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Peer Tutoring through an Ecoprint Project in Arts and Culture Learning at Madrasah Ibtidaiyah

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ABSTRACT

Objectives: This research aims to test the effectiveness of peer tutoring through an ecoprint project to improving learning outcomes in arts and culture learning at Madrasah Ibtidaiyah (Islamic primary school) students.

Method: The research employed a quantitative experimental design using a one-group pretest-posttest method. The sample comprised 47 students at Madrasah Ibtidaiyah. Data collection was carried out through structured peer tutor observations and performance-based assessment tests measuring students' craft-making abilities. The collected data were analyzed using a *Paired Sample T-Test* and N-Gain Score calculations to determine the statistical significance and instructional impact.

Results: The results of the *Paired Sample T-Test* showed a significance value of 0.000 ($p < 0.05$), which indicated a statistically significant difference in students' project-making skills after peer tutor intervention, but the N-Gain Score of 0.1717 (17.17%) indicated that the level of effectiveness of the peer tutor method was relatively low.

Theoretical Contribution: This research found five steps to implementing peer tutoring through ecoprint projects in arts and culture learning. Hands-on mentoring and structured group presentations within an arts-based curriculum represent a new finding. The results of this research reinforce Islamic educational theory that emphasizes *ta'awun* (cooperation) and character building through practical engagement, and demonstrate the importance of designing appropriate peer tutoring methods in arts and crafts subjects.

Implication: Peer tutoring in arts and culture learning can be implemented through five stages by taking into account adequate student readiness, balanced group composition, and active teacher guidance.

INTRODUCTION

Learning about art and culture plays a crucial role in sustaining human life and shaping cultural values (Alfrey et al., 2025; Escaño et al., 2021). Art education provides learning materials that help students absorb knowledge and develop essential life skills (Farid, 2023; Kusumastuti, 2014). In this context, project-based learning in cultural arts is often considered an effective way to encourage imagination and creativity through works that are both aesthetically pleasing and functionally meaningful (Edwita et al., 2023; Fujiawati et al., 2020). Through these projects, students engage in hands-on experiences that strengthen their ability to express ideas visually and conceptually.

Cultural arts skills are not only based on knowledge and technique but can also support students in building personal identity and self-branding (Kugler & Karpati, 2023; Pratiwi & Yensharti, 2024). These skills help students enhance their collaboration, communication, and creativity, which are essential for 21st-century learning (Komala & Nugraha, 2022). Studying art enables students to develop emotional intelligence, aesthetic appreciation, and critical thinking (Ali et al., 2025; Lum et al., 2019). Learning models that utilize tools and materials can be planned with independent assignments to create craft projects, such as in arts and culture (Hamid et al., 2024; Kalofolia & Siountri, 2023).

Observations at Madrasah Ibtidaiyah (Islamic Primary school) Muhammadiyah Jogosetran, indicate that students experience difficulties completing assignments independently in the arts and culture skills subject. These data are supported by observations of practical activities in the documentation and recapitulation of grades for the arts and culture learning process in the previous fifth grade. Field observations indicate that arts and culture assignments have become a serious issue where students often copy the work produced by others. Interviews at the Madrasah Ibtidaiyah Muhammadiyah Jogosetran Klaten, also uncovered the same problem, namely the ability to independently create craft projects using ecoprinting in art lessons.

Arts and culture learning at Madrasah Ibtidaiyah faces several challenges, such as a lack of varied methods and limitations in implementing art-based projects

that connect students with their cultural values (Hommel et al., 2024). Teachers still rely more on lectures than collaborative learning, while arts and culture learning prioritizes practice and demonstration (Adams et al,, 2025). Building collaboration in schools must be implemented by teachers, taking into account media, methods, and appreciation of student creations (Gusti & Rahayuningtyas, 2025; Jamain et al., 2020). The main problem identified was students' difficulty developing practical skills independently, particularly in craft-based projects (Aguilera & Ortiz-Revilla, 2021; Bright, 2019). This has become a concern for madrasah principals and classroom teachers, who observe project-based learning processes in schools.

