Impact of Ecoprint Activities Using Natural Materials on Fine Motor Skills of 5–6 Year Old Children

Kadek Intan Puspita Sari[1*], Fitriana[2], Hesti Putri Setianingsih[3], Shofiyanti Nur Zuama[4]
[1,2,3,4]*Universitas Tadulako, Indonesia*

*Corresponding Author: Kadek Intan Puspita Sari,   **E-mail**: kadekintan260@gmail.com

ABSTRACT
This study aims to examine the effect of natural material-based ecoprint activities on the fine motor skills of of 5–6 year old children. A mixed methods approach was employed using a quasi-experimental design. The research subjects consisted of 28 children from Group B at State Kindergarten of 8 Wita Ponda, divided into an experimental group and a control group. The experimental group received treatment through ecoprint activities for ten days, while the control group engaged in regular activities without similar interventions. Data were collected through fine motor skills tests (pretest and posttest), observations, documentation, and interviews. Quantitative data were analyzed using the paired sample t-test and N-Gain Score, while qualitative data were analyzed thematically. The findings revealed a significant improvement in the fine motor skills of children in the experimental group compared to the control group, with a p-value < 0.05 and an average N-Gain Score of 68.4%, categorized as moderately effective. Interviews with teachers and the principal affirmed that ecoprint activities provided enjoyable learning experiences, enhanced hand and finger coordination, and fostered children's environmental awareness. Therefore, ecoprint is considered a viable alternative learning method to holistically develop fine motor skills in early childhood education.

Keywords: Ecoprint, Fine Motor Skills, Early Childhood, Natural Materials, Thematic Learning

INTRODUCTION

Early childhood education (ECE) is an essential foundation in shaping the overall development of children physically, cognitively, socially, and emotionally (Masykuroh & Kurnia, 2025; Rohali & Sitorus, 2025; Warmansyah et al., 2023). The early years, particularly between the ages of 4 and 6, are referred to as the golden age because during this period, children's brains develop rapidly and are highly sensitive to stimulation from their environment (Khodarasih et al., 2025; Sukatin et al., 2020; Zahra & Harmawati, 2019). Law No. 20 of 2003 on the National Education System affirms that ECE aims to support the physical and spiritual growth and development of children to prepare them for further education (Saputra, 2020; Tatminingsih, 2016). Therefore, learning activities in ECE must be designed to provide joyful and meaningful learning experiences that foster the holistic

development of children, including fine motor skills, which are crucial indicators of school readiness.

Fine motor skills are one of the key indicators in early childhood development, serving as the foundation for more complex basic skills required in the next educational stages, such as writing, drawing, cutting, and stringing beads (Ariana & Novitawati, 2023; Priyanti & Warmansyah, 2021; Talango, 2020). These skills involve the coordination of small muscles, particularly in the hands and fingers, as well as the integration of visual-motor coordination, emotional regulation, and concentration (Hurlock, 1954). Children with well-developed fine motor skills tend to be better prepared for formal learning processes as they have mastered the basic skills necessary for elementary school (Santrock, 2017). Conversely, children with delayed fine motor skills may encounter significant challenges in completing even basic tasks, which can adversely affect their self-confidence, autonomy, and academic performance (Ihsanti et al., 2024; Innes et al., 2023). This delay in motor development may hinder their ability to engage effectively in learning activities, potentially leading to broader educational and developmental setbacks.

Various research studies have shown that many children aged 5–6 years face significant barriers in fine motor skills, which are characterized by difficulties in controlling finger movements, lack of precision in writing, or challenges in using simple tools such as scissors (Comuk-Balci et al., 2016; Fitriyah et al., 2021; Maromi & Hasibuan, 2025). These impediments arise not only from biological factors but also from a lack of appropriate stimulation in the learning environment. A monotonous learning environment, with limited exploration and an overemphasis on passive activities such as worksheets, is often inadequate in providing optimal stimulation for the development of children's hand skills (Wijaya & Dewi, 2021). Therefore, reinforcing fine motor development through active, targeted, and enjoyable activities has become an urgent necessity in early childhood education to ensure children's holistic development and prepare them to face subsequent developmental challenges.

