The Effectiveness of Ecoprint Batik Application on Fine Motor Skills of Class B of Nur Islam Santaruna Kindergarten Makassar City

Nurwahdhani Mawahda Jumrah[1], Ulfiani Rahman[2], Fitriani Nur[3], Ade Agustiani[4], Eka Damayanti[5]

[1,2,3,4,5]Universitas Islam Negeri Alauddin Makassar, Universitas Islam Negeri Alauddin Makassar, Universitas Islam Negeri Alauddin Makassar

Author Correspondence Email: ulfiani.rahman@uin-alauddin.ac.id

ABSTRACT

This study aims to determine the effectiveness of the application of ecoprint batik activities on improving children's fine motor skills in Class B of Nur Islam Santaruna Kindergarten, Makassar City. The study used a quantitative approach with a quasi-experimental method and a non-equivalent control group design. The research sample consisted of two classes, namely B1 as an experimental group that received ecoprint batik activities, and B2 as a control group that underwent regular learning activities. Data collection techniques were carried out through observation using observation sheets as instruments, and data analysis included descriptive statistics and independent sample t-test to see the difference in results between the two groups. The results showed that ecoprint batik activities significantly improved children's fine motor skills in the experimental group compared to the control group. Thus, this study implies that the application of ecoprint batik activities can be an effective learning strategy to develop children's fine motor skills in early childhood.

Keywords: ecoprint batik, fine motor skills, early childhood

1). INTRODUCTION

Early childhood education has an important role in preparing the younger generation, supporting the development of their attitudes, knowledge, skills, and creativity from an early age (Martuty, Fadhila, & Arfiani, 2024). At an early age, children's fine motor development plays an important role in preparing them to interact with the environment more effectively, especially in terms of learning and playing. Fine motor skills are movements that involve small muscles or only certain parts of the body, which are influenced by the desire and motivation to try and train (Dzariyah & Rocmah, 2024; Amanatul Rufi'ah & Prasetiya, 2023). Activities that involve fine motor skills such as drawing, writing, stringing small objects, and other art activities, not only help children develop physical agility, but also support cognitive and emotional development. In the development of fine motor skills, especially in Kindergarten children, it is often found that they still have difficulty moving their fingers for activities

such as cutting, painting, folding, or filling patterns by attaching small objects. This difficulty is caused by various factors, such as limited media, the child's inability to hold the scissors correctly, difficulty following patterns, or lack of proper learning methods and strategies. Less varied and monotonous methods can also make children less enthusiastic about doing these activities (Shanty, Handayani, & Saputro, 2022). Therefore, it is important for educators at the early childhood education level to provide a variety of activities that can stimulate children's fine motor development in an interesting and fun way.

However, in practice, early childhood education institutions often do not pay enough attention to the development of fine motor skills, especially in the context of activities involving creativity and art. As research conducted by Safitri, Astini, Sriwarthini, & Rachmayani (2023) shows that the development of children's creativity is still not optimal. This can be seen from learning activities that are mostly dominated by teachers, so that children have limited space to be creative and express their ideas. As a result, the development of children's creativity is not well developed; They tend to prefer imitation, lack confidence in their own work, and feel afraid when trying something new. Therefore, it is crucial to develop more innovative and engaging approaches so that children can train their fine motor skills in a way that is not only beneficial but also enjoyable.

