dyta, F. R., Mahdi, A., Irdamurni, Zulmiyetri, & Handayani, E. S. (2025). Efektivitas Media Sandpaper Letter Untuk Meningkatkan Kemampuan Mengenal Huruf Hijaiyah Pada Anak Disabilitas Intelektual. *Indonesian Journal Of Education*, 2(1),

- 229–233. <https://doi.org/10.71417/ije.v2i1.506>
- Egel, A. L., Barthold, C. H., Kouo, J. L., & Maajeeny, F. S. (2018). Single-Subject Design and Analysis. In *The Reviewer's Guide to Quantitative Methods in the Social Sciences* (pp. 417–433). Routledge. <https://doi.org/10.4324/9781315755649-31>
- Frolova, O., Nikolaev, A., Grave, P., & Lyakso, E. (2023). Speech Features of Children with Mild Intellectual Disabilities. *International Conference on Multimodal Interaction*, 45(4), 406–413. <https://doi.org/10.1145/3610661.3616236>
- Helmalia, R., Suzanti, L., & Widjayatri, R. D. (2024). Pengenalan Huruf Hijaiyah Melalui Metode Tilawati bagi Anak Usia 5-6 Tahun. *Aulad: Journal on Early Childhood*, 7(1), 199–209. <https://doi.org/10.31004/aulad.v7i1.634>
- Hidayah, M., & Majidun, A. (2022). Improvement of Knowledge of Hijaiyah Letters through The Media of Hijaiyah Letters Card. *Khidmatan*, 10–19. <https://doi.org/10.61136/khid.v2i1.27>
- Kazdin, A. E. (2019). Single-case experimental designs. Evaluating interventions in research and clinical practice. *Behaviour Research and Therapy*, 117, 3–17. <https://doi.org/10.1016/j.brat.2018.11.015>
- Kazdin, A. E. (2021). Single-case experimental designs: Characteristics, changes, and challenges. *Journal of the Experimental Analysis of Behavior*, 115(1), 56–85. <https://doi.org/10.1002/jeab.638>
- Komalasari, M., & Yakubu, A. B. (2023). Implementation of Student Character Formation Through Islamic Religious Education. *At-Tadzkir: Islamic Education Journal*, 2(1), 52–64. <https://doi.org/10.59373/attadzkir.v2i1.16>
- Laida, A., & Sari, D. D. (2023). Develop Early Literacy Skills through Cooperative Learning Models, Montessori Game Methods and Sandpaper Letters Media. *E-CHIEF Journal*, 3(1), 18008–18012. <https://doi.org/10.20527/e-chief.v3i1.8628>
- Lubis, H. A., Nur, K., & Mukhlis, M. (2024). Developing Recognizing Ability of Hijaiyah Letters Through the Hijaiyah Letter Tree Educational Game Tool at RA Asyarif Sibanggor Jae. *Kepompong Children Centre Journal*, 2(1). <https://doi.org/10.62031/q51xat90>
- Mindani, M., Satrisno, H., & Asvio, N. (2022). Pedagogic competence of teachers in religious moderation-based islamic education for disabled students. *JPPi (Jurnal Penelitian Pendidikan Indonesia)*, 8(4), 1268. <https://doi.org/10.29210/020232158>
- Nurjanah, T., Wida Rachmiati, & Imas Masto'ah. (2025). The Influence of Sandpaper Letters Media to Improve the Letter Recognition Skills of Children with Mild Mental Disability. *COMPETITIVE: Journal of Education*, 4(1), 15–21. <https://doi.org/10.58355/competitive.v4i1.134>
- Rambe, M. S., & Widodo, H. (2023). Pengembangan Materi Pai Dalam Penguatan Baca Tulis Al-Qur'an Di Smp Piri 2 Yogyakarta. *AT-TA'DIB: JURNAL ILMIAH PRODI PENDIDIKAN AGAMA ISLAM*, 107–119. <https://doi.org/10.47498/tadib.v15i1.1773>
- Sari, W. S. M., Warnandi, N., Heryati, E., & Susetyo, B. (2024). Media Tilawati dalam Meningkatkan Kemampuan Membaca Permulaan Al-Quran pada Siswa Tunanetra. *JIIP - Jurnal Ilmiah Ilmu Pendidikan*, 7(7), 6253–6259. <https://doi.org/10.54371/jiip.v7i7.4486>
- Sriyanto, A., & Hartati, S. (2022). Perkembangan dan Ciri-Ciri Perkembangan pada Anak Usia Dini. *Journal Fascho: Jurusan Pendidikan*, 2(1), 28–32. <https://doi.org/https://doi.org/10.63353/journalfascho.v2i1.39>
- Tafonao, T. (2018). Peranan Media Pembelajaran dalam Meningkatkan Minat Belajar Mahasiswa. *Jurnal Komunikasi Pendidikan*, 2(2), 103. <https://doi.org/10.32585/jkp.v2i2.113>