Fine motor skills are closely associated with the ability to use small muscles, particularly those in the hands and fingers, which serve as the foundation for everyday activities such as writing, drawing, cutting, and holding writing instruments (Ariana & Novitawati, 2023; Ridwan et al., 2022; Sukarini, 2020). These skills also play a crucial role in the development of children's independence and self-expression abilities. However, based on observations conducted at State Kindergarten of 8 Wita Ponda, many children exhibit delays in fine motor skills, as evidenced by difficulties in holding a pencil properly, lack of precision when using scissors, and an inability to button clothing independently. These deficiencies not only affect children's future academic performance but also indicate a lack of proper motor stimulation during early childhood. Therefore, a learning model that systematically and engagingly stimulates fine motor movements is essential.

One activity with significant potential for stimulating the development of children's fine motor skills is ecoprint, a technique for transferring patterns from leaves or flowers onto fabric or paper using specific pressure (Alyannur & Sitorus, 2024; Nurliana et al., 2021). The ecoprint process involves activities such as selecting and arranging leaves, applying careful pressure, and rubbing or tapping the surface, which naturally trains hand-eye coordination,

finger movement precision, and persistence. Unlike conventional activities such as drawing or playing with clay, ecoprint offers a more contextual and multisensory approach as it involves exploration of nature and creativity (Sedjati & Sari, 2019). This activity also introduces children to various textures, shapes, and colors from their surrounding environment while instilling early values of environmental awareness (Fatmala & Hartati, 2020). Therefore, ecoprint is not only educational but also recreational and ecological in nature.

In this context, ecoprint activities not only provide a comprehensive sensory and motor experience but also cultivate children's interest in art and the environment (Andayani et al., 2022). Unfortunately, this method is still rarely used in early childhood education institutions, especially in areas rich in local biodiversity that have not yet been fully utilized for educational purposes. Based on preliminary interviews with teachers at State Kindergarten of 8 Wita Ponda, it was revealed that learning activities still primarily focus on routine tasks such as coloring and sticking, which, while beneficial, fail to offer sufficient variety and new challenges for children. Teachers also acknowledged that children's involvement in activities involving the exploration of natural materials is very limited, despite the fact that the surrounding environment offers considerable potential for nature-based learning. This situation indicates a gap between the potential for contextual learning and its implementation in practice.

Numerous studies have highlighted that activities involving nature-based fine motor stimulation are more effective compared to conventional approaches (Lisdiyana et al., 2025; Maylita et al., 2025). Activities such as printing with natural materials, assembling small objects from nature, and creating artwork based on leaf and flower textures have been shown to significantly improve finger movement coordination and hand stability in children. Moreover, activities that provide room for exploration and creative freedom have proven to enhance children's self-confidence and independence in completing motor tasks (Masykuroh & Kurnia, 2025; A. P. Sari et al., 2023; Yulianti, 2016). A non-pressuring learning environment, which encourages children psychologically, also plays a significant role in the effectiveness of fine motor skill development, particularly for children aged 5–6 years (Siahaan & Hidayat, 2019). Therefore, nature-based exploration approaches are considered to provide more comprehensive stimulation, not only physically but also emotionally and cognitively.

Furthermore, nature-based art activities like ecoprint not only stimulate hand skills but also provide multisensory experiences that have been shown to enhance children's attention, focus, and self-regulation (Istifadhoh et al., 2022; Kharisma & Sepiana, 2019). Through the process of selecting leaves, arranging patterns, and pressing surfaces, children engage in a complex series of activities requiring excellent visual-motor coordination. A study by Saptutyningsih & Wardani, (2019) found that children regularly involved in nature-based art activities demonstrated superior abilities to imitate shapes, create repetitive patterns, and regulate hand pressure compared to children who only participated in standard coloring activities. Moreover, in research by Susanto et al., (2021), children involved in a nature-based art program showed significant improvement in 6 out of 8 fine motor skill indicators over the span of three weeks. This evidence supports that methods like ecoprint are not only pedagogically relevant but also have a tangible impact on the development of motor skills.