One method that offers great potential to achieve this goal is the ecoprint batik technique. Ecoprint is a technique of making motifs on fabric using natural materials, such as leaves and flowers, that are printed or shaped on the fabric to create natural patterns or designs (Fransiska, Sudarto, & Adpriyadi, 2023). Ecoprint is a newer batik method compared to the written batik technique, so the techniques in making ecoprint batik still have many opportunities to be further developed (Sulismawati, Astini, Rachmayani, & Suarta, 2021). Ecoprint activities for early childhood are focused on the process of making products that aim to stimulate various aspects of child development (Susanti, Henny, & Marwah, 2021). Some of the benefits of batik activities for early childhood include providing examples or direct ideas that are easy to understand, training children to imagine, increasing brain activity, training concentration and patience, and providing the right stimulation for the development of children's fine motor skills, which is achieved through batik activities (Alyannur & Sitorus, 2024; Zumaroh, Purwadi, & Karmila, 2023). In principle, batik making activities carried out by children are natural activities. Batik using natural materials through the ecoprint technique is an opportunity for children to express their creative imagination through strokes or color combinations that form certain batik motifs (Jariah, Astini, Fahruddin, & Rachmayani, 2023). Activities using ecoprint techniques are very important to

develop basic creativity in children, because through these activities, children can learn to discover new things and develop their imagination (Fatimah, Setiawan, & Irmade, 2024).

At Nur Islam Santaruna Kindergarten, Makassar City, although the teaching of fine motor arts and skills has become part of the curriculum, the methods applied are still limited to activities that do not fully optimize the development of children's fine motor skills, such as drawing or coloring which is simpler. Based on the results of initial observations and interviews with teachers and principals, it was found that most children in class B rarely engage in activities that hone fine motor skills directly, especially in forms that involve creativity and high precision. Therefore, this study is designed to explore how the application of ecoprint batik can make a significant contribution to the improvement of children's fine motor skills, especially in Nur Islam Santaruna Kindergarten.

This study aims to measure the effectiveness of the application of ecoprint batik activities on the fine motor development of children in class B of Nur Islam Santaruna Kindergarten. It is hoped that, through the natural ecoprint technique that involves coordinated hand movements, children can develop their fine motor skills in a more fun and meaningful way. With a focus on early childhood groups, this study aims to contribute to the understanding of how arts and nature-based approaches can be utilized to address gaps in fine motor development in early childhood education. In addition, this research is also expected to provide strong evidence for the development of more innovative curricula in kindergartens and other early childhood education institutions, which can balance academic education and the development of children's motor skills and creativity.

As a result of this study, it is hoped that a more effective approach can be found in teaching fine motor skills that can be applied by educators at Nur Islam Santaruna Kindergarten and in other early childhood education institutions. The ecoprint batik technique made from natural materials not only has benefits in improving fine motor skills, but also provides a more holistic experience for children in getting to know nature, art, and the importance of creativity in their learning process.

2). RESEARCH METHODS

This study uses a quantitative approach with a quasi-experimental type of research. The research design used is a non-equivalent control group design. The research was carried out at Nur Islam Santaruna Kindergarten, Makassar City, precisely in Class B which is located on Jl. Tamangapa Raya No. 5, Tamangapa, Kec. Through the saturation sampling technique, two classes were selected as

samples, namely classes B1 and B2, each consisting of 17 children. The selection of classes B1 and B2 was based on the results of observations and interviews with the principal and classroom teachers, which showed that students in these two classes rarely carried out activities involving fine motor skills. Therefore, this study aims to find out whether ecoprint batik activities made from natural materials can develop children's fine motor skills.

The data collection technique was carried out through observation to obtain data on the effect of ecoprint batik techniques on the students' fine motor skills, using observation sheets as instruments. Data analysis includes descriptive statistical analysis and inferential analysis using an Independent Sample T-test.

3) RESULTS AND DISCUSSION

Based on the results of the initial instrument data processing, it was found that the fine motor skills of children at Nur Islam Santaruna Kindergarten, Makassar City had not reached the expected level. Teachers teach activities involving hand, finger, and eye-hand coordination, such as drawing, coloring, scissors continuously and making children bored and bored with the same media. Regarding the problem of children's fine motor skills, the results of the study revealed the application of ecoprint batik to the fine motor skills of Class B children of Nur Islam Santaruna Kindergarten, Makassar City.