- Whitbread, K. M., Knapp, S. L., & Bengtson, M. (2021). Teaching Foundational Reading Skills to Students With Intellectual Disabilities. *TEACHING Exceptional Children*, 53(6), 424–432. <https://doi.org/10.1177/0040059920976674>
- Widiastuti, N. L. G. K., & Winaya, I. M. A. (2019a). Prinsip Khusus dan Jenis Layanan Pendidikan bagi Anak Tunagrahita. *Jurnal Santiaji Pendidikan (JSP)*, 9(2), 116–126. <https://doi.org/10.36733/jsp.v9i2.392>
- Widiastuti, N. L. G. K., & Winaya, I. M. A. (2019b). Prinsip Khusus Dan Jenis Layanan Pendidikan Bagi Anak Tunagrahita. *Jurnal Santiaji Pendidikan (JSP)*, 9(2), 116–126. <https://doi.org/10.36733/jsp.v9i2.392>
- Widodo, S. A., Prihatininggih, A., & Taufiq, I. (2021). Single subject research: use of interactive video in children with developmental disabilities with dyscalculia to introduce natural numbers. *Participatory Educational Research*, 8(2), 94–108. <https://doi.org/10.17275/per.21.31.8.2>
- Yogantari, L. P. W., Yoenanto, N. H., & Marhaeni, A. (2023). Meningkatkan Kemampuan Membaca Permulaan Melalui Metode Mnemonik dan Orton-Gillingham pada Anak dengan Disabilitas Intelektual. *Jurnal Diversita*, 9(2), 167–175. <https://doi.org/10.31289/diversita.v9i2.8225>
- Yulita, M., Budi, S., Asnah, M. B., Zulmiyetri, Z., & Safaruddin, S. (2023). Efektivitas Penggunaan Aplikasi Secil Dalam Meningkatkan Kemampuan Mengenal Huruf Abjad Pada Anak Disleksia. *Jurnal Pendidikan*, 32(1), 139–144. <https://doi.org/10.32585/jp.v32i1.3569>
- Yunidar, D., Bahri, N. F., Ramawisari, I., & Putri, S. A. (2025). Analyzing the design of montessori-based media to introduce letters and numbers. *Jurnal Desain*, 12(2), 546. <https://doi.org/10.30998/jd.v12i2.21972>
- Zulkifli, H., Rashid, S. M. M., Mohamed, S., Toran, H., Raus, N. M., & Suratman, M. N. (2022). Challenges and Elements Needed for Children with Learning Disabilities in Teaching and Learning the Quran. *Children*, 9(10), 1469. <https://doi.org/10.3390/children9101469>

Copyright holder :

© Dyta, F. R., Mahdi, A., Irdamurni, I., Fakhruddin, F. M., Handayani, E. S. (2024)

First publication right:

Khalifa: Journal of Islamic Education

This article is licensed under:

CC-BY-SA