Previous research has mostly focused on stimulating fine motor skills in children through activities like drawing, paper folding (origami), playdough, or bead threading (Arminawati et al., 2021; Lisdiyana et al., 2025; Partriani et al., 2020; H. M. Sari & Nofriyanti, 2019). While these activities effectively train fine muscles, most of the methods used are conventional and lack direct involvement with environmental exploration. Research on ecoprint as a nature-based art activity within early childhood education remains limited. However, ecoprint holds the potential to not only develop fine motor movements through activities such as selecting, arranging, and pressing leaves but also to provide a holistic learning experience through tactile, visual, and interaction with natural materials. Few studies have examined the effectiveness of this method in the context of kindergarten learning, let alone quantitatively linking it to fine motor skill indicators. This gap highlights the need for a systematic effort to explore ecoprint's potential as a more comprehensive and meaningful learning alternative for stimulating children's hand skills.

Based on the background above, this study aims to explore the impact of ecoprint activities using natural materials on the fine motor skills of early childhood children, specifically in group B at State Kindergarten of 8 Wita Ponda. It is hoped that this research will contribute to the expansion of nature-based learning approaches that are applicable in early childhood education institutions and support efforts to strengthen fine motor stimulation in children through contextual, enjoyable, and easily implementable activities in daily life.

RESEARCH METHODOLOGY

Research Approach and Design

This study employed a mixed methods approach, combining quantitative and qualitative methodologies within a single research framework to gain a more comprehensive understanding. This approach was chosen not only to examine the numerical impact of natural-material-based ecoprint activities on children's fine motor skills but also to explore the subjective experiences of both children and teachers throughout the intervention. From the quantitative perspective, the study utilized a quasi-experimental design, involving an experimental group and a control group to compare outcomes before and after the intervention.

Research Subjects

The subjects of this study were children from Group B at State Kindergarten of 8 Wita Ponda, consisting of 22 students (14 girls and 8 boys). The selection of subjects was conducted purposively, considering the appropriateness of age and developmental level to ensure optimal participation in the activities.

Research Procedure

The research was carried out in three main stages: pretest, intervention, and posttest. In the initial stage, the children's fine motor skills were assessed using an observation sheet designed around five skill aspects. The experimental group then participated in ecoprint activities for ten days, while the control group engaged in regular routines without

intervention. After the treatment, a posttest was administered using the same instrument to measure changes in fine motor skills. During the intervention, additional data were collected through direct observation, photo and video documentation, as well as semi-structured interviews with teachers and children to gather qualitative insights.

Data Collection Techniques

Data collection employed two approaches. First, quantitative data were gathered from fine motor skill observations conducted during the pretest and posttest phases. The instrument measured aspects such as hand-eye coordination, fine motor control, printing pressure, accuracy in pattern following, and tool usage. Second, qualitative data were obtained through semi-structured interviews with teachers and children, participatory observation during the activities, and visual documentation (photos and videos). This combination of techniques enabled the researcher to obtain both measurable numerical data and rich, contextual narratives.

Data Analysis Techniques

Quantitative and qualitative data were analyzed separately. Quantitative data were analyzed using both descriptive and inferential statistics. Descriptive statistics were used to calculate the mean, standard deviation, and percentage improvement in fine motor skills. Inferential analysis was conducted using a paired sample t-test to determine significant differences between pretest and posttest results in the experimental group. Qualitative data were analyzed thematically through data reduction, thematic coding, narrative presentation, and drawing conclusions, supported by triangulation of data sources.

Success Indicators

The success of ecoprint activities in enhancing children's fine motor skills was measured using two main indicators. Quantitatively, success was defined as a minimum 20% increase in the average score of fine motor skills from pretest to posttest, and more than 75% of the children showing improvement in at least three out of the five assessed skill aspects. Qualitatively, success was reflected in high levels of active participation, visible enthusiasm from the children, and positive responses from teachers regarding the children's skill development following the ecoprint activities.

RESULTS AND DISCUSSION

Research Results

Paired Sample t-Test

After the ecoprint activity was implemented, a paired sample t-test was conducted to determine the difference in the average fine motor skills scores of children before and after the intervention in the experimental group. The results of the test are presented in Table 6 below.

