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# Integration of Islamic Ecological Ethics in Plastic Waste-Based Arts and Culture Learning for Student Creativity

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**ABSTRACT**

This study aims to analyze the integration of Islamic Ecological Ethics in the utilization of plastic waste in Arts and Culture learning to enhance student creativity at MIS Al-Falah Nipa. The research is motivated by the increasing problem of plastic waste and the suboptimal utilization of the environment as a contextual and meaningful learning resource for Arts and Culture learning. Furthermore, student creativity in learning still tends to be low because students prefer to imitate examples given by teachers rather than develop ideas independently. This study used a qualitative descriptive exploratory research method. The participants consisted of 32 fifth-grade students and one Arts and Culture teacher selected using purposive sampling techniques. Data collection was conducted through observation, semi-structured interviews, and documentation. Data analysis used the Constant Comparative Procedure (CCP) through a continuous process of data reduction, coding, categorization, and drawing conclusions. The results showed that the integration of Islamic Ecological Ethics in Arts and Culture learning based on the utilization of plastic waste was able to increase students' creativity in the aspects of fluency, flexibility, originality, and elaboration. Learning also increased students' ecological awareness through environmentally conscious behavior, responsibility in utilizing plastic waste, and an understanding of the importance of protecting the environment from an Islamic perspective. In addition, project-based learning created a more active, collaborative, and contextual learning atmosphere. Despite constraints such as limited time and facilities, this learning still showed great potential in supporting sustainable education based on Islamic values. This study confirms that the integration of Islamic Ecological Ethics in Arts and Culture learning can be an innovative strategy in forming a creative and environmentally conscious generation starting from elementary school.

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## INTRODUCTION

In Indonesia, the problem of plastic waste is still a serious challenge for the government. This is based on various reports showing that the volume of plastic waste continues to increase along with the growth in public consumption [1]. This problem is not limited to large cities but also affects rural and developing areas, including Bima Regency. This phenomenon demonstrates that the plastic waste problem is not simply a technical issue of waste management, but is also closely related to low levels of ecological awareness and environmental literacy in the community from an early age [2], [3]. In this context, educational efforts are needed that can instill sustainable environmental awareness through contextual and meaningful educational processes.

From the perspective of Islamic Ecological Ethics, humans are seen as caliphs with a moral responsibility to maintain the balance and sustainability of nature. Islam views the environment as a trust that must be protected and utilized wisely, not over-exploited. Values such as cleanliness, responsibility, balance (*mizan*), and the prohibition of causing damage (*fasad*) to the earth serve as ethical foundations for building ecological awareness in society [4], [5]. Therefore, the plastic waste problem should not only be understood as an

environmental issue, but also as a moral and spiritual problem that requires solutions based on education and Islamic values.

Schools, as formal educational institutions, have a strategic responsibility in shaping the character and ecological awareness of students. Education serves not only to transfer knowledge but also to instill values, attitudes, and skills relevant to the challenges of the times [6]. In the face of the global environmental crisis, schools are required to integrate environmental education into various subjects, including arts and culture. Arts and culture subjects are flexible, creative, and contextual, allowing for the use of various alternative media, including recycled materials like plastic waste. Through this approach, learning is not only oriented towards the product but also focuses on developing students' holistic ecological awareness.

The integration of Islamic Ecological Ethics in Arts and Culture learning is important because it provides a philosophical and spiritual foundation in the learning process. Art lessons utilizing plastic waste not only foster students' creativity but also instill the values of trust, social awareness, and environmental responsibility as part of their religious obligations. This way, students not only understand the aesthetic aspects of artwork but also recognize that environmental protection is part of implementing Islamic teachings in their daily lives.

Arts and culture learning at elementary school level aims to develop students' creativity, imagination, aesthetic appreciation and motor skill [7]. However, the reality on the ground shows that arts and culture learning still tends to use conventional media and ready-made materials, such as drawing paper, plasticine, and manufactured craft tools. These learning practices fail to fully utilize the surrounding environment as an authentic and contextual learning resource. As a result, the learning process often lacks ample space for students to explore and simultaneously develop creativity and environmental awareness.