The experimental group consisted of 17 children at Nur Islam Santaruna Kindergarten, Makassar, who received treatment in the form of ecoprint batik activities for five sessions. Before starting the treatment, a pretest was carried out to measure the child's fine motor ability as preliminary data. After the series of ecoprint batik learning sessions was completed, a posttest was held to measure the improvement of fine motor skills that occurred after the treatment. The results of the pretest and posttest in the experimental group were then analyzed descriptively to see changes in values and score distribution, so that an overview of the influence of ecoprint batik activities on the fine motor skills of children in this group was obtained.

Table 1. Description of Pretest and Posttest Data Fine Motor Ability of the Experimental Group

No.	Interval Class	Pretest		Posttest		Category
		Frequency	Percentage (%)	Frequency	Percentage (%)	
1	76 – 100	0	0	16	94,16	Developing Very Well
2	51 – 75	6	23,12	1	5,84	Developing as expected
3	26 – 50	11	76,88	0	0	Starting to Develop
4	0 – 25	0	0	0	0	Undeveloped
Total		17	100	17	100	

Based on the table above, it can be concluded that in the pretest data of the experimental group, there are no children who are very capable of moving their fine motor skills. However, of the 17 children, there are 6 children (23.12%) who have developed as expected, while the other 11 children (76.88%) are in the category of starting to develop. In the posttest data of the experimental group, the children's fine motor skills experienced a significant improvement. A total of 16 children (94.16%) were included in the category of developing very well, while 1 child (5.84%) was in the category of developing as expected.

The control group also consisted of 17 children at Nur Islam Santaruna Kindergarten, Makassar, who did not receive treatment in the form of ecoprint batik activities. Just like in the experimental group, a pretest was carried out to measure the initial fine motor skills of the children in this group. After a predetermined period of time, a posttest is carried out to find out changes in their fine motor skills. The results of the pretest and posttest of the control group were then analyzed descriptively to determine the change in score and data distribution without the intervention of ecoprint batik activities, which will be used as a comparison against the experimental group.

Table 2. Description of Pretest and Posttest Data Fine Motor Ability of the Control Group

No.	Interval Class	Pretest		Posttest		Category
		Frequency	Percentage (%)	Frequency	Percentage (%)	
1	76 – 100	0	0	3	17,68	Developing Very Well
2	51 – 75	5	22,25	10	58,84	Developing as expected
3	26 – 50	12	77,75	4	23,58	Starting to Develop
4	0 – 25	0	0	0	0	Undeveloped
Total		17	100	17	100	

Based on the table above, it can be concluded that in the pretest data of the control group, there are 5 children (22.25%) who have developed as expected, while the other 12 children (77.75%) are in the category of starting to develop. In the control group posttest data, the children's fine motor skills showed a fairly good improvement, with 3 children (17.78%) included in the category of being very able to move fine motors, 10 children (58.84%) were in the category of being able to move fine motors, and 4 children (23.58%) in the category of starting to be able to move fine motors.

After the results of the pretest and posttest are known, a statistical test (Independent Sample T-Test test) is carried out to see how the difference in the average value of fine motor skills between children who learn and children who do not learn using the ecoprint technique of class B Nur Islam Sataruna Kindergarten. The analysis of child learning outcome data aims to draw conclusions about the data that has been obtained from the learning outcome test. To draw conclusions about the data obtained from the learning outcome test, statistical analysis was carried out. Before conducting a hypothesis test, a normality test and a homogeneity test were first carried out using the IBM SPSS Statistics application.

Table 3. Normality Test

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Hasil Penerapan Membatik Ecoprint Kemampuan MotorikHalus	Pretest Eksperimen	.283	17	.001	.835	17	.006
	Posttest Eksperimen	.200	17	.069	.927	17	.193
	Pretest Kontrol	.211	17	.043	.907	17	.089
	Posttest Kontrol	.174	17	.184	.941	17	.327

The results of the normality test in the pretest experimental group above explained that with Kolmogorov-Smirnov the data obtained was 0.283 > 0.05. This means that 0.283 is more than 0.05, then the data is distributed normally. In Shapiro-Wilk, the data obtained were 0.835 > 0.05. This means that 0.695 is more than 0.05, then the data is normally distributed. Furthermore, the results of the normality test in the pretest control group above explained that with Kolmogorov-Smirnov the data obtained were 0.211 > 0.05. This means that 0.211 is more than 0.05, then the data is distributed normally. In Shapiro-Wilk, the data obtained were 0.907 > 0.05. This means that 0.907 is greater than 0.05, then the data is normal.

To find homogeneously distributed data, researchers used the IBM SPSS Statistics application. This can be seen in the following table:

Table 4. Homogeneity Test

		Levene Statistic	df1	df2	Sig.
Hasil Penerapan Membatik Ecoprint Kemampuan Motorik Halus	Based on Mean	8.125	1	32	.008
	Based on Median	8.124	1	32	.008
	Based on Median and with adjusted df	8.124	1	25.222	.009

	Based on trimmed mean	8.194	1	32	.007

The homogeneity test aims to see whether the sample has a homogeneous variation or not. The results of the homogeneity test obtained were 0.008. Thus, it can be concluded that the sample data has homogeneous data.

Furthermore, after the sample is normally distributed and has a homogeneous variation, it is continued with a hypothesis test using a t-test. This is used to see the effectiveness carried out after the treatment is carried out, a t-test is carried out to see the difference in the effectiveness of the child's fine motor skills, where this is done after the treatment. And a posttest was conducted to both groups to see the final results of the tests carried out in the experimental group and the control group. This can be seen in the table below about the T test.

Table 5. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil Penerapan Membatik Ecoprint Kemampuan Motorik Halus	Equal variances assumed	8.125	.008	7.073	32	.000	19.294	2.728	13.737	24.851
	Equal variances not assumed			7.073	22.852	.000	19.294	2.728	13.649	24.939

Based on the results of the analysis of the above statistical data, it can be concluded that the hypothesis is accepted because the significance value (2-tailed) < 0.05 is 0.000< 0.05 which can be seen in the equal variances not assumed data has homogeneous variations, this means that there is a difference in fine motor ability with and without applying ecoprint batik to group B children at Nur Islam Santaruna Kindergarten, Makassar City. So that the treatment given to children in the form of the application of ecoprint batik has an increase related to children's fine motor skills.

Furthermore, after seeing the difference in the average score of fine motor skills between children who learn and children who do not learn using the ecoprint technique, it is continued with the N-Gain

Score test. This is used to determine the effectiveness of using a certain method or treatment in one group pretest posttest design (experimental design or pre-experimental design) or research using a control group (quasi experiment or true experiment).

Referring to the N-gain value in the form of percent (%) and the Descriptive output table, it is possible to make table 4.7 of the results of the calculation of the N-gain score test below:

Table 6. N-Gain Score Test

Descriptives

	Kelas		Statistic	Std. Error
NGain_Persen	Eksperimen	Mean	68.3583	2.22649
		Minimum	56.41	
		Maximum	87.8	
	Kontrol	Mean	25.8419	5.07219
		Minimum	0	
		Maximum	63.46	

Based on the results of the calculation of the N-gain score test, it shows that the average value of the N-gain score for the experimental group is 68.3583 or 68.4%, which is included in the category of quite effective. With a minimum N-gain score of 56.41% and a maximum of 87.80%. Meanwhile, the average N-gain score for the control class was 25.8419 or 25.9%, which was included in the ineffective category. With an N-gain score of at least 0% and a maximum of 63.46%. Therefore, it can be concluded that the use of class B ecoprint technique is quite effective in improving children's fine motor skills in group B of Nur Islam Santaruna Kindergarten, Makassar City.

In the initial observation made by the researcher, the learning activities provided by teachers were limited to conventional activities, such as writing and scissors. These activities generally focus on developing children's fine motor skills, but are only limited to basic skills that do not involve too complex fine movements. However, after the treatment with ecoprint batik activities, the results obtained showed a significant improvement in the children's fine motor skills. The goal of fine motor development is to train children's skills in using their fingers in various daily activities, such as holding a

pencil well and safely, as well as writing, drawing, and coloring skillfully. In addition, fine motor development aims to enable children to optimize the function of small muscles for finger movements, improve coordination between eyes and hands, and help them manage emotions better (Dzariyah & Rocmah, 2024). The importance of paying attention to fine motor development in children is even more obvious when we understand that Early Childhood Education has an important role in shaping characters and skills that will affect their lives in the long term (Martuty et al., 2024).

One of the activities that can be used to train this fine motor skill is batik with the ecoprint technique, which involves hand, finger, and visual-motor coordination. These activities not only support the physical development and artistic skills of children, but also contribute to the foundation of useful life skills in the future. Ecoprint batik activities provide added value in the form of the introduction of natural materials that are part of local wisdom, which are often not widely applied in learning at school. This contributes to the development of children's understanding of their surroundings, as well as fostering a love for the local culture. Batik with ecoprint technique is not just about transferring color pigments from leaves or flowers, but for early childhood, this activity offers an opportunity to experiment with new things and get to know the different types of leaves and flowers that can be used in artwork. Ecoprint batik activities are an alternative to introduce Indonesian culture. In addition to training fine motor skills, this activity also introduces simple science concepts through mixing colors and honing children's creativity. By making ecoprint batik, children are expected to develop logical thinking skills through the art activities they do (Sulismawati et al., 2021). Thus, learning ecoprint batik provides dual benefits: in addition to improving fine motor skills, it also enriches children's knowledge about the natural environment and local wisdom.

Several previous studies have shown the effectiveness of learning by making ecoprint batik on improving students' fine motor skills. Research by Jariah et al. (2023) revealed that batik activities with natural materials can improve the fine motor skills of group B children at the Mataram Model State Kindergarten. Research by Alyannur & Sitorus (2024) revealed that the game of ecoprint batik on leaves with the pounding technique has proven to be very effective in developing the fine motor skills of children aged in the early years of Diina Binjai. Research by Martuty et al. (2024) revealed that playing ecoprints is the most effective method to develop children's fine motor skills. As well as the research of Octaviani, Astini, Rachmayani, & Nurhasanah (2024) which revealed that batik activities with natural materials can have an effect on improving the fine motor development of children aged 5-6 years at RA

Darul Achwan.

Overall, the application of ecoprint batik has proven to be effective in improving children's fine motor skills at Nur Islam Santaruna Kindergarten, Makassar City. The results of this study show that through more creative and fun activities, children not only acquire fine motor skills, but also new knowledge about natural materials and local wisdom that can improve the quality of learning at an early age. Therefore, the use of art-based learning methods such as ecoprint batik can be a good alternative to be applied in various early childhood education institutions to support more optimal fine motor development.

4) CONCLUSION

The conclusion of this study shows that the application of ecoprint batik activities is effective in improving children's fine motor skills in Class B of Nur Islam Santaruna Kindergarten, Makassar City. The results of the data analysis showed that there was a significant improvement in the fine motor skills of the children after participating in the ecoprint batik activity, compared to the control group that was not given similar treatment. Through ecoprint batik activities, children are not only trained in fine motor movements that require precision and coordination, but also get a creative and fun learning experience.

The recommendation of this study is that ecoprint batik activities are applied more widely at various levels of early childhood education as an effective method to develop fine motor skills. Teachers and educators are advised to include this activity in learning to support children's motor development and creativity. Further research is also recommended to assess the long-term impact of ecoprint activities on children's overall development.

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

Amanatul Rufi'ah, & Prasetiya, B. (2023). Mengembangkan Fisik Motorik Halus Anak Usia Dini Melalui Kegiatan Membatik Di Ra Islamiyah Triwung Kidul. *Al-ATHFAL: Jurnal Pendidikan Anak*, *4*(2), 260–278. https://doi.org/10.46773/alathfal.v4i2.1093

Dzariyah, A., & Rocmah, L. I. (2024). Peningkatan Kemampuan Motorik Halus Melalui Kegiatan Membatik Jumputan Pada Anak Usia 4-5 Tahun di TK. *Jurnal Pendidikan Anak Usia Dini*,

1(4), 23. https://doi.org/10.47134/paud.v1i4.707

Fatimah, T., Setiawan, M. H. Y., & Irmade, O. (2024). Implementasi Teknis Ecoprint untuk Meningkatkan Kreativitas Anak Usia Dini di KB Strawberry Surakarta Tahun Pelajaran 2023/2024. *Widya Wacana: Jurnal Ilmiah*, *19*(2), 96–115.

Fransiska, F., Sudarto, S., & Adpriyadi, A. (2023). Implementasi Ecoprint Menggunakan Teknik Pounding Pada Fase Fondasi (5-6 Tahun) Di Tk Santa Maria Sintang. *Jurnal Pendidikan Dasar Perkhasa*, *9*(2), 594–611. https://doi.org/10.31932/jpdp.v9i2.2864

Jariah, A., Astini, B. N., Fahruddin, & Rachmayani, I. (2023). Efektivitas Penerapan Teknik Ecoprint untuk Mengembangkan Motorik Halus Anak. *Journal of Classroom Action Research*, *5*(1), 75–79. https://doi.org/10.29303/jcar.v5i1.2646

Martuty, A., Fadhila, & Arfiani. (2024). Pengaruh Kegiatan Bermain Ecoprint Terhadap Perkembangan Motorik Halus Anak Kelompok B TK Uswatun Hasanah Kabupaten Bantaeng. *SEMINAR NASIONAL DIES NATALIS 62*, 95–100.

Octaviani, W. R., Astini, B. N., Rachmayani, I., & Nurhasanah. (2024). Pengaruh Kegiatan Membatik dengan Bahan Alam untuk Meningkatkan Perkembangan Motorik Halus Anak Usia 5-6 Tahun di RA Darul Achwan. *Jurnal Pendidikan, Sains, Geologi, Dan Geofisika*, *5*(3).

Safitri, N. F., Astini, B. N., Sriwarthini, N. L. P. N., & Rachmayani, I. (2023). Efektivitas Penerapan Teknik Ecoprint Untuk Mengembangkan Kreativitas Anak Usia 5-6 Tahun. *Jurnal Ilmiah Profesi Pendidikan*, *8*(1), 403–409. https://doi.org/10.29303/jipp.v8i1.1181

Shanty, A. D., Handayani, A., & Saputro, B. A. (2022). Pengembangan Metode Membatik Ecoprint Untuk Menumbuhkan Motorik Halus Anak Tk. *JP3 (Jurnal Pendidikan Dan Profesi Pendidik)*, *8*(1), 21–34. https://doi.org/10.26877/jp3.v8i1.13035

Sulismawati, N., Astini, B. N., Rachmayani, I., & Suarta, I. N. (2021). Efektivitas Teknik Ecoprint Untuk Meningkatkan Kemampuan Berpikir Logis Anak Usia 5-6 Tahun Di Tk Edelweiss Dasan Cermen. *Jurnal Ilmiah Pendidikan Dasar*, *08*, 3956–3965.

Susanti, S. M., Henny, & Marwah. (2021). Inovasi Pembelajaran Anak Usia Dini Berbasis Kearifan Lokal melalui kegiatan Eco print di masa pandemic. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, *5*(2), 1987–1996.

Zumaroh, N., Purwadi, P., & Karmila, M. (2023). Analisis kemampuan motorik halus anak melalui kegiatan membuat batik jumputan dari tisu. *Prosiding Seminar Nasiona; Program Studi Pendidikan Guru Pendidikan Anak Usia Dini*, 1–10.