Table 6. Results of Paired Sample t-Test for Children's Fine Motor Skills

Variable	Mean Pretest	Mean Posttest	t-value	Sig. (2-tailed)
Fine Motor Skills	45.68	83.09	18.925	0.000

Source: SPSS Analysis Results, 2025

The test results show that there is a significant difference between the pretest and posttest scores in the experimental group. The average score increased from 45.68 to 83.09. The t-value was 18.925 with a p-value of 0.000 (< 0.05), indicating that this improvement is statistically significant. This proves that the ecoprint activity using natural materials significantly enhanced the fine motor skills of the Group B children at the State Kindergarten of 8 Wita Ponda. The activity involved various skills such as gripping, arranging, pressing, as well as hand-eye coordination, all of which optimally support the stimulation of children's fine motor skills.

N-Gain Score Test

To assess the effectiveness of the intervention, an N-Gain Score test was conducted with the following results.

Table 7. Average N-Gain Score of Children's Fine Motor Skills

Group	Average N-Gain (%)	Category
Experimental	68.4%	Moderately Effective
Control	25.9%	Ineffective

Source: N-Gain Score Calculation Results, 2025

The average N-Gain Score in the experimental group was 68.4%, which falls into the "moderately effective" category. This indicates that the ecoprint method can be considered effective in improving children's fine motor skills. In contrast, the control group showed an increase of only 25.9%, which falls into the "ineffective" category, reinforcing that the improvement in fine motor skills occurred due to the ecoprint activity, not by chance or through regular classroom activities.

Interview Results

Interviews were conducted with the principal and the Group B teachers to gather contextual and in-depth information about the process, planning, and their perceptions of the ecoprint activity in developing children's fine motor *skills. Each quote was coded according to qualitative research standards, such as K1 (Principal 1), G1 (Teacher 1), and so on.*

Ecoprint Activity Planning

The Group B teacher stated that the learning plan always refers to the RPPH (Daily Learning Plan) that is created together with other teachers. The theme raised is natural materials, with the main media being leaves and flowers.

> *"The design of the ecoprint learning technique created by the institution is usually after carrying out the teaching and learning activities (KBM), the institution has prepared the material that has been designed or packaged in the form of an RPPH related to the ecoprint technique material." (K1)*

The teacher also emphasized the importance of selecting safe media for children, such as plain fabric, fresh leaves, clear plastic, and wooden hammers. This activity uses the

pounding technique (hammering leaves with a mallet) so that children can stimulate their fine motor skills through engaging activities.

"The media used include white fabric, fresh leaves, flowers, clear plastic, and a mallet for pounding. We select leaves that contain natural dyes and have low moisture content to achieve the best results." (G1)

Implementation of the Ecoprint Activity

The activity was carried out in stages. The children were introduced to the tools and materials, and then given the opportunity to arrange the leaves and pound them on the fabric.

"Usually, we start by introducing what ecoprint is and what materials are used. Then, we demonstrate how to arrange the leaves and gently pound them with the mallet. After that, the children are guided to try it themselves under supervision." (G2)

The teacher explained that through the pounding technique, children learn to control the pressure of their hands while pounding, adjust the position of the leaves, and work carefully to ensure the print turns out well. This activity not only enhances fine motor skills but also trains children's focus, patience, and responsibility.

"The act of holding the mallet and pounding carefully is very good for training the muscles in their hands and wrists. They also learn to pay attention to detail so that the print succeeds. This trains their motor skills while also fostering a sense of pride in their own work." (G3)

Challenges and Solutions

Some of the challenges faced were limited tools and the lack of attention from children during the initial introduction. The teacher addressed this by providing concrete examples and allowing the children to engage directly.

"At first, some children were engrossed in playing on their own while the instructions were being given. But once they got their hands on the tools, they became more interested. They enjoy activities that involve movement and exploration." (G4)

The principal also mentioned that this activity is a new and innovative approach that has never been implemented before at State Kindergarten of 8 Wita Ponda.