Students experience difficulties in understanding and applying art techniques, particularly in craft subjects that involve practical work with the theme of ecoprinting. Teachers are required to implement art learning with well-structured skills assessments, which are often subjective. To address this problem, it is necessary to implement learning methods such as peer tutoring, which encourage students to learn actively with peers and demonstrate their learning with the teacher. The implementation of art-based craft projects such as Ecoprinting will provide a different atmosphere in student learning activities with peers as partners (Sampurno, 2023). Overall, project-based approaches and peer tutoring have not been encountered in this research context.

Several studies have shown that activity-based learning, particularly project-based learning (PjBL), can significantly enhance students' cognitive, social, and creative capacities. PjBL fosters critical thinking and collaborative problem-solving by engaging students in meaningful tasks (Thomas, 2000). Iraqi et al. (2023) Found that PjBL improves students' ability to communicate, collaborate, and create across disciplines. In addition, PjBL has been reported to stimulate brain activity, reduce academic stress, and expand students' insight and learning experiences (Markham, 2011). A research also suggests that PjBL enhances moral development, writing skills, social awareness, and the capacity for sustained focus and analysis (Larmer & Mergendoller, 2015).

When implemented in a cooperative model, project-based learning is particularly effective in developing both receptive and expressive language skills in

young learners (Gillies, 2016). This model encourages interaction in a supportive environment where children learn to communicate, negotiate, and construct meaning with peers. As a result, students are better prepared to work collaboratively on craft projects, which in turn promote independence, responsibility, and a sense of ownership in the learning process (Johnson & Johnson, 2009). Through structured collaboration, students not only develop academic skills but also build the confidence and autonomy necessary for real-life problem-solving.

In the field of education, learning methods are a crucial component that must be carefully planned, especially at the elementary school level (Kertati et al., 2023). The effectiveness of instructional delivery is highly dependent on the teacher's ability to select and apply appropriate learning methods. The use of suitable teaching methods plays a significant role in facilitating students' understanding of subject matter and influences the development of both cognitive and practical skills (Parhannes & Azrizal, 2025; Yusup & Herdiana, 2024). For this reason, the proper selection and implementation of instructional methods are considered vital in shaping the overall quality of the learning environment.

Introducing the peer tutoring method has been recognised as an essential competency for teachers across all educational levels, as it supports differentiated instruction and collaborative learning strategies (Banarsari et al., 2025; Van Keer & Verhaeghe, 2003). The application of the peer tutoring method plays a crucial role in the learning process at the elementary level (Kurniawan et al., 2022). In every thematic learning and all areas in elementary school lessons, peer tutoring learning processes are commonly found. These are often implemented in group form (Arifin & Ekayati, 2021). Despite its proven benefits, the development and implementation of peer tutoring programs in school environments remain underutilised due to limited teacher preparation, inadequate institutional frameworks, and the absence of systematic program planning (Gisbert & Rivas, 2021).

The peer tutoring method not only fosters active learning in the classroom but also promotes camaraderie, collaboration among students, motivation, advice, and joint evaluation outside of class (Gisbert & Rivas, 2021; Susilowati et al., 2021). This method can increase students' learning motivation, sense of responsibility, and

self-confidence (Pratiwi & Yensharti, 2024). The peer tutoring method focuses on learning among students, with teachers becoming facilitators, supervisors, and verifiers in the implementation process. Several studies have shown that peer tutoring provides a more relaxed and supportive learning environment compared to traditional teacher-led instruction (Avramidis et al., 2019; Sari et al., 2024).

Assistance from peers of the same age can reduce anxiety, enhance communication, and foster a more comfortable learning atmosphere (Alegre et al., 2019). Peer tutoring allows students to be more honest and reflective during the learning process, as they feel less judged and more empowered to express difficulties openly (Byl & Topping, 2023; Elghomary & Bouzidi, 2019). In this model, students are no longer passive recipients of knowledge but active participants who both teach and learn from one another. Teachers can use this method as an alternative approach support to students' independent learning readiness at school and at home. This shift promotes a sense of responsibility, collaboration, and mutual respect among learners (Tabanci, 2023; Oikarinen et al., 2022).

Previous studies on peer tutoring have predominantly focused on its application in core academic subjects such as mathematics, reading, and science, showing positive effects on student achievement and motivation (Arco Tirado et al., 2020). Peer tutoring improves student motivation and learning outcomes in science classes (Susilowati et al., 2021). Increased engagement and understanding of peer tutors can be seen in language subjects (Bowman Perrott et al., 2023). However, limited research has been conducted on the implementation of peer tutoring in arts and culture education, particularly in Islamic primary school settings.

This research aims to improve learning outcomes in arts and culture by using peer tutoring through an ecoprint project at Islamic primary school students, specifically at Madrasah Ibtidaiyah Muhammadiyah Jogosetran Klaten. Unlike previous studies that mainly focus on cognitive outcomes, this research highlights how peer tutors help develop students' practical and collaborative skills through eco-print craft projects aligned with the national curriculum theme P5 (Kartika et al., 2023). The uniqueness of this research lies in its focus on the application of peer tutoring methods to the under-explored area of arts education in religious schools.

Pre-research data shows that peer tutoring is rarely used as a structured pedagogical tool, especially in skills-based learning. Although peer tutoring has been widely applied in various subjects, its application in arts education remains limited (Van Keer & Verhaeghe, 2003).

METHODS

Research Design

This research uses a quantitative approach with a pre-experimental type and a one-group pretest-posttest design. Quantitative research is a method used to test hypotheses on a population or sample using research instruments, with data analysed statistically (Sugiyono, 2019). This approach emphasizes the use of numerical data, which is then analyzed using statistical methods to measure effectiveness (Abdussamad et al., 2024). Pre-experimental research is a type of quantitative research design used to test a treatment as a whole but that does not yet meet the characteristics of a true experimental design. This is due to the lack of a control/comparison group of subjects, but the ability to determine whether changes are truly caused by the treatment is still limited. The results are potentially influenced by external factors such as pretests, maturation, or learning conditions outside the treatment, so the results are more appropriately positioned as initial evidence of effectiveness. The one-group pretest-posttest design is employed to observe changes in students' skills before and after the treatment (Arioen et al., 2023).

Procedure

This research was conducted at Madrasah Ibtidaiyah Muhammadiyah Jogosetran Klaten using a pre-experimental procedure with a single-group pretest-posttest design, in which the same group of students was assessed before and after the intervention to identify changes in skills following the treatment. Prior to implementation, the research instrument was prepared and then tested for validity and reliability to ensure it was suitable for data collection. Once the instrument met the required criteria, the implementation phase was carried out in a structured manner. Data collection began on Monday, November 4, 2024, with a pretest to obtain baseline data. The peer tutoring treatment was then administered in three

sessions: Treatment I on Tuesday, November 5, 2024; Treatment II on Wednesday, November 6, 2024; and Treatment III on Thursday, November 7, 2024, which focused on Arts and Culture learning with the theme of ecoprint crafts. On the final day, Friday, November 9, 2024, students completed a posttest to evaluate learning outcomes after the intervention. During the intervention, the researchers worked in two teams: one team provided the peer tutoring treatment, while the other team observed and documented the learning process.

Population and Sample

This research was conducted at Madrasah Ibtidaiyah Muhammadiyah Jogosetran, Klaten, Indonesia, targeting students from grades 5 and 6. Madrasah Ibtidaiyah Muhammadiyah Jogosetran Klaten was selected based on preliminary observations that showed diverse student abilities in art learning, particularly in craft practices. These differences provided the basis for measuring learning improvement through peer tutoring. The school granted permission to support the research to examine skills in individual and group projects. The total number of participants in the main research was 47 students, selected using total sampling from the available population. Instrument validity and reliability testing was conducted before implementation using a separate group of 30 students from a school with the same grade level as the main research. This approach was applied to prevent testing effects on the research participants.

Data Collection

Data in this research were collected through four main techniques: observation, interviews, documentation, and questionnaires. Observations were conducted to examine students' behavior, participation, and interactions during the learning process. Interviews were conducted with teachers and students to explore their views and experiences regarding the peer tutoring method implemented. Documentation included the collection of visual evidence such as photos, videos, student work, and relevant school administrative records. Meanwhile, questionnaires were used to gather students' perceptions in a structured manner regarding the effectiveness of the peer tutoring method in project-based art learning.