This gap between the potential of contextual learning and conventional learning practices is what gives rise to academic anxiety. On the one hand, the school environment faces a significant plastic waste problem, while on the other hand, learning has not fully utilized this problem as a source of student creativity and innovation [8]. MIS Al-Falah Nipa, as a school based on Islamic values, has a significant opportunity to integrate environmental education with Islamic Ecological Ethics through arts and culture learning. The values of cleanliness, responsibility, and environmental concern taught in Islam can be implemented concretely through the use of plastic waste as a creative medium. However, the extent to which this integration of values can enhance students' creativity and ecological awareness still requires further scientific study.

Based on initial observations, it was found that plastic waste such as beverage bottles, food wrappers, and plastic bags is still widely found in the school environment. Furthermore, the use of recycled materials in Arts and Culture learning has not yet become a primary part of the learning strategies implemented by teachers. Student creativity has also not developed optimally because most students still tend to imitate examples given by teachers without exploring more varied ideas. The resulting work tends to be homogeneous and lacks elements of novelty or originality [9]. This condition indicates a gap between environmental reality and the learning process taking place in the classroom.

This situation indicates that learning has not fully integrated Islamic environmental ethics values into educational practices. However, developing an environmentally conscious character in Islam is not sufficient through mere theoretical presentation; it must be realized through real-life experiences and habits in everyday life. Utilizing plastic waste as a creative learning medium can be an effective way to internalize Islamic Ecological Ethics in students from an early age.

In fact, creativity is a crucial 21st-century competency that needs to be developed from an early age. Creativity is not only related to the ability to produce works of art, but also the ability to think divergently, solve problems, and find innovative solutions to challenges [8], [9], [10], [11]. In this context, utilizing plastic waste

as a medium for art learning has great potential to foster the development of students' creative thinking skills. When students transform plastic waste into useful works of art, they learn to transform something considered worthless into an object with aesthetic and economic benefits. This process indirectly trains students' flexibility of thought, imagination, and elaboration skills.

Theoretically, learning based on environmental utilization is in line with the constructivist approach which emphasizes that knowledge is built through direct experience [12]. When students are actively involved in the process of designing and creating works from used materials, they not only learn art techniques but also construct meaning regarding the importance of protecting the environment. From the perspective of Islamic Ecological Ethics, the activity of recycling plastic waste into works of art also reflects the implementation of the value of human responsibility towards nature as a mandate from Allah SWT. Thus, learning Arts and Culture based on the utilization of plastic waste not only has a pedagogical dimension, but also a spiritual and moral dimension that strengthens the formation of students' religious and ecological character.

Several previous studies have examined the use of recycled materials in art instruction in elementary schools. Research conducted by Syofiyanti et al. showed that the use of recycled materials such as cardboard and plastic bottles in craft activities significantly increased student participation and interest in learning [13]. Similarly, research by Abdullah et al. found that project-based learning utilizing plastic waste can foster environmental awareness and improve students' creativity, fluency, and flexibility [14]. However, both studies focused more on increasing learning interest and environmental awareness, while creativity measurements have not been comprehensively analyzed based on theoretical indicators such as originality and elaboration. Furthermore, the research context is still general and has not been specifically conducted in Islamic value-based schools.

Another study by Dhany et al., examined the integration of environmental education in Arts and Culture subjects through the ecocraft program in urban elementary schools and found an increase in students' motor skills and collaborative abilities [15]. However, most of these studies focus more on the aspect of creativity or environmental education in general and have not specifically integrated the perspective of Islamic Ecological Ethics in Arts and Culture learning. In addition, research on the utilization of plastic waste in schools based on Islamic values, especially in Bima Regency, is still relatively limited. Therefore, this study has a novelty in the integration of Islamic ecological ethics in arts and culture learning based on plastic recycling as an effort to increase creativity while forming ecological awareness of students, and has not been conducted in the local context of Bima Regency, especially Nipa Village, Ambalawi District.