"We had never done this ecoprint activity before. But after seeing its benefits, we want to make it part of our regular activities because, in addition to being fun, it is also effective for children's learning." (K1)

Figure 1. Ecoprint Activity Using Natural Materials to Enhance Children's Fine Motor Skills

Discussion

The findings from statistical tests and interviews indicate that ecoprint activities have a significant impact on enhancing fine motor skills in early childhood. Through activities such as arranging and pressing leaves, children learn to use the small muscles in their hands, practice hand-eye coordination, and develop both visual and tactile skills simultaneously.

Statistically, there was a highly significant improvement between the pretest and posttest scores in the experimental group, with t-test results showing a p-value < 0.05. The N-Gain Score test also demonstrated an effectiveness rate of 68.4% for the ecoprint method, which is considerably higher than the control group. This data aligns with the qualitative findings, where both teachers and the school principal reported that the children showed high enthusiasm and significant development in their hand skills.

Practically, this activity also provides flexibility for teachers to develop nature-based thematic learning that benefits not only the cognitive aspects but also the emotional and social development of children. Teachers can integrate this activity into various themes such as the environment, art, and science simultaneously. Therefore, it can be concluded that ecoprint activities not only yield significant quantitative results but also have a real impact on children's learning experiences within the context of active and meaningful learning.

This finding is consistent with the research of Alyannur & Sitorus (2024) which shows that ecoprint batik activities using the pounding technique can significantly improve children's fine motor skills, particularly in terms of movement precision and finger strength when stamping leaf patterns. Activities that involve manipulating real objects such as leaves, wooden hammers, and fabric provide important sensory stimulation that strengthens the neuromuscular system in early childhood. Arminawati et al., (2021) also reveal that children

who receive fine motor stimulation based on hands-on practice show more stable development compared to children who only receive stimulation in the form of visual or passive instructions. This supports the findings of this study, which indicate that the ecoprint method is active and exploratory, providing space for children to directly control and coordinate hand movements through meaningful activities.

Furthermore, according to Setianingsih & Handayani (2022), nature-based learning media has advantages in creating contextual learning experiences that are close to children's environments. Ecoprint activities, as part of nature-based learning, enhance children's focus, perseverance, and concern for the learning process because they are multisensory and involve high curiosity. This aligns with the view of Munawarah (2023) who emphasizes that ecoprint batik activities can enhance children's creativity and have a positive impact on fine motor skills through the exploration of natural shapes, colors, and patterns. Thus, learning through ecoprint not only builds motor skills mechanically but also strengthens emotional, aesthetic, and ecological values from an early age.

CONCLUSION

Based on the overall process and findings of this research, it can be concluded that ecoprint activities using natural materials are an effective learning method in supporting the holistic development of fine motor skills in early childhood. This activity actively engages children through a creative process that stimulates hand and finger coordination, improves precision, and strengthens the fine motor control necessary for basic skills such as writing, drawing, and threading. In addition to its impact on physical-motor aspects, ecoprint also provides an enjoyable and meaningful learning experience emotionally, while bringing children closer to their natural surroundings. Through the exploration of natural materials such as leaves and flowers, children not only develop their hand skills but also gain an understanding of the importance of utilizing natural resources wisely and creatively. Therefore, ecoprint activities are worthy of being incorporated as part of thematic learning strategies in early childhood education, as they can simultaneously integrate aspects of motor, cognitive, affective development, and environmental care values.

ACKNOWLEDGEMENTS

REFERENCES

Alyannur, N., & Sitorus, A. S. (2024). Upaya Meningkatkan Kemampuan Motorik Halus Anak melalui Permainan Membatik Ecoprint pada Daun dengan Teknik Pounding untuk

AUD. *Journal of Education Research*, *5*(3), 3740–3749. https://doi.org/10.37985/jer.v5i3.1527

Andayani, S., Dami, S., & ES, Y. R. (2022). Pelatihan Pembuatan Ecoprint Menggunakan Teknik Steam Di Hadimulyo Timur. *SINAR SANG SURYA: Jurnal Pusat Pengabdian Kepada Masyarakat*, *6*(1), 31. https://doi.org/10.24127/sss.v6i1.1871

Ariana, L., & Novitawati, N. (2023). Mengembangkan Kemampuan Anak Dalam Mengontrol Gerakan Tangan Menggunakan Otot Halus Melalui Kombinasi Model Project Based Learning Dan Model Direct Instructions Pada Kegiatan Mozaik. *Jurnal Inovasi, Kreatifitas Anak Usia Dini (JIKAD)*, *3*(3), 32. https://doi.org/10.20527/jikad.v3i3.10065

Arminawati, Aprian, S., & Salmiati, S. (2021). Analisis Perkembangan Motorik Halus Anak Selama Belajar dirumah di TK Kelompok B Al-Washliyah Banda Aceh. *Jurnal Ilmiah Mahasiswa*, *2*(1), 37. https://jim.bbg.ac.id/pendidikan/article/download/311/148

Comuk-Balci, N., Bayoglu, B., Tekindal, A., Kerem-Gunel, M., & Anlar, B. (2016). Screening preschool children for fine motor skills: environmental influence. *Journal of Physical Therapy Science*, *28*(3), 1026–1031. https://doi.org/10.1589/jpts.28.1026

Fatmala, Y., & Hartati, S. (2020). Pengaruh Membatik Ecoprint terhadap Perkembangan Kreativitas Seni Anak di Taman Kanak-Kanak. *Jurnal Pendidikan Tambusari*, *4*(2), 1143–1155.

Fitriyah, Q. F., Purnama, S., Febrianta, Y., Suismanto, S., & 'Aziz, H. (2021). Pengembangan Media Busy Book dalam Pembelajaran Motorik Halus Anak Usia 4-5 Tahun. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *6*(2), 719–727. https://doi.org/10.31004/obsesi.v6i2.789

Hurlock, E. B. (1954). Developmental psychology. *Journal of Consulting Psychology*, *18*(6), 473–473. https://doi.org/10.1037/h0052832

Ihsanti, N., Amelia, L., & Muthmainnah, M. (2024). The Influence of Weaving Activities on Self-Identity Development in Kindergarten: Exploring Early Childhood Enrichment. *Journal of Islamic Education Students (JIES)*, *4*(1), 120. https://doi.org/10.31958/jies.v4i1.12297

Innes, R. M., Priyanti, N., Warmansyah, J., & Yandira, R. (2023). Crafting Dexterity : Enhancing Fine Motor Skills in 4-5-Year-Olds through the Art of Paper Folding Origami. *Indonesian Journal of Early Childhood Education Research (IJECER)*, *2*(1), 1–9. https://doi.org/10.31958/ijecer.v2i1.6757

Istifadhoh, N., Wardah, I., & Stikoma, T. (2022). Pemanfaatan Digital Marketing Pada Pelaku Usaha Batik Ecoprint. *Aptekmas: Jurnal Pengabdian Kepada Masyarakat*, *5*(2), 147–152. http://dx.doi.org/10.36257/apts.vxixpp147-152

Kharisma, & Sepiana. (2019). Pelatihan Teknik Ecoprint untuk Guru Paud. Seni, Teknologi, Masyarakat. *Seminar Nasional: Seni, Teknologi, Dan Masyarakat #4 Tepung*, *2*, 183–188.

Khodarasih, D., Sari, M., & Pérez, C. (2025). Development of the Magic Cube Numbers Educational Tool to Enhance Symbolic Thinking Skills in Children Aged 4 - 5 Years.

Journal of Early Childhood Education and Teaching (JECET), *1*(1), 1–10. https://doi.org/00.00000/jecet.0000.000-00

Lisdiyana, Serli Hasmita, Ulfa Yunita, & Yolla Franssisca. (2025). Penggunaan Media Loose Part Dalam Meningkatkan Motorik Halus Dan Kreativitas Pada Anak Usia Dini. *Jurnal DZURRIYAT : Jurnal Pendidikan Islam Anak Usia Dini*, *3*(1), 40–48. https://doi.org/10.61104/dz.v3i1.885

Maromi, C., & Hasibuan, R. (2025). The Role of Nutrition in Supporting Physical and Motor Development in Early Childhood. *Journal of Islamic Education Students (JIES)*, *5*(1), 113. https://doi.org/10.31958/jies.v5i1.14011

Masykuroh, K., & Kurnia, R. (2025). Enhancing Love of Homeland in Early Childhood: A P5 Batik Nusantara Case Study. *Indonesian Journal of Early Childhood Educational Research (IJECER)*, *4*(1), 190. https://doi.org/10.31958/ijecer.v4i1.15026

Maylita, N., Trianggono, M. M., Kurniawan, N., & Dahlan, M. Z. (2025). Pengembangan Media Pembelajaran Puzzle Berbasis Kearifan Lokal Jember dalam Menstimulasi Motorik Halus Anak Usia Dini di TK Al Hidayah III. *Jurnal Ilmiah Profesi Pendidikan*, *10*(2), 1223–1230. https://doi.org/10.29303/jipp.v10i2.3352

Munawarah, S. (2023). Meningkatkan Kreativitas melalui Kegiatan Membatik Ecoprint Anak Usia 5-6 Tahun. *PAUD Lectura: Jurnal Pendidikan Anak Usia DIni*, *6*(2), 11–21. https://doi.org/10.31849/paud-lectura.v

Nurliana, S., Wiryono, W., Haryanto, H., & Syarifuddin, S. (2021). Pelatihan Ecoprint Teknik Pounding Bagi Guru-Guru PAUD Haqiqi di Kota Bengkulu. *Dharma Raflesia : Jurnal Ilmiah Pengembangan Dan Penerapan IPTEKS*, *19*(2), 262–271. https://doi.org/10.33369/dr.v19i2.17789

Partriani, D., Jati, S. N., & Yuniarti, Y. (2020). Efektivitas Metode Drill Dalam Aktivitas Menggambar Terhadap Peningkatan Kemampuan Motorik Halus Anak Di Taman Kanak-Kanak Barunawati Pontianak. *Edukasi: Jurnal Ilmiah Pendidikan Anak Usia Dini*, *7*(2). https://doi.org/10.29406/jepaud.v7i2.2002

Priyanti, N., & Warmansyah, J. (2021). The Effect of Loose Parts Media on Early Childhood Naturalist Intelligence. *JPUD - Jurnal Pendidikan Usia Dini*, *15*(2), 239–257. https://doi.org/10.21009/jpud.152.03

Ridwan, A., Nurul, N. A., & Faniati, F. (2022). Analisis Penggunaan Media Loose Part untuk Meningkatkan Kemampuan Motorik Halus Anak Usia 5-6 Tahun. *Mitra Ash-Shibyan: Jurnal Pendidikan Dan Konseling*, *5*(02), 105–118.

Rohali, A., & Sitorus, M. (2025). Enhancing Imagination Through Finger Painting Activities in 5-6 Year Olds. *Journal of Islamic Education Students (JIES)*, *5*(1), 1. https://doi.org/10.31958/jies.v5i1.14018

Santrock, J. W. (2017). *Psikologi Pendidikan* (2nd ed.). Kencana Prenada Media Group.

Saptutyningsih, E., & Wardani, D. T. K. (2019). Pemanfaatan Bahan Alami Untuk Pengembangan Produk Ecoprint Di Dukuh Iv Cerme, Panjatan, Kabupaten

Kulonprogo. *Warta LPM*, *21*(2), 18–26. https://doi.org/10.23917/warta.v21i2.6761

Saputra, A. (2020). Kompetensi Pedagogik Guru PAUD dalam Meningkatkan Nilai-Nilai Sosial, Moral dan Keagamaan melalui Metode Bercerita. *KINDERGARTEN: Journal of Islamic Early Childhood Education*, *3*(1), 85. https://doi.org/10.24014/kjiece.v3i1.9472

Sari, A. P., Febrini, D., & Wiwinda, W. (2023). Implementasi Pembelajaran Outdoor Learning dalam Mengembangkan Kecerdasan Naturalis Anak Usia Dini. *Journal of Elementary School (JOES)*, *6*(1), 126–133. https://doi.org/10.31539/joes.v6i1.6743

Sari, H. M., & Nofriyanti, Y. (2019). Peningkatan Kreativitas Anak Usia Dini melalui Kegiatan Menganyam dengan Origami. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, *4*(1), 146. https://doi.org/10.31004/obsesi.v4i1.247

Sedjati, D. P., & Sari, V. T. (2019). Mix Teknik Ecoprint Dan Teknik Batik Berbahan. *CORAK Jurnal Seni Kriya*, *8*(1), 1–11.

Setianingsih, A., & Handayani, I. N. (2022). Implementasi Media Loose Parts untuk Mengembangkan Aspek Motorik Halus Anak Usia Dini. *Aulad: Journal on Early Childhood*, *5*(1), 77–86. https://doi.org/10.31004/aulad.v5i1.301

Siahaan, A., & Hidayat, R. (2019). Konsep-Konsep Keguruan dalam Pendidikan Islam. In *Sustainability (Switzerland)*. Lembaga Peduli Pengembangan Pendidikan Indonesia (LPPPI).

Sukarini, S. (2020). Meningkatkan keterampilan motorik halus melalui kegiatan menggambar dengan teknik finger painting pada anak kelompok B2 di State Kindergarten of Pembina Bantul. *Jurnal Pendidikan Anak*, *9*(2), 86–93. https://doi.org/10.21831/jpa.v9i2.31355

Sukatin, S., Chofifah, N., Turiyana, T., Paradise, M. R., Azkia, M., & Ummah, S. N. (2020). Analisis Perkembangan Emosi Anak Usia Dini. *Golden Age: Jurnal Ilmiah Tumbuh Kembang Anak Usia Dini*, *5*(2), 77–90. https://doi.org/10.14421/jga.2020.52-05

Susanto, N. C. A., Latief, M., Puspitasari, R. D., Bemis, R., & Heriyanti, H. (2021). Pengenalan ecoprint guna meningkatkan keterampilan siswa dalam pemanfaatan bahan alam. *Jurnal Inovasi Hasil Pengabdian Masyarakat (JIPEMAS)*, *4*(1), 111. https://doi.org/10.33474/jipemas.v4i1.8974

Talango, S. R. (2020). Konsep Perkembangan Anak Usia Dini. *Early Childhood Islamic Education Journal*, *1*(1), 92–105. https://doi.org/10.54045/ecie.v1i1.35

Tatminingsih, S. (2016). Hakikat Anak Usia Dini. *Perkembangan Dan Konsep Dasar Pengembangan Anak Usia Dini*, *1*, 1–65. https://repository.ut.ac.id/4707/1/PAUD4306-M1.pdf

Warmansyah, J., Utami, T., Faridy, F., Syarfina, S., Marini, T., & Ashari, N. (2023). *Perkembangan Kognitif Anak Usia Dini* (A. Ulinnuha & Tarmizi (eds.)). Bumi Aksara. https://www.google.co.id/books/edition/Perkembangan_Kognitif_Anak_Usia_Dini/a YLeEAAAQBAJ?hl=id&gbpv=1

Wijaya, I. K. W. B., & Dewi, P. A. S. (2021). Pengembangan Kecerdasan Naturalis Anak Usia Dini melalui Model Pendidikan Lingkungan Unesco. *Ideas: Jurnal Pendidikan, Sosial, Dan*

Budaya, *7*(3), 97. https://doi.org/10.32884/ideas.v7i3.449

Yulianti, R. (2016). Pembelajaran Tari Kreatif untuk Meningkatkan Pemahaman Cinta Lingkungan pada Anak Usia Dini. *Jurnal Pendidikan Dan Kajian Seni*, *1*(1), 29–42. http://jurnal.untirta.ac.id/index.php/JPKS/article/view/851

Zahra, A., & Harmawati, F. (2019). Meningkatkan Kemampuan Kognitif melalui Penerapan Metode Eksperimen Menggunakan Media Loose Parts pada Anak Kelompok B Info Articles. *Emphaty Cons: Journal of Guidance and Counseling*, *1*(2), 7–19.