The instruments used in this research included a pretest and posttest in the form of descriptive questions to measure students' skills in the ecoprint craft project. Additionally, an observation sheet was used to assess student participation and collaboration during the peer tutoring sessions. Another instrument was a student perception questionnaire designed using a Likert scale to evaluate students' responses to their learning experiences using the peer tutoring method. The table 1 below presents the results of the validity test of the research instruments that have been carried out.

Table 1. Validity Test Results

Question	Correlation Value (Pearson Correlation)	Probability Correlation (sig . 2-tailed)	Information
1. I understand the steps involved in making ecoprint crafts after learning with peer tutoring.	0.867	0.000	Valid
2. My creativity improved through collaboration with peer tutors.	0.849	0.000	Valid
3. I enjoyed the learning process more when guided by my peers.	0.876	0.000	Valid
4. The learning outcomes from peer tutoring were as good as when taught by the teacher directly.	0.894	0.000	Valid
5. The peer tutor helped me solve difficulties during the craft-making process.	0.875	0.000	Valid

The validity of the instrument was tested using two approaches. First, empirical validity was conducted through a Product Moment correlation test using SPSS version 25. The test results showed that all five questionnaire items had a correlation value of more than 0.30 and a significance value below 0.05, thus being declared valid. For the reliability test, Cronbach's Alpha analysis was used, and a value of 0.920 was obtained. This value indicates that the instrument has high reliability because it exceeds the minimum limit of 0.70; therefore, the instrument is declared consistent and suitable for use in research. All five questionnaire items showed a correlation value > 0.30 and p-value < 0.05, indicating that all items are valid.

Data Analysis

Quantitative data from pretest and posttest scores were analyzed using the *Paired Sample T-Test* to determine significant differences in student learning outcomes before and after the peer tutoring intervention. Furthermore, the N-Gain Score was calculated to assess the intervention's effectiveness in improving students' skills. The qualitative data collected through observation and interviews were analysed thematically to identify patterns, supporting the quantitative findings. To enhance data credibility and reduce bias, triangulation of methods and sources was applied across observation, interview, and documentation data.

DISCUSSION

Implementation of the Peer Tutoring Method at Madrasah Ibtidayah Muhammadiyah Jogosetran, Klaten.

The implementation of the peer tutoring method at Madrasah Ibtidaiyah Muhammadiyah Jogosetran Klaten was designed to support student learning in art and culture subjects, particularly in the thematic craft project of *ecoprint*. The peer tutoring method at Madrasah Ibtidayah Muhammadiyah Jogosetran, Klaten was carried out through several structured stages.

The First Stage

The first stage involved selecting peer tutors based on teacher observations of students' academic abilities, social skills, and leadership potential. Tutors were chosen from Grade 5 and 6 students who demonstrated a strong understanding of the arts and the ecoprint craft process, as well as cooperative attitudes. Peer tutor selection aimed at students who excelled socially and academically, with above-average abilities in art and culture. The selection was based on pretest results, followed by observations and interviews with both teachers and students. The selected 10 peer tutors were prepared for their roles with assistance from the teacher, ensuring they had the necessary qualifications and skills for the task.

The pretest was held on Monday, November 4, 2024, with 47 5th- and 6th-grade students of Madrasah Ibtidayah Muhammadiyah Jogosetran Klaten, participating in the first period, which lasted for 90 minutes or 1.5 lesson hours from

08.00 to 09.30 WIB. The pretest was conducted directly in class by calling one group of students to come forward to make ecoprint crafts before the experiment was carried out, in order to assess students' ability to develop art and culture materials based on projects with the theme of ecoprint crafts.

Figure 1. Process of Implementing Ecoprint Skills

The figure 1 above shows the process of implementing ecoprint skills practices in groups, with each group consisting of 5–7 students, and supervised by a teacher. Following the pretest, the researchers conducted observations on the second day to prepare the group for treatment by students who served as peer tutors in learning about art and culture. Peer tutors, whose indicators have been validated and tested for reliability, will mentor several students in a group. Researchers consider the material to be delivered by the peer tutors to students according to the planned indicators, where the peer tutors act as companions and explainers of arts and culture material on the ecoprint craft theme to help their friends who do not yet understand or are unable to practice the craft.

The Second Stage

In the second stage, students were divided into small, heterogeneous groups, each consisting of one tutor and several tutees. Tutors were given instructional guides outlining the steps of the ecoprint project, while the teacher provided necessary materials and explained the project-based learning objectives. The selection of peer tutors was based on the pretest scores given to students. The reason for selecting peer tutors was their above-average qualifications, as determined through observations and interviews with teachers and students. After identifying suitable peer tutors, the next

step was to provide treatment to students in class using the peer tutoring method, with the teacher acting as a facilitator. This research focused on the material skills the peer tutors had mastered.

The Third Stage

The third stage focused on guided practice, where peer tutors facilitated hands-on activities such as preparing fabric, selecting leaves, arranging patterns, and printing. Tutors acted as facilitators—providing instructions, answering questions, and assisting with difficulties—while the teacher monitored the process and supported group dynamics. This stage was supported by observation data from the teacher and research team, using observation sheets to assess peer tutors and their groups. The observation process included checks for the correct implementation of activities, with indicators aligned with the project's goals.

After identifying suitable student tutors, the next step was to provide treatment to students in the classroom using the peer tutoring method, with the teacher acting as a facilitator. The research focused on the material skills that had been understood by the peer tutors.

This is supported by observation data on the implementation of the tutoring method, accompanied by a teacher-researcher using an observation sheet. In assessing peer tutors and student group members, the observation focused on the implementation of learning activities in art and culture based on the ecoprint craft project. The peer tutor observation sheet had been tested by the research validation team to determine target observation indicators related to planning, processes, and assessments provided to peer tutors, and was further supported by evaluation data from teachers and interviews with teachers and students in Grades 5 and 6. The observation sheet, besides being completed by the research team, was also filled out by Grade 5 and 6 teachers during their observations.

The Fourth Stage

The next stage was the implementation of teacher and team observations, with the analysis providing a check mark (V) in the "yes" column if the activity was carried out in accordance with the indicators, and a check mark (X) in the "no" column if the activity was not carried out in accordance with the indicators. The fourth stage

also involved collaborative reflection, where students discussed their experiences, evaluated their group work, and exchanged feedback between tutors and tutees. Observation sheets filled out by the research team and teachers helped assess whether the activities were implemented according to the planned indicators. The activity is not carried out in accordance with the indicators. The results of observations on the implementation of the peer guidance method can be seen in the summary of the table 2:

Table 2. Percentage of Implementation of the Peer Tutor Method

3nd Meeting	Percentage Implementation (%)	
	Yes	No
1	100.00	0.00
2	100.00	0.00
3	100.00	0.00

Based on the table 2 above, it can be seen that the percentage of implementation of learning with peer tutors, as evaluated by the research team and classroom teachers, from the first meeting until the third meeting was implemented successfully in accordance with the achieved indicators. As for the mentoring process, peer tutoring activities were adjusted according to reference activities developed by the researchers as learning materials and achievement targets based on the research tasks. The stages of peer tutoring activities can be seen in the table 3.

Table 3. Stages of peer tutoring activities.

Number	Stages activity	Companion
1	Students are introduced to tools, materials, types, and forms.	Peer Tutors and teachers
2	Students demonstrate the design of ecoprint crafts	Peer tutor
3	Students are introduced to the techniques and stages of making ecoprint crafts	Peer Tutor
4	Students evaluate the ecoprint production process	Peer Tutor
5	Students complete the ecoprint craft work	Peer Tutor
6	Students assess the results of their work, including workmanship and artistic aspects, independently and describe them.	Peer tutors and teachers

The above stages were developed based on a comprehensive process of evaluation and validation involving two subject matter experts in education and two

classroom teachers from grades 5 and 6. These experts reviewed the learning design, peer tutoring procedures, and assessment instruments to ensure that the implementation of peer tutoring aligned with the objectives of arts and culture education—particularly within the context of project-based learning using ecoprint craft materials.

The validation results indicated that the learning stages, task distribution, and role of peer tutors were appropriate and feasible to be applied in the classroom. Experts emphasized the importance of clear role definitions for peer tutors, as well as scaffolding strategies that gradually guide students toward independence in the crafting process. Meanwhile, the teachers provided input based on classroom practicality, suggesting minor adjustments related to student grouping and time allocation to optimize learning effectiveness.

The Fifth Stage

Finally, in the fifth stage, each group presented their ecoprint work to the class. Peer tutors were responsible for explaining their group's process, while the teacher assessed the creativity, neatness, and teamwork demonstrated in each project. This structured implementation not only improved students' practical skills but also fostered meaningful collaboration and leadership within the learning environment. The results of these assessments were documented, with check marks indicating whether each activity met the specified criteria.

The implementation of peer mentoring in the ecoprint craft project at Madarasah Ibtidaiyah Muhammadiyah Jogosetran Klaten follows five important stages that must be guided by the teacher and observed by the peer tutor group. First, the teacher selects several students to act as peer mentors and provide initial guidance regarding the ecoprint assignment. Second, the teacher forms groups to ensure diversity of abilities within each group. Third, the peer mentors provide guidance throughout the ecoprint process, starting from helping group members determine the theme and design (motif, shape, and coloring) to guiding technical steps using the right tools, materials, and techniques so that each member understands the procedure. Fourth, the teacher observes and documents the implementation of the guidance carried out by the peer mentors to ensure the learning process runs as

expected. Fifth, each group presents their ecoprint work to the class and teacher. Students are encouraged to demonstrate collaboration, communication, and creativity through active participation, contributing ideas, and applying techniques that produce aesthetic and meaningful results.

In the procedural description, the implementation of peer tutoring can be read as five main stages, namely: 1) structured tutor interaction with carefully prepared material; 2) initial determination of roles or activities; 3) providing sufficient time to strengthen the structure of the material; 4) monitoring student progress by the teacher; and 5) providing feedback so that students can develop further. This is related to building student collaboration, with leadership, and peer-assisted learning (Fernandez Barros et al., 2023). Hands-on mentoring and structured group presentations within an arts-based curriculum represent a new finding, highlighting the method's potential to support both technical skill development and character education. This adaptation strengthens the relevance of peer tutoring within creative and culturally rooted learning environments.

The implementation stages in this research are similar to previous peer tutoring studies in that both are structured by the teacher, involve the assignment of peer tutor teams, and require teacher monitoring throughout the learning process. This research differs in that it uses heterogeneous groups rather than paired tutoring, relies on fixed tutor roles rather than reciprocal role exchange, and includes group presentations as the final stage of learning. While previous implementations emphasized initial tutor training and ongoing feedback, this research focuses more on group-based practice in completing ecoprinting skills projects.

The Effectiveness of Peer Tutoring through Ecoprint Project in Arts and Culture Learning

From the data obtained, the average pretest result was 11.30, the standard deviation was 3.719, the maximum value was 17, and the minimum value was 5. Here is a description of the distribution of pretest data in terms of frequency, ability, understanding, and ecoprint craft material. Based on the frequency distribution of pretest scores, a total of 47 respondents were classified into four categories, namely very high, high, medium, and low. The category with the highest frequency is

moderate (score 9–12), which includes 20 respondents (37%), indicating that a large proportion of the respondents are currently at this level.

The graph illustrates the pretest and posttest results. It shows three categories: Average, Maximum, and Minimum. The blue bars represent the pretest results, while the orange bars represent the posttest results. The average score is higher in the posttest than in the pretest, indicating improvement. The maximum score indicates a significant increase from pretest to posttest. However, the minimum score remains relatively consistent, although slightly higher in the posttest. The obtained posttest score averaged 12.59, with a standard deviation of 3.608, a maximum score of 18, and a minimum score of 6. The following table describes the posttest frequency distribution of students' ecoprint craft-making ability: Based on the posttest score frequency distribution table, the 47 respondents were grouped into four categories: very high, high, medium, and low.

The obtained data show a posttest score average of 12.59, a standard deviation of 3.608, a maximum score of 18, and a minimum score of 6. Based on the posttest frequency distribution of students' ecoprint craft-making ability, the total number of 47 respondents was grouped into four categories: very high, high, medium, and low. The high category (score 13–16) and the medium category (score 9–12) included 10 (33%) and 20 respondents (33%), respectively, making them the most dominant categories in the distribution. Furthermore, there were 7 respondents (19%) who were in the very high category (score 17–20), indicating that a small proportion of respondents achieved very high scores. As for the low category (score 4–8), it included 10 respondents (15%). Overall, respondents are predominantly in the medium and high categories, which indicates a similar distribution pattern.

The graph below shows the pretest–posttest results, with a class pretest average score of 11.30, a maximum value of 17, and a minimum value of 5. After examining the pretest and posttest chart above, an average increase in students' ability to make crafts with peer tutors was observed among students in Grades 5 and 6 at Madrasah Ibtidaiyah Muhammadiyah Jogosetran Klaten before and after the given treatment. The pretest–posttest scores of students' ability in peer tutoring for making ecoprint crafts, each group is shown in the graph in figure 2.

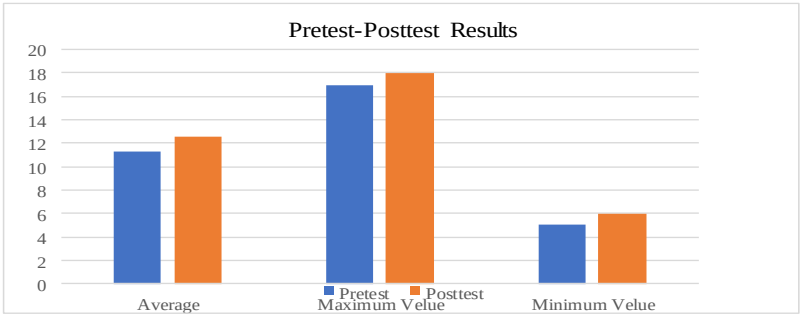

Figure 2. Pretest-Posttest Results Graph

Furthermore, there were 10 respondents (26%) who were in the high category (score 13–16) and 10 respondents (26%) who were in the low category (score 4–8). The very high category (score 17–20) has the fewest respondents, namely 7 people (11%). Overall, this data shows that the majority of respondents are in the medium and high categories, while the proportion of respondents with very high scores is still relatively low.

This research used a normality test with the Kolmogorov–Smirnov test using SPSS version 25 for Windows. The criteria for the normality test are that the data are considered normally distributed if the significance value is greater than 0.05. The results of the normality test in this research for the pretest and posttest in the same class are presented in table 4.

Table 4. Results of the Normality Test of Pretest and Posttest Scores

	Sig. Kolmogorov Smirnov	
Results	***Pretest***	***Posttest***
	0.200	0.200
Information	Normally Distributed	Normally Distributed

Based on the table 4 above, it can be seen that the pretest and posttest evaluation results have a significance value > 0.05. The pretest normality test results have a significance value of 0.200. The results of the normality test show that a significance value > 0.05 means that the pretest evaluation data are normally distributed. The posttest normality test results have a significance value of 0.200. The results of the normality test show that a significance value > 0.05 means that the posttest evaluation data are also normally distributed. Based on the explanation, it

can be concluded that the pretest and posttest evaluation data are normally distributed.

This research used the *Paired Sample T-Test* Hypothesis testing was conducted with the help of the SPSS version 25 application for Windows. The *Paired Sample T-Test* was used to compare the average pretest and posttest scores of the same group. This was done to determine whether there was a significant difference resulting from the peer tutoring method used in making ecoprint crafts among students. The results *Paired Sample T-Test* are shown in table 5.

Table 5. *Paired Sample T-Test* T Test Results

	Sig. (2-tailed) Paired Sample T Test
Results	Post-test
	0,000
Information	There is a Difference

Based on the table 5 above, it can be seen that the significance value (2-tailed) of the posttest score is 0.000. The value is less than 0.05 (sig. 2-tailed < 0.05); therefore, H_0 is rejected and H_a is accepted. This means there is a difference in students' ability to make ecoprint crafts at Madrasah Ibtidaiyah Muhammadiyah Jogosetran Klaten after being given the peer tutoring treatment. Thus, it can be concluded that there is a difference in students' ability to understand and make ecoprint crafts at Madrasah Ibtidaiyah Muhammadiyah Jogosetran Klaten when using the peer tutoring method as a learning companion.

After determining that there is a difference in students' ability, understanding, and ecoprint-making skills at Madrasah Ibtidaiyah Muhammadiyah Jogosetran Klaten with the peer tutoring method, the next effectiveness test was conducted with the N-Gain Score test. The results of the N-Gain Score test are shown in Table 6.

Table 6. N-Gain Score Effectiveness Test Results

Descriptive Statistics					
	N	Min	Max	Mean	Std. Deviation
N-Gain Score	47	.00	0.50	.1717	.11670
N-Gain Percent	47	.00	50.00	17.1748	11.66990
Valid N (listwise)	47				

Based on the table 6, it can be seen that the average N-Gain Score is 0.1717. The gain score is less than 0.3; therefore, the improvement falls into the low category. As for the percentage improvement, the gain is 17.1748%.

The conclusion from the calculations of the hypothesis test, effectiveness, and percentage increase in students' ability to make ecoprint crafts is as follows, the significance value (2-tailed) of the *Paired Sample T-Test* for the posttest score is 0.000 < 0.05, therefore, H_0 is rejected and H_a is accepted. The results obtained show an N-Gain Score of 0.1717 and an effectiveness percentage increase in students' ability to make ecoprint crafts of 17.17%. The research on the effectiveness of the peer tutoring method at Madrasah Ibtidaiyah Muhammadiyah Jogosetran Klaten reveals a positive but modest improvement (17.17%) in students' skills and understanding of ecoprint crafts. Although the method showed improvement, the limited duration of the intervention (only three sessions) might have hindered more significant progress. Peer tutoring requires repeated practice and an environment conducive to learning, which was not fully achieved within the brief period of intervention.

Despite statistical significance in the intervention's effectiveness, the modest improvement in students' skills indicates that the effectiveness was not substantial enough to make a meaningful difference in practical learning outcomes. Factors such as the short duration of the intervention, the preparedness of peer tutors, large group sizes, and the complexity of the skills involved likely contributed to this outcome. To enhance the effectiveness of peer tutoring in similar projects, long-term planning, intensive preparation, and extended training periods for both students and tutors are recommended.

In the context of Islamic education, peer tutoring reflects the values of mutual assistance, trust, and respect as demonstrated in the five learning processes during the implementation of ecoprint practices. This research shows the values of students working together in groups, peer tutors guiding classmates, and communication that respects each other and fosters a sense of trust. In Islam, the command for ta'awun (cooperation) is found in the Qur'an Surah Al-Ma'idah 5:2 (Aziz & Ojim, 2025), while trust and respect are found in Qur'an Surah An-Nisa' 4:58 (Hardiyanti et al., 2025). Thus, peer tutoring not only supports cognitive achievement but also moral

and spiritual growth, strengthening the holistic goal of Islamic education in developing knowledge along with the character of students in Islamic primary schools.

CONCLUSION

This research concluded that the peer tutoring method was ineffective in improving students' skills in ecoprint craft projects at Madrasah Ibtidaiyah Muhammadiyah Jogosetran Klaten, with an N-Gain Score of 0.1717, below the threshold of 0.3, indicating low effectiveness (17.17%). The research found five stages in implementing peer tutoring through ecoprint projects in arts and culture learning: 1) the teacher selects students to be peer tutors; 2) the teacher forms heterogeneous student groups; 3) the peer tutors carry out the tutoring; 4) the teacher observes the implementation of the peer tutoring; and 5) each group presents their ecoprint work to the class. Hands-on mentoring and structured group presentations within an arts-based curriculum represents a new finding. Theoretically, this research expands Islamic educational theory, which emphasizes *ta'awun* (cooperation) and character development. Several factors that limit the contribution to these research results need further investigation, namely students' lack of readiness to absorb information from peer tutors, group imbalance, and lack of positive responses from students due to personal preferences or group dynamics.

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