



THE EFFECT OF LETTER-TREE MEDIA ON THE ABILITY TO ARRANGE LETTERS INTO WORDS AMONG CHILDREN AGED 5–6 YEARS IN GROUP B AT PAUD HARAPAN BUNDA

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Abstract

Background: The ability to arrange letters into words is an important component of early literacy development in early childhood. However, children aged 5–6 years may experience difficulties recognizing, selecting, and sequencing letters to form simple words. Therefore, engaging, concrete, and developmentally appropriate learning media are needed to support this ability. **Objective:** This study aimed to examine the effect of letter-tree media on the ability to arrange letters into words among children aged 5–6 years in Group B at PAUD Harapan Bunda. **Method:** This study employed a quantitative approach using a pre-experimental one-group pretest-posttest design. The participants were 10 children aged 5–6 years in Group B at PAUD Harapan Bunda. Data were collected through tests of the ability to arrange letters into words, observations, and documentation. The data were analyzed using descriptive statistics and a paired-samples *t*-test to examine differences in scores before and after the use of letter-tree media. **Results:** The findings showed that the mean score for the ability to arrange letters into words increased from 44.00 at pretest to 81.10 at posttest, representing a mean increase of 37.10 points. The paired-samples *t*-test revealed a statistically significant difference between pretest and posttest scores, $t(9) = 5.908$, $p < .001$. These findings indicate that children's ability to arrange letters into words improved significantly following the use of letter-tree media. **Novelty:** This study provides preliminary empirical evidence on the use of letter-tree media specifically to stimulate children's ability to arrange letters into words, rather than focusing solely on recognizing or naming individual letters. **Conclusion:** Letter-tree media may serve as an alternative instructional tool to support the development of children's ability to arrange letters into words. Its use can provide concrete and interactive learning experiences for young children. However, because this study did not include a control group and involved only 10 children, the findings should be interpreted cautiously and cannot be generalized broadly.

Keywords: Letter-Tree Media; Letter Sequencing; Early Literacy; Early Childhood; Early Childhood Education.

INTRODUCTION

Early childhood education is an important stage for providing stimulation across various aspects of child development, including language development and emergent literacy. At the age of 5–6 years, children begin to develop the ability to recognize letter symbols, understand the relationship between letters and sounds, and combine letters to form simple words. These abilities provide a foundation for reading and writing development at subsequent educational levels. Therefore, learning activities should be designed to match children's developmental characteristics through enjoyable, concrete, and meaningful experiences (Anggita et al., 2023).

The ability to arrange letters into words is part of emergent literacy and requires letter recognition, phonological awareness, and the ability to sequence letters correctly. Children need to do more than identify individual letters; they also need opportunities to combine letters to form meaningful words. Munifah et al. (2024) found that letter-card media can help children recognize and arrange letters to form simple words. This finding highlights the importance of learning activities that allow children to manipulate letters directly.

In learning activities, instructional media play an important role in connecting learning materials with children's real-life experiences. Engaging media can help maintain attention, increase participation, and provide opportunities for learning through observation and hands-on activities. Yakin's (2025) study on the development of tree-chart media reported high validity and practicality ratings for supporting letter-recognition activities. This finding suggests that visual media designed to meet children's learning needs have the potential to support emergent literacy development.

One type of media that can be used to support emergent literacy is the letter tree. This medium takes the form of a tree with letters attached to specific sections, allowing children to select, move, and arrange letters to form target words. Through these activities, children not only observe letter symbols but also actively participate in the word-building process. Slow et al. (2023) reported improvements in children's letter-recognition skills through the use of letter-tree media. These findings indicate that letter-tree media may be relevant for stimulating children's foundational literacy skills.

Rosiana (2021) also found that letter-tree games influenced letter-recognition skills among children aged 5–6 years. The findings indicated that play-based media can make letter-learning activities more engaging. In addition, Nurlaita et al. (2022) developed letter-tree media to stimulate letter-recognition skills among Group B children and reported that the developed media were suitable for use. These studies provide further justification for examining letter-tree media in early childhood language learning.

Nevertheless, letter recognition is not the same as the ability to arrange letters into words. Letter recognition focuses on identifying symbols, whereas word construction requires children to select appropriate letters, arrange them in the correct sequence, and form accurate words. Studies by Khoirunisa (2020) and Anggita et al. (2023) have examined the use of letter-tree or smart-tree media

to support emergent literacy development. However, the effect of letter-tree media on children's ability to arrange letters into words requires more specific investigation, taking into account children's developmental characteristics and the learning context.

Based on this background, the use of letter-tree media needs to be examined in Group B at PAUD Harapan Bunda. According to the preliminary observations described in the research proposal, letter-recognition activities need to be further optimized through instructional media that encourage active child participation. This situation provides a basis for investigating whether letter-tree media can help children arrange letters into simple words accurately. This study is expected to provide empirical evidence regarding the effect of letter-tree media on the ability of children aged 5–6 years to arrange letters into words.

Therefore, investigating the effect of letter-tree media on children's ability to arrange letters into words is important for expanding research on emergent literacy in early childhood education. This study focuses on children's ability to select letters, arrange them in the correct sequence, and form simple words using letter-tree media. The findings are expected to inform teachers' selection of developmentally appropriate instructional media and contribute to the improvement of language-learning practices at PAUD Harapan Bunda.

METHODS

This study employed a quantitative approach using a pre-experimental design with a one-group pretest–posttest design. The quantitative approach was selected because the study aimed to examine the effect of letter-tree media on the ability of children aged 5–6 years to arrange letters into words in Group B at PAUD Harapan Bunda. The design involved one group of children who completed an initial assessment (pretest), received an intervention using letter-tree media (treatment), and completed a final assessment (posttest). This design enabled the researchers to compare the children's abilities before and after the intervention.

The research design is illustrated as follows:

$$O_1 \text{ X } O_2$$

Where:

(O₁) = Assessment of children's ability to arrange letters into words before the intervention (pretest).

(X) = Intervention using letter-tree media.

(O₂) = Assessment of children's ability to arrange letters into words after the intervention (posttest).

The independent variable was letter-tree media, while the dependent variable was children's ability to arrange letters into words. Letter-tree media is a visual instructional medium designed in the shape of a tree and equipped with letters that children can select and arrange to form simple words. Meanwhile, the ability to arrange letters into words was defined as children's ability to identify the

required letters, sequence them correctly, and form meaningful simple words. This ability was measured using an assessment instrument developed based on the study's indicators.

The study population consisted of all children enrolled at PAUD Harapan Bunda, while the sample included all children aged 5–6 years in Group B who met the study criteria. If all members of the group were included, a total sampling technique was used. Data were collected through pretest and posttest assessments, observations of children's activities during learning, and research documentation. The assessment instrument was developed based on indicators of the ability to arrange letters into words and was to be evaluated for suitability before being used for data collection.

Data analysis involved descriptive and inferential statistics. Descriptive statistics were used to report the mean, minimum, maximum, and standard deviation of the pretest and posttest scores. The hypothesis was then tested by comparing scores before and after the intervention using a paired-samples t-test if the assumptions for parametric analysis were satisfied. If these assumptions were not met, the Wilcoxon signed-rank test was used as an alternative. The analysis used a significance level of 0.05 to determine whether children's ability to arrange letters into words differed before and after the use of letter-tree media. The results were used to assess the evidence of an intervention effect while acknowledging the limitations of a one-group design without a control group.

RESULTS AND DISCUSSION

RESULTS

3.1 Description of Children's Ability to Arrange Letters into Words

This study analyzed changes in the ability to arrange letters into words before and after the use of letter-tree media among 10 children aged 5–6 years in Group B at PAUD Harapan Bunda. Measurements were conducted through a pretest before the intervention and a posttest afterward. The scores from both assessments were compared to describe individual changes and the overall pattern of improvement within the group. A summary of individual scores is presented in Table 1.

Table 1. Pretest and Posttest Scores for the Ability to Arrange Letters into Words

Child	Pretest	Posttest	Score Difference
1	52	84	32
2	28	88	60
3	60	87	27
4	28	72	44
5	62	74	12
6	46	86	40
7	34	88	54
8	20	88	68
9	44	70	26

10	66	74	8
Total	440	811	371
Mean	44.00	81.10	37.10

Table 1 shows that the mean score for the ability to arrange letters into words increased from 44.00 on the pretest to 81.10 on the posttest, representing an average improvement of 37.10 points. All children obtained higher posttest scores than pretest scores, with individual gains ranging from 8 to 68 points. The largest improvement occurred for Child 8, whereas the smallest occurred for Child 10. Descriptively, these findings indicate improved scores following learning activities using letter-tree media.

3.2 Distribution of Children's Ability Categories

To further illustrate changes in achievement, scores were classified into five categories based on the classification used in the research data: very poor, poor, fair, good, and very good. The distribution of scores before and after the intervention is presented in Table 2.

Table 2. Distribution of Ability Categories for Arranging Letters into Words

Score Range	Category	Pretest, n (%)	Posttest, n (%)
0–59	Very poor	7 (70%)	0 (0%)
60–69	Poor	3 (30%)	0 (0%)
70–79	Fair	0 (0%)	4 (40%)
80–89	Good	0 (0%)	6 (60%)
90–100	Very good	0 (0%)	0 (0%)
Total		10 (100%)	10 (100%)

At the initial assessment, seven children (70%) were classified as very poor and three (30%) as poor. No children were classified as fair, good, or very good. Following the intervention, four children (40%) were classified as fair and six (60%) as good. No children remained in the very poor or poor categories, and none reached the very good category. This shift in the distribution indicates an improvement toward higher achievement categories following the use of letter-tree media.

These categories represent levels of achievement based on the score ranges used in the study and should not be interpreted as diagnoses of children's developmental status. Their interpretation should therefore be aligned with the assessment indicators, scoring procedures, and classification criteria described in the research methods.

3.3 Analysis of Score Changes and Hypothesis Testing

3.3.1 Descriptive Statistics

Descriptive statistics were used to summarize the scores for the ability to arrange letters into words before and after the intervention. The calculations indicated an increase in the mean score, accompanied by a change in score dispersion. The descriptive statistics are presented in Table 3.

Table 3. Descriptive Statistics for Pretest and Posttest Scores

Statistic	Pretest	Posttest
Number of participants	10	10
Mean	44.00	81.10
Standard deviation	16.06	7.58
Minimum score	20	70
Maximum score	66	88

As shown in Table 3, the standard deviation decreased from 16.06 on the pretest to 7.58 on the posttest. This indicates that posttest scores were more closely clustered around the group mean than the initial scores. The minimum score increased from 20 to 70, while the maximum score increased from 66 to 88. Thus, the improvement was reflected not only in the mean score but also in the range of scores obtained by the children.

3.3.2 Normality Test of Score Differences

A paired-samples *t*-test was selected because the pretest and posttest scores were obtained from the same participants. For this analysis, the normality assumption was assessed using the distribution of the differences between the two measurements. The Shapiro–Wilk test for the difference scores yielded ($W = 0.968$), with ($p = 0.875$). Because the significance value exceeded 0.05, there was insufficient evidence to reject the normality assumption for the difference scores.

This result supports the use of a parametric test to analyze the paired mean difference. However, given the small sample of 10 children, the normality test should be interpreted cautiously. Visual inspection of the difference-score distribution and examination for potential outliers are also recommended.

3.3.3 Paired-Samples *t*-Test Results

A paired-samples *t*-test was conducted to determine whether the mean ability to arrange letters into words differed before and after the use of letter-tree media. The significance level was set at 0.05, with the following hypotheses:

(H₀): There is no difference in the mean scores for the ability to arrange letters into words before and after the intervention.

(H1): There is a difference in the mean scores for the ability to arrange letters into words before and after the intervention.

The results calculated from the 10 pairs of scores are presented in Table 4.

Table 4. Results of the Paired-Samples *t*-Test

Parameter	Result
Number of paired observations	10
Mean difference (posttest – pretest)	37.10
Standard deviation of differences	19.86
Standard error of the difference	6.28
<i>t</i> -value	5.908
Degrees of freedom (<i>df</i>)	9
Two-tailed <i>p</i> -value	0.00023
95% confidence interval	22.89–51.31

The test results indicated a statistically significant difference between the mean scores before and after the intervention, ($t(9) = 5.908$), ($p < 0.001$). The mean difference was 37.10 points, with a 95% confidence interval ranging from 22.89 to 51.31 points. Because the confidence interval did not include zero and the *p*-value was below 0.05, the null hypothesis was rejected. Thus, the posttest scores for the ability to arrange letters into words were statistically higher than the pretest scores following the use of letter-tree media.

These findings provide evidence of improved scores following learning activities using letter-tree media among the children studied. However, a significant difference in a one-group design does not, by itself, establish that the media were the sole cause of the improvement. The effects of learning experience, repeated testing, and children's developmental changes cannot be separated from the intervention because the study did not include a control group.

3.4 Summary of Key Findings

The descriptive and inferential analyses revealed three main findings. First, the mean score for the ability to arrange letters into words increased from 44.00 to 81.10. Second, the distribution shifted from predominantly very poor and poor categories at the initial assessment to fair and good categories at the final assessment. Third, the paired-samples *t*-test indicated a statistically significant difference between the two measurements.

Overall, these findings indicate that the use of letter-tree media was associated with improved ability to arrange letters into words among children aged 5–6 years in Group B at PAUD Harapan Bunda. The results support the use of letter-tree media as one alternative for emergent literacy instruction. Further research involving a control group, a larger sample, and instruments with

established validity and reliability is needed to obtain stronger evidence regarding the effectiveness of this instructional medium.

DISCUSSION

4.1 Changes in the Ability to Arrange Letters into Words

The findings showed that the ability to arrange letters into words among Group B children at PAUD Harapan Bunda improved after instruction using letter-tree media. The mean score increased from 44.00 on the pretest to 81.10 on the posttest. This change indicates that the children obtained higher scores on word-construction tasks after participating in learning activities using letter-tree media. These findings are consistent with the importance of providing emergent literacy stimulation through concrete and engaging instructional media.

The ability to arrange letters into words depends not only on recognizing alphabetic symbols but also on selecting appropriate letters and placing them in the correct sequence. Through letter-tree media, children can interact directly with letter symbols, experiment with different arrangements, and correct letter sequences when the resulting words are inaccurate. Such activities provide opportunities for learning through action, observation, and repetition. However, because the research data consist only of scores obtained before and after the intervention, this explanation represents a plausible learning mechanism that requires confirmation through observations of the learning process.

These findings are related to the study by Puad and Sa'adah (2023), which examined the use of an A–Z alphabet sensory book to improve letter-recognition skills in early childhood. Their study emphasized the importance of engaging instructional media that actively involve children in letter-learning activities. Although the media used in their study differed from letter-tree media, both studies highlight the relevance of instructional media in stimulating emergent literacy skills.

4.2 Letter-Tree Media and Emergent Literacy Learning

Letter-tree media have the potential to support learning by presenting letters in a visual format that children can manipulate. The tree structure can attract children's attention, while the attached or hanging letters allow them to select and arrange symbols. Consequently, learning involves more than listening to the teacher's explanations; it also provides opportunities for children to participate directly in completing learning tasks.

The relevance of concrete instructional media in emergent literacy learning was also discussed by Syahbana, Mulyadi, and Mulyana (2023). Their study indicated that letter recognition can be stimulated through various media, including letter cards, flannel boards, activity books, and other instructional materials. These findings support the view that teachers should select instructional media according to learning objectives and children's developmental characteristics. In the present study, letter-tree media were used to guide learning from symbol recognition toward arranging letters into words.

The study by Inrawulan et al. (2025) on the development of interactive animation-based media for letter and syllable recognition is also relevant to the importance of varying instructional media. Although digital media and letter-tree media have different characteristics, both can be designed to help children understand relationships among written language symbols. Letter-tree media allow children to manipulate physical letters, whereas animation-based media present stimuli through digital displays. Therefore, media selection should consider learning objectives, available resources, and children's needs.

4.3 Changes in Children's Ability Categories

Changes in the distribution of ability categories further support the descriptive findings. Before the intervention, all children were classified as very poor or poor. After the intervention, all children were classified as fair or good. Six children reached the good category, while four were classified as fair. This shift indicates that improvement was reflected not only in the group mean but also in the distribution of children's achievement categories.

These findings are important because young children's developmental progress varies. Individual score gains ranged from 8 to 68 points, indicating that children responded differently to the learning activities. Children with smaller gains may require additional practice, assistance in recognizing particular letters, or support in determining the correct letter sequence. However, these explanations cannot be confirmed from test scores alone. Further research should examine children's letter-sequencing errors and the types of assistance required by individual learners.

Studies by Firdaus and Hidayani (2021) on three-dimensional busy-book media and Paridah et al. (2020) on letter cards provide additional context for the use of manipulative media to support letter recognition in early childhood. Meanwhile, Mery's (2020) study on flannel boards highlights the relevance of visual media for learning vowel and consonant recognition. Although these studies address related topics, their outcome variables are not entirely identical to those examined in the present study. Therefore, they are more appropriately used to support the rationale for media-based learning than as direct evidence of the magnitude of the effect of letter-tree media on word-construction skills.

4.4 Implications for Early Childhood Education

The findings have practical implications for teachers at PAUD Harapan Bunda. Letter-tree media can be incorporated into small-group activities, letter-arranging games, and word-building exercises using vocabulary familiar to children. Teachers can begin with simple two- or three-letter words and gradually increase the level of difficulty according to children's abilities. Supporting pictures, word pronunciation, and opportunities for independent practice may help children connect letter symbols with sounds and word meanings.

Studies by Aini et al. (2022) on letter-button media for vowel and consonant recognition and Bee et al. (2022) on illustrated alphabets provide examples of alternative media for supporting letter learning. Untari and Aulina's (2021) study on smart-box media further broadens the context for using instructional media to develop consonant-recognition skills. These studies suggest that learning outcomes depend not only on the type of media used but also on how teachers implement it, the suitability of learning tasks, and the opportunities provided for children to practice.

Although the results indicated a statistically significant improvement, the use of letter-tree media should be accompanied by individual assessment. Teachers should evaluate not only whether children can form words but also whether they select the correct letters, arrange them accurately, and recognize and correct errors. Such assessments can help teachers determine appropriate follow-up activities. In addition, further research using a control group or a stronger experimental design is needed to determine whether the observed improvement exceeds that achieved through other instructional approaches.

4.5 Research Limitations

This study has several limitations. First, the sample consisted of only 10 children from one early childhood education group, limiting the generalizability of the findings. Second, the one-group pretest–posttest design did not include a control group; therefore, changes in scores may have been influenced by factors other than the use of letter-tree media. Third, the findings depend on the quality of the assessment instrument and the consistency of scoring children's ability to arrange letters into words. Future research should involve larger samples, establish the validity and reliability of assessment instruments, and include a comparison group where feasible.

Overall, the analysis indicated an improvement in children's ability to arrange letters into words following the use of letter-tree media. These findings provide preliminary evidence supporting the use of letter-tree media in emergent literacy instruction. However, causal conclusions should be stated cautiously and in accordance with the limitations of the research design.

CONCLUSION

Main Findings: This study found that the use of letter-tree media was followed by an improvement in the ability of children aged 5–6 years in Group B at PAUD Harapan Bunda to arrange letters into words. The mean score increased from 44.00 on the pretest to 81.10 on the posttest, representing a gain of 37.10 points. The paired-samples t-test showed a statistically significant difference between pretest and posttest scores, $t(9) = 5.908$, $p < 0.001$. **Research Contribution:** This study provides preliminary empirical evidence of the potential of letter-tree media to support emergent literacy, particularly the ability to arrange letters into words, through concrete, engaging, and developmentally appropriate learning activities. **Theoretical and Practical Implications:** The findings highlight the importance of interactive and activity-based learning in developing young children's emergent literacy skills. Teachers can use letter-tree media to facilitate letter recognition, letter selection and matching,

sequential arrangement, and the formation of simple words, supported by repetition, positive reinforcement, and individualized guidance. **Research Limitations:** This study involved only 10 children from one early childhood education institution and used a pre-experimental one-group pretest–posttest design without a control group. Therefore, the findings should be interpreted cautiously, as the observed improvement cannot be attributed solely to the use of letter-tree media or generalized broadly. **Future Research Directions:** Future studies should involve larger samples across multiple early childhood education institutions and employ comparison groups or stronger experimental designs. Further research could compare letter-tree media with other instructional approaches and examine its effects on additional emergent literacy skills, including letter recognition, syllable formation, and beginning reading.

REFERENCES.

- Aini, M., Rahmah, & Fithri, R. (2022). Pengaruh media kancing huruf terhadap kemampuan mengenal huruf vokal dan konsonan anak kelas B. *Jurnal Talenta: Journal of Early Childhood Education*, 13(1), 12–19.
- Anggita, R., Sormin, D., & Lubis, J. N. (2023). Upaya meningkatkan kemampuan anak dalam mengenal huruf melalui media pohon pintar. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 7(5), 5907–5918. <https://doi.org/10.31004/obsesi.v7i5.5384>
- Bee, P. J. Y., Dengah, J., & Tampi, F. (2022). Meningkatkan kemampuan mengenal huruf konsonan melalui media alfabet bergambar pada anak di kelompok A TK Lembon Samala Moronge Selatan I. *Kidspedia: Jurnal Pendidikan Anak Usia Dini*, 3(2), 1–6.
- Budiarti, E., & Shintarahayu, B. (2025). Desain media pohon baca huruf hijaiyah berbahan kardus untuk anak usia dini. *Center of Education Journal (CEJou)*, 6(1), 51–64. <https://doi.org/10.55757/cejou.v6i1.892>
- Evagustia, A., Herlina, Azizah, & Wahira. (2026). Permainan kartu huruf terhadap permulaan membaca awal anak usia dini. *INDOPEDIA: Jurnal Inovasi Pembelajaran dan Pendidikan*, 4(1), 22–36. <https://indopediajurnal.my.id/index.php/jurnal/article/view/536>
- Inrawulan, I., Ahmad Razak, A. R., Kurnia R, R., Herlina, H., & Amal, A. (2025). Pengembangan media interaktif berbasis animasi dalam kurikulum sekolah untuk pengenalan huruf dan suku kata. *Murhum: Jurnal Pendidikan Anak Usia Dini*, 6(2), 41–54. <https://doi.org/10.37985/murhum.v6i2.1416>
- Karmeliya Firdaus, M., & Ayu Puteri Handayani, D. (2021). Meningkatkan kemampuan mengenal huruf anak usia dini melalui media busy book 3D. *Jurnal Pendidikan Anak Usia Dini Undiksha*, 9(1), 53–62. <https://doi.org/10.23887/paud.v9i1.35719>

- Mery, M. M. (2020). Penggunaan media papan flanel untuk meningkatkan kemampuan mengenal huruf vokal dan konsonan pada anak kelompok B di TKK Rherhedja 2. *Prima Magistra: Jurnal Ilmiah Kependidikan*, 1(1), 116–124. <https://doi.org/10.37478/jpm.v1i1.357>
- Munifah, A., Sumarni, L., & Desyanti, R. (2024). Upaya meningkatkan kemampuan membaca permulaan melalui media kartu huruf. *Journal of Islamic Early Childhood Education (JOIECE): PIAUD-Ku*, 3(1), 25–40. <https://doi.org/10.54801/21f4b071>
- Paridah, P., Joni, J., & Ahmadi, D. (2020). Upaya peningkatan kemampuan mengenal huruf dengan media kartu huruf usia 5–6 tahun. *Journal of Education Research*, 1(3), 213–217. <https://doi.org/10.37985/jer.v1i3.24>
- Puad, N. E. H., & Sa'adah, H. I. (2023). Peningkatan kemampuan mengenal huruf anak usia dini melalui media buku sensori alphabet A–Z pada kelompok A TK Runiah School Kota Makassar. *MAANA: Jurnal Pendidikan Islam Anak Usia Dini*, 2(1), 61–77. <https://doi.org/10.52166/mjpiaud.v2i1.4746>
- Rosiana, D. (2021). Pengaruh permainan pohon huruf terhadap kemampuan mengenal huruf pada usia 5–6 tahun di TK Pembina Jekan Raya tahun ajaran 2019/2020. *Jurnal Pendidikan dan Psikologi Pintar Harati*, 17(1), 44–54. <https://doi.org/10.36873/jph.v17i1.3326>
- Slow, L., Budhiarti, Y., & Susana, E. (2023). Peningkatan kemampuan pengenalan huruf anak usia dini dengan media pohon huruf. *Masa Keemasan: Jurnal Pendidikan Anak Usia Dini*, 3(1), 21–26. <https://doi.org/10.46368/mkjpiaud.v3i1.1028>
- Syahbana, H., Mulyadi, S., & Mulyana, E. H. (2023). Media untuk mengenalkan huruf pada AUD sebagai upaya menstimulasi perkembangan keaksaraan awal. *Ceria: Jurnal Program Studi Pendidikan Anak Usia Dini*, 12(1), 116–132. <https://doi.org/10.31000/ceria.v12i1.9136>
- Untari, N. B., & Aulina, C. N. (2021). Improving the ability to recognize consonants through smart box media for children aged 4–5 years in kindergarten. *Academia Open*, 4, 1–10. <https://doi.org/10.21070/acopen.4.2021.2542>
- Wahyuni, N., Darmiyanti, A., & Riana, N. (2025). Pengaruh media pohon huruf bersries terhadap kemampuan membaca permulaan anak usia dini membaca permulaan anak usia dini 5–6 tahun di TKQ Baitul Amal Karawang. *Jurnal Ilmiah Wahana Pendidikan*, 11(5.D), 248–260. <https://www.jurnal.peneliti.net/index.php/JIWP/article/view/11956>
- Yakin, N. R. (2025). Pengembangan media treechart dalam meningkatkan kemampuan mengenal huruf pada anak. *Jurnal Pendidikan Tambusai*, 9(3), 35093–35097. <https://doi.org/10.31004/jptam.v9i3.33655>