The researchers' academic concerns grew when they observed that the abundant plastic waste in school environments was not being utilized as an educational and creative learning resource. If this situation continues, schools will miss a crucial opportunity to simultaneously instill ecological awareness, creativity, and Islamic values in students. Furthermore, monotonous and uninnovative learning has the potential to lead to boredom, thus hindering the development of students' creative potential. Therefore, learning innovations are needed that can provide enjoyable, contextual, and meaningful learning experiences through the integration of Islamic Ecological Ethics values into the use of plastic waste in arts and culture learning.

Considering these gaps, urgency, and potential contributions, research on the Integration of Islamic Ecological Ethics in the Utilization of Plastic Waste in Arts and Culture Learning to Enhance Student Creativity at MIS Al-Falah Nipa is crucial. This research is expected to provide an empirical overview of the process of integrating Islamic ecological ethics values into learning, the effectiveness of utilizing plastic waste as a creative learning medium, and its impact on increasing students' creativity and ecological awareness.

## METHODOLOGY

This research uses a qualitative approach with a descriptive exploratory approach. Qualitative descriptive research aims to provide a systematic and accurate description of social phenomena, learning processes, and realities in the field, based on facts without any data manipulation [16]. This approach was chosen because the research focuses on an in-depth study of the integration of Islamic Ecological Ethics in the utilization of plastic waste in Arts and Culture learning and its impact on increasing student creativity at MIS Al-Falah Nipa. In this study, the researcher followed the principles of qualitative research reporting to ensure the validity, transparency, and credibility of the research results [17].

Participants in this study consisted of 32 fifth-grade students and one Arts and Culture teacher at MIS Al-Falah Nipa, Ambalawi District, Bima Regency. Participants were selected using a purposive sampling technique because they were directly involved in the Arts and Culture learning process based on the utilization of plastic waste. Students were chosen as the main subjects of the study because they actively participated in creative activities in processing plastic waste into works of art, thus enabling researchers to examine the development of students' creativity and ecological awareness through Islamic Ecological Ethics-based learning. Meanwhile, teachers were selected as key informants because they have a role in designing, implementing, and evaluating the learning process. The purposive sampling technique was used so that the data obtained were more in-depth, contextual, and relevant to the research objectives [18].

Data collection instruments in this study included observation, semi-structured interviews, and documentation. The observation instruments were designed to identify indicators of student creativity and ecological awareness during the learning process. Observations focused on student participation in creative activities, students' ability to process plastic waste into art products, collaborative interactions between students, and the implementation of Islamic Ecological Ethics values such as cleanliness, responsibility, environmental awareness, and wise use of resources. To maintain consistency of observations, the researcher used a structured observation sheet so that the data obtained were more systematic and focused [17].

Semi-structured interviews were conducted with teachers and students to gain a deeper understanding of their experiences during the learning process. Interviews with students focused on their perceptions regarding the use of plastic waste as a medium for art learning, their creative experiences during the creative process, and their understanding of the responsibility to protect the environment from an Islamic perspective. Interviews with teachers focused on learning strategies, obstacles in implementing environmentally-based learning, and the effectiveness of integrating Islamic Ecological Ethics into arts and culture learning. Interview guidelines were validated through expert judgment involving experts in Islamic education, arts education, and qualitative research [19]. Based on the validator's input, several improvements were made to the structure and wording of the questions to make them more contextual and in line with the research objectives.

**Table 1.** Indicators of Student Creativity and Islamic Ecological Ethics

| Aspect | Indicator | Code |
|---|---|---|
| Fluency | The ability to produce various creative ideas from plastic waste | A1 |
| Flexibility | Ability to create variations in the shape and design of works | A2 |
| Originality | The ability to produce unique and original work | A3 |
| Elaboration | Ability to develop detailed work in detail | A4 |
| Ecological Awareness | Demonstrate concern for environmental cleanliness | B1 |
| Responsibility | Utilizing plastic waste responsibly | B2 |
| Islamic Ecological Ethics | Understanding environmental protection as part of Islamic values | B3 |

The data collection process was carried out through several stages, starting with initial observations and preliminary interviews, followed by the implementation of the learning, then ending with further observations and final interviews. In the initial stage, researchers conducted pre-observations to determine the initial conditions of student creativity and environmental awareness in Arts and Culture learning. Next, the learning implementation was carried out through project-based activities by utilizing plastic waste such as beverage bottles, food wrappers, and plastic bags as the main materials for making artwork. During the learning process, students were directed to design, create, and present their work individually or in groups while reflecting on the values of Islamic environmental ethics related to the mandate to protect nature.

Throughout the learning process, students actively engaged in creative activities and documented their ideas and experiences related to the use of plastic waste as a medium for their work. Follow-up observations were conducted to assess changes in students' creativity, participation, and ecological awareness after the learning activities. These observations focused on student engagement, the originality of the work produced, the flexibility of ideas, and students' understanding of Islamic environmental ethics. Follow-up interviews with students and teachers were conducted to obtain their perceptions regarding the effectiveness of utilizing plastic waste in Arts and Culture learning on enhancing students' creativity.

The data analysis in this study used the Constant Comparative Procedure (CCP), a qualitative analysis technique carried out through a continuous process of comparing data to identify patterns, categories, and research themes. The CCP technique was applied to data from observations, interviews, and documentation to identify the development of student creativity and the implementation of Islamic Ecological Ethics during the learning process. Observational data were analyzed through a coding process of behaviors related to creativity, such as the ability to generate ideas, uniqueness of work, flexibility of thinking, and elaboration of work details. In addition, ecological behaviors such as environmental awareness, responsibility for waste, and collaborative participation were also analyzed continuously.

Interview data was analyzed using thematic analysis to identify key themes related to students' creative experiences, ecological awareness, and teacher-implemented learning strategies. Themes such as recycling-based creative exploration, students' environmental awareness, the effectiveness of project-based learning, and the implementation of Islamic values in environmental education emerged from the data analysis process. Through a continuous data comparison process, the research results are expected to provide an in-depth empirical picture of the integration of Islamic Ecological Ethics in the utilization of plastic waste in Arts and Culture learning to enhance student creativity at MIS Al-Falah Nipa [20].

## RESULTS

### Developing Creativity through Utilizing Plastic Waste

The development of creativity is the main dimension studied in this study, which includes four main indicators, namely fluency (fluency in generating ideas) (A1), flexibility (flexibility of thinking) (A2), originality (authenticity of work) (A3), and elaboration (ability to develop details of work) (A4). The results of the study indicate that the integration of Islamic Ecological Ethics in Arts and Culture learning through the utilization of plastic waste provides a significant contribution to increasing student creativity at MIS Al-Falah Nipa. Learning activities that utilize plastic waste as a creative medium are able to encourage students to explore ideas, develop imagination, and produce creative works based on environmental awareness and Islamic values.

Before the implementation of environmental-based learning, most students tended to simply follow the examples provided by their teachers. Students still struggled to develop ideas independently, resulting in homogenous work that lacked novelty. Furthermore, students were unfamiliar with utilizing recycled materials

from their surroundings as creative media. However, after implementing project-based learning utilizing plastic waste, students began to show significant changes in their creative thinking processes. Students appeared more confident in creating work, dared to try new shapes and designs, and were more active in developing ideas based on their individual imaginations. The increase in student creativity can be seen from the observation results which show an increase in scores on all creativity indicators as shown in Figure 1 below.

**Table 2.** Average Student Creