Vol. 7, No. 1, 2026, pp. 84-93
DOI: https://doi.org/10.29210/991920

Contents lists available at Elora Center

Lentera Negeri

Journal homepage: https://lentera.eloracenter.org/lentera

Development of a minangkabau culture-based educational game to improve children's reading readiness

Kaniska Kristianti*), Delfi Eliza, Farida Mayar, Setiyo Utoyo
Universitas Negeri Padang, Padang, Indonesia

Article Info

Article history:
Received Mar 11th, 2026
Revised Apr 20th, 2026
Accepted May 16th, 2026

Keyword:
Children's reading readiness
Educational game
Minangkabau culture
kindergarten

ABSTRACT

This study is motivated by the need to stimulate early childhood learning through culturally grounded educational games to improve reading readiness in kindergarten settings. The introduction of reading concepts through culturally familiar and engaging media is believed to support early literacy development in a more meaningful way. This study employed a Research and Development (R&D) methodology using the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation). The research subjects were Grade B students of TK Sani Ashilla, Padang City. A small group trial involved 10 children in one class, and a field trial involved 23 children across two classes. The findings indicate that the educational game product received a content expert validation score of 100% (Very Valid), a Minangkabau cultural expert validation score of 87% (Very Valid), and a media expert validation score of 73% (Valid). The practicality test yielded a score of 95.5% (Very Practical), while the effectiveness test yielded a score of 88.52% (Effective). Based on these results, the Minangkabau culture-based educational game is declared suitable for use as an instructional medium for early childhood reading readiness.

Corresponding Author:
Kaniska Kristianti,
kaniskaniska1986@gmail.com

Introduction

Early childhood children in kindergarten are generally aged between 4 and 6 years. This developmental period is widely recognised as the golden age, a phase in which growth and development occur at a remarkably rapid pace. Young children require optimal stimulation because both processes unfold in a relatively short timeframe (Delfia & N., 2019). Early childhood encompasses individuals aged 0 to 8 years who are in a critical phase of growth and development. Children aged 5 to 6 years are in the psychosocial stage of industry versus inferiority, during which they begin to develop self-confidence and strive to meet their personal needs independently (Kandula et al., 2020). In accordance with Law Number 20 of 2003 on the National Education System, Article 1, Paragraph 14, early childhood education is defined as a developmental effort from birth to six years of age, carried out through learning stimulation to support physical and spiritual growth and to prepare children for further education (Delfia & N., 2019).

The literacy challenges of the 21st century demand that reading readiness be cultivated from early childhood. This constitutes an essential component that must be developed within the national education curriculum. However, reading competencies among Indonesian students remain relatively low, indicating that not all children have developed reading skills adequately. Introducing children to reading is an obligatory process that should begin early, encompassing the recognition of letter symbols, their shapes, sounds, and the ability to read simple words. Instilling reading readiness from an early age has a significant impact on

children's long-term academic success (Mursid, 2017). Educational stimulation provided through enjoyable literacy activities can encourage children's readiness to recognise symbols, sounds, and words more effectively.

To support the reading learning process, instructional media capable of bridging children's conceptual understanding and information-processing skills are essential. Media and learning platforms play a pivotal role in supporting the educational process for early childhood (Latifah et al., 2022). The integration of technology-based learning media has increasingly become an effective approach to improving children's engagement and literacy development. Educational media that incorporate interactive elements, animations, and game-based learning can enhance children's motivation and sustain their attention during the learning process (Aulia, 2024). In addition, educational games provide opportunities for children to learn in a more enjoyable and meaningful manner while simultaneously developing cognitive, linguistic, and creative abilities (Dere, 2019; Zatrahadi et al., 2021).

The 2013 Curriculum explicitly emphasises the importance of local cultural values in early childhood education as a means of cultivating pride in national identity from an early age. Introducing culture to children from an early age instils an appreciation for diversity and ensures that cultural values and national norms are transmitted to the next generation. In this context, Minangkabau culture, as a local heritage of West Sumatra, provides a highly relevant foundation for integration into early childhood instructional media (Diradjo, 2013). Traditional stories, local foods, customs, and symbols embedded within learning activities can strengthen children's familiarity with their cultural environment while simultaneously enhancing literacy development (Eliza, 2017; Marini, 2020).

Among the instructional media favoured by young children are educational games, a form of multimedia that integrates entertainment with learning objectives. Educational games offer several advantages over conventional teaching methods, including the visualisation of real-world problems and animated content that facilitates longer retention of learning material (Latifah et al., 2022). An educational game is fundamentally an enjoyable and engaging activity, making it a highly promising vehicle for effective early childhood learning (Rachmawati & Kurniati, 2019). The use of technology-supported educational games can create interactive learning environments that encourage children to actively participate in literacy activities while fostering creativity, imagination, and problem-solving abilities (Purwanti & Zulkarnaen, 2023). Against this background, the present study aims to develop a Minangkabau culture-based educational game that is valid, practical, and effective as an instructional medium for reading readiness in early childhood at TK Sani Ashilla, Padang City.

Method

Research Design

This study employed a Research and Development (R&D) approach using the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation). The ADDIE model was selected due to its systematic and sequential nature, enabling each development stage to be implemented in a structured and measurable manner to produce an effective and efficient product (Branch, 2009). The model also allows for formative evaluation at each phase, ensuring that revisions are carried out continuously before the product is finalised. The stages of this development model are illustrated in Figure 1.

Figure 1. Stages of the ADDIE Development Model

ADDIE Development Stages

The first phase is Analysis. During this phase, learning needs were identified through field observations at TK Sani Ashilla, Padang City. The analysis revealed that children required more engaging, contextually

relevant, and culturally grounded reading readiness stimulation. Curriculum analysis was also conducted to ensure the product's alignment with early childhood developmental outcomes stipulated in Permendikbud Number 137 of 2014.

The second phase is Design. Based on the needs analysis findings, the conceptual design of the Minangkabau culture-based educational game was developed. This encompassed early literacy components such as letter recognition, phoneme-sound correspondence, and culturally embedded vocabulary. At this stage, validation instruments, practicality instruments, and effectiveness instruments were also designed as tools for assessing product feasibility. The third phase is Development. The educational game product was developed in accordance with the design blueprint. The resulting product was subsequently validated by three categories of experts: a content expert, a Minangkabau cultural expert, and a media expert, using the prepared validation instruments. Product revisions were carried out based on expert feedback prior to the trial phase.

The fourth phase is Implementation. The revised product was implemented through two trial stages: a small group trial involving 10 children in one class, and a field trial involving 23 children across two classes at TK Sani Ashilla, Padang City. Teachers were also provided with an instructional module as a guide for integrating the educational game into intracurricular activities. The fifth phase is Evaluation. Formative evaluation was conducted at each stage of the development process. At the conclusion of implementation, a post-test instrument was administered to measure the effectiveness of the educational game on children's reading readiness, and the results served as the basis for the final revision and product refinement.

Research Subjects

The research subjects were Grade B students of TK Sani Ashilla, Padang City. The small group trial involved 10 children in one class, while the field trial involved 23 children across two classes. The practicality test was conducted with educators at TK Semen Padang as product end-users.

Research Instruments

The research instruments comprised three types: (1) validation sheets for the content expert, cultural expert, and media expert; (2) a practicality questionnaire completed by educators; and (3) an effectiveness assessment instrument used to observe children's competencies before and after using the educational game.

Content Expert Validation Instrument

Content expert validation was conducted to assess the product's suitability in terms of content alignment with early childhood developmental standards, presentation aspects, and content delivery techniques. The validator was a lecturer at Universitas Negeri Padang with expertise in instructional media and early childhood education. The instrument grid is presented in Table 1.

Table 1. Content Expert Validation Instrument Grid for the Educational Game

Aspect	No.	Indicator	Items
Content Feasibility	1	The Minangkabau Culture-Based Educational Game is aligned with school needs	1
	2	The content of the Educational Game is easy to understand	1
	3	Content is aligned with learning objectives	1
Presentation Feasibility	4	Presentation techniques	2
	5	Presentation support	2
	6	Coherence and continuity of content flow	2

Media Expert Validation Instrument

The media expert validation instrument comprised two main components: the language aspect and the media design aspect. The instrument grid is presented in Table 2.

Table 2. Media Expert Validation Instrument Grid for the Educational Game

Aspect	No.	Indicator	Items
Language Aspect	1	Language used is appropriate for early childhood	1
	2	Language supports ease of understanding the content flow	1
Media Device Aspect	3	The educational game features innovation in instructional media	1
	4	Application size is appropriate	1
	5	The educational game media is easy to use	1
	6	The educational game media can be operated independently	1
Visual Display Aspect	7	Game presentation is systematic from the cover onward	1
	8	Cover design and game content are visually attractive	1

Effectiveness Instrument

The effectiveness instrument was used to assess children's competencies before and after the use of the Minangkabau culture-based educational game. The instrument was designed around five key variables reflecting early childhood reading readiness indicators, as presented in Table 3.

Table 3. Effectiveness Instrument Grid for the Educational Game in Improving Reading Readiness

No.	Variable	Indicator	Assessment Item
1.	Reading Interest	Children show enthusiasm while playing the game	Children demonstrate high interest when playing the educational game
		Children are motivated to attempt reading after playing the game	Children recognise and name at least 3 letters in the game
2.	Letter and Phoneme Recognition	Children are able to recognise letters in the game	Children demonstrate understanding of Minangkabau cultural elements
		Children are able to connect sounds and letters	Children are able to match letters with corresponding phoneme sounds
3.	Introduction to Local Minangkabau Culture	Introduction to Minangkabau traditional foods	Children are more active in reading learning through the game
		Children are able to name Minangkabau traditional foods	Children recognise and name at least 3 cultural elements in the game
4.	Early Reading Readiness	Children can arrange letters into simple syllables or words	Children can name at least 3 letters in the game
		Children understand reading direction (left to right)	Children demonstrate understanding of Minangkabau cultural elements and traditional foods

5.	Instructional Media Effectiveness	Children are more focused when learning with the game compared to conventional methods	Children are able to match letters with corresponding phoneme sounds
		Children feel that learning has become more enjoyable	Children are more active in reading learning with the game compared to conventional methods

Data Analysis Technique

Data analysis employed both qualitative and quantitative techniques in an integrated manner. Qualitative data were obtained from expert feedback during the validation phase, including input from the content expert, cultural expert, and media expert, which subsequently served as the basis for product revision. Quantitative data in the form of rating scores obtained through the research instruments during the trial phases were analysed using descriptive percentage statistics. Product validity was categorised based on the following percentage score criteria: 81-100% (Very Valid), 61-80% (Valid), 41-60% (Sufficiently Valid), 21-40% (Less Valid), and 0-20% (Invalid) (Rindrayani et al., 2025). Practicality and effectiveness were categorised using comparable criteria adjusted to their respective assessment contexts.

Results and Discussions

The feasibility assessment of the Minangkabau culture-based educational game product was conducted by three categories of experts. Figure 1 presents a summary of the percentage scores across all validation aspects, including a comparison against the Very Valid threshold (>=81%).

Figure 2. Summary of Validation Results for the Minangkabau Culture-Based Educational Game

As shown in Figure 2, all validation aspects exceeded the Very Valid threshold of 81%, with the exception of the overall media expert validation score, which fell within the Valid category (73%). These results indicate that the product broadly meets the established academic feasibility standards.

Content Expert Validation

The content expert validation results indicate that the product received a score of 100%, placing it in the Very Valid category and confirming that it is suitable for use without further revision. This finding demonstrates that the instructional content presented in the educational game is well-aligned with the learning objectives and developmental needs of early childhood learners.

Minangkabau Cultural Expert Validation

The assessment of cultural content feasibility was conducted by a Minangkabau cultural expert. The frequency distribution and percentage of validation results are presented in Table 4 and Figure 2.

Table 4. Data Analysis of Content Feasibility Assessment by the Minangkabau Cultural Expert

Category	Score	Frequency	Percentage
Very Valid	5	3	50%
Valid	4	2	35%
Less Valid	3	1	15%
Invalid	2	0	0%
Very Invalid	1	0	0%
Total		**6**	**100%**

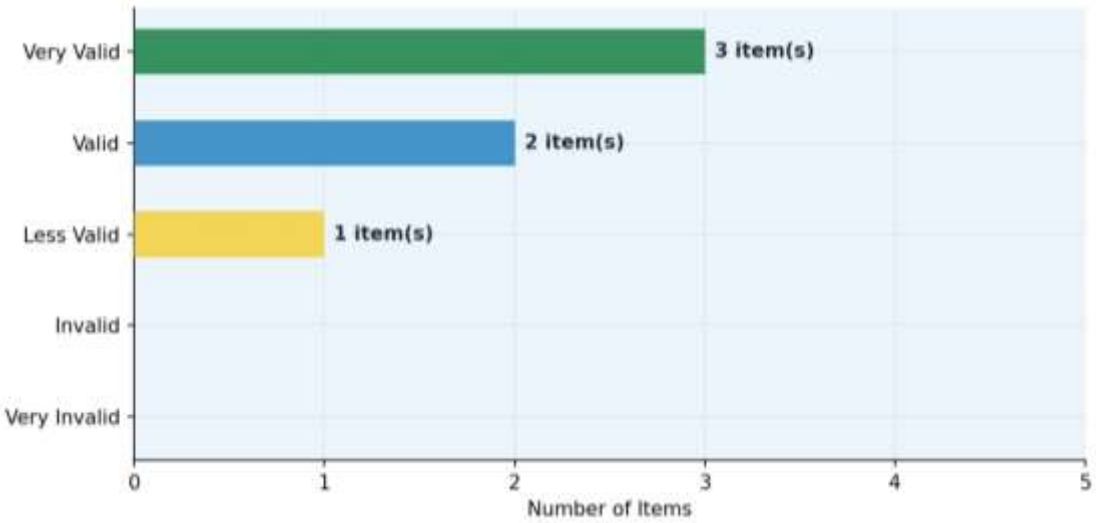

Figure 3. Distribution of Minangkabau Cultural Expert Assessment by Item Frequency

As shown in Table 4 and Figure 3, 3 items (50%) were rated Very Valid, 2 items (35%) were rated Valid, and 1 item (15%) was rated Less Valid, with no items falling in the Invalid or Very Invalid categories. Overall, the product received a percentage score of 87%, categorised as Very Valid, indicating that the Minangkabau cultural content has been accurately and representatively incorporated into the educational game as an early childhood instructional medium.

Media Expert Validation - Language Aspect

The language aspect of the educational game product was assessed by the media expert. The distribution of results is presented in Table 5.

Table 5. Data Analysis of Language Aspect Assessment by the Media Expert

Category	Score	Frequency	Percentage
Very Valid	5	14	100%
Valid	4	0	0%
Less Valid	3	0	0%
Invalid	2	0	0%
Very Invalid	1	0	0%

Total	**14**	**100%**

As shown in Table 5, all 14 assessment items (100%) received a Very Valid rating, with no items rated Less Valid or below. These results confirm that the language employed in the educational game is appropriate for the linguistic developmental characteristics of early childhood learners and facilitates comprehension of the instructional content flow (Vanden Bempt et al., 2022; Cheng et al., 2024).

Media Expert Validation - Cultural Aspect

The cultural aspect as a dimension of the educational game media was assessed by the media expert. The distribution of results is presented in Table 6 and Figure 4.

Table 6. Data Analysis of Cultural Aspect Assessment by the Media Expert

Category	Score	Frequency	Percentage
Very Valid	5	5	90%
Valid	4	1	10%
Less Valid	3	0	0%
Invalid	2	0	0%
Very Invalid	1	0	0%
Total		**6**	**100%**

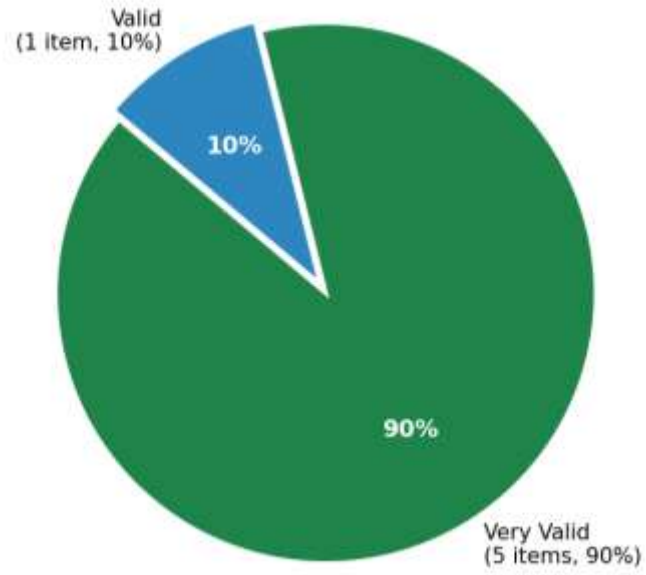

Figure 4. Media Expert Assessment Composition - Cultural Aspect

As shown in Table 6 and Figure 4, 5 items (90%) were rated Very Valid and 1 item (10%) was rated Valid, with no items falling below the Valid category. These findings confirm that the cultural representation within the educational game media meets the established feasibility standards (Ishaq et al., 2022; Puspitasari & Da Ary, 2024).

Practicality and Effectiveness Test

The practicality test was conducted with educators at TK Semen Padang as product end-users. The effectiveness test was carried out with 15 children taking turns in groups during the field trial phase. The comparative results of both tests are presented in Figure 5.

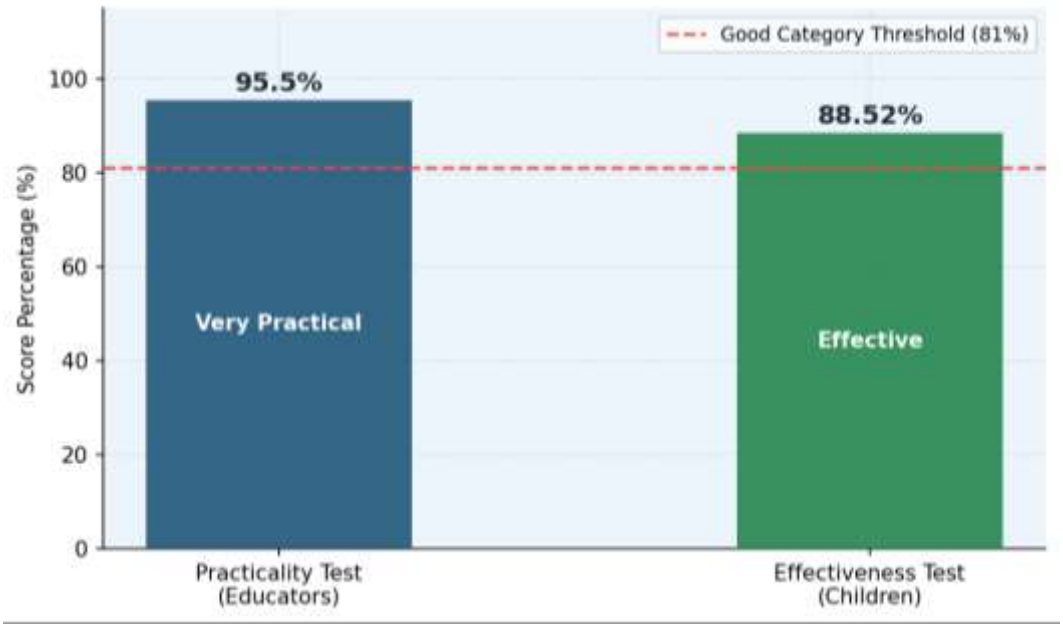

Figure 5. Comparison of Practicality and Effectiveness Test Scores

As shown in Figure 5, the practicality test yielded a score of 95.5% (Very Practical), while the effectiveness test yielded a score of 88.52% (Effective). Both scores surpassed the good category threshold of 81%, indicating that the product is not only easily operable by educators but also empirically proven to enhance early childhood reading readiness. The Minangkabau culture-based educational game developed in this study is an interactive medium designed with rich local cultural content (Aldi & Khairanis, 2025; Panjaitan et al., 2025). Reading readiness in this research context encompasses the ability to recognise letters, understand phoneme sounds, and build initial vocabulary (Ngura et al., 2025; Chen et al., 2022). By integrating cultural elements familiar to Minangkabau children, the learning process becomes more contextual, enjoyable, and meaningful. Children who are provided with engaging learning experiences tend to develop higher intrinsic motivation, which in turn contributes to sustained improvement in early literacy competencies.

Conclusions

This developmental research has produced a Minangkabau culture-based educational game designed to support early childhood reading readiness learning at TK Sani Ashilla, Padang City. The product was developed through the five stages of the ADDIE model and underwent validation by a content expert, a Minangkabau cultural expert, and a media expert, as well as small group and field trial testing. Based on the overall findings of the development and testing process, the following conclusions are drawn: First, the content expert validation yielded a score of 100% (Very Valid), indicating full alignment of the instructional content with early childhood learning objectives. Second, the Minangkabau cultural expert validation yielded a score of 87% (Very Valid), confirming that the local cultural content has been accurately represented. Third, the media expert validation yielded a score of 73% (Valid), demonstrating that the media design meets the feasibility standards for early childhood instructional tools. Fourth, the practicality test yielded a score of 95.5% (Very Practical), confirming that the product can be seamlessly integrated into daily classroom activities. Fifth, the effectiveness test yielded a score of 88.52% (Effective), providing empirical evidence that the Minangkabau culture-based educational game successfully enhances early childhood reading readiness. In conclusion, the Minangkabau culture-based educational game developed in this study is feasible and effective as an instructional medium for early childhood reading readiness, and represents a promising innovative, culturally contextual, and engaging alternative to conventional learning approaches in kindergarten settings.

Acknowledgments

The authors would like to express their deepest gratitude to all individuals and institutions who contributed to the successful completion of this research. Special appreciation is extended to the participants and their legal guardians for their willingness, cooperation, and valuable contributions throughout the research process. The authors also sincerely thank colleagues, academic supervisors, and institutional partners who provided guidance, support, and constructive feedback during the preparation of this study. Their encouragement and assistance have been invaluable in the completion of this manuscript.

References

Aldi, M., & Khairanis, R. (2025). History and culture of Minangkabau in educational perspective: integrating traditional values for character development. Jurnal Penelitian Ilmu-Ilmu Sosial, 6(1), 52-67.

Aulia, D. (2024). E-book integrated video tutoring with symbolic modelling techniques to increase the self-control of bullying perpetrators. Bisma The Journal of Counseling, 8(1), 27–35. https://doi.org/10.23887/bisma.v8i1.84341

Branch, R. M. (2009). Instructional Design: The ADDIE Approach. Springer New York Dordrecht Heidelberg London.

Chen, M. J., Yin, G. J., Goh, H. S., Soo, R. S., Nor, R., Harun, S. R., ... & Wong, W. L. (2022). Theoretical review of phonics instruction among EFL beginner-level readers in China. International Journal of Academic Research in Progressive Education and Development, 11(2), 449-466.

Cheng, Y. W., Wang, Y., Cheng, Y. J., & Chen, N. S. (2024). The impact of learning support facilitated by a robot and IoT-based tangible objects on children's game-based language learning. Computer Assisted Language Learning, 37(7), 2142-2173.

Delfia, E. & N. (2019). Profesionalisme Guru Pendidikan Anak Usia Dini dalam Merancang Pembelajaran. Αγαη, 8(5), 55.

Dere, Z. (2019). Investigating the creativity of children in early childhood education institutions. Universal Journal of Educational Research, 7(3), 652–658. https://doi.org/10.13189/ujer.2019.070302

Diradjo, I. D. S. (2013). Tambo Alam Minangkabau Tatanan Adat Warisan Nenek Moyang Orang Minang. Kristal Multimedia.

Eliza, D. (2017). Pengembangan Model Pembelajaran Karakter Berbasis Cerita Tradisional Minangkabau Untuk Anak Usia Dini. Pedagogik, 3, 153–163.

Ishaq, K., Rosdi, F., Zin, N. A. M., & Abid, A. (2022). Serious game design model for language learning in the cultural context. Education and Information Technologies, 27(7), 9317-9355.

Kandula, T., Park, S. B., Carey, K. A., Lin, C. S., & Farrar, M. A. (2020). Clinical Neurophysiology Peripheral nerve maturation and excitability properties from early childhood: Comparison of motor and sensory nerves. Clinical Neurophysiology, 131(10), 2452–2459. https://doi.org/10.1016/j.clinph.2020.06.035

Latifah, A., Tresnawati, D., & Sanjaya, H. (2022). Media Pembelajaran Menggunakan Teknologi Augmented Reality untuk Tanaman Daun Herbal. Jurnal Algoritma, 19(2), 515–526.

Marini, T. (2020). A Picture Story Book Based on Minangkabau Culture for Religion and Moral Early Childhood. 2nd International Conference on Social Science and Character Educations (ICoSSCE 2019), 283–285.

Mursid. (2017). Pengembangan Pembelajaran PAUD. PT Remaja Rosdakarya.

Ngura, E., Fono, Y. M., & Wea, H. R. (2025). Optimizing Children's Early Literacy Through Contextual Implementation of The Phonics Method in Rural Early Childhood Institutions. EDUKASIA Jurnal Pendidikan dan Pembelajaran, 6(2), 819-830.

Panjaitan, D. J., Firmansyah, F., Sapta, A., Aprilia, R., & Siregar, A. F. P. (2025). Development Of Mathematics Learning Using Batak Culture-Based Media In Indonesia. Jurnal Ilmiah Ilmu Terapan Universitas Jambi, 9(3), 1249-1261.

Purwanti, P., & Zulkarnaen, Z. (2023). Media pembelajaran berbahan loose part berbasis STEAM dapat membangun merdeka belajar pada anak usia dini. Pedagogi: Jurnal Ilmu Pendidikan, 23(1), 38–47. https://doi.org/10.24036/pedagogi.v23i1.1469

Puspitasari, D. S., & Da Ary, D. (2024). Cultural Monopoly Game: Designing and testing game-based media for intangible cultural heritage learning in elementary school. Jurnal Pendidikan Progresif, 14(3), 1859-1872.

Rachmawati, Y., & Kurniati, E. (2019). Strategi pengembangan kreativitas pada anak usia taman kanak-kanak. Penerbit Kencana.

Rindrayani, S. R., Rustiyana, R., Judijanto, L., Abdullah, G., & Ardiyanti, A. D. (2025). Metode Penelitian dan Pengembangan: R&D Research and Development. PT. Sonpedia Publishing Indonesia.

Vanden Bempt, F., Economou, M., Dehairs, W., Vandermosten, M., Wouters, J., Ghesquière, P., & Vanderauwera, J. (2022). Feasibility, enjoyment, and language comprehension impact of a Tablet- and GameFlow-based story-listening game for kindergarteners: methodological and mixed methods study. JMIR serious games, 10(1), e34698.

Zatrahadi, M. F., Darmawati, D., & Yusra, N. N. (2021). The effect of online game addiction on adjustment social in adolescents. Indonesian Journal of Creative Counseling, 1(1), 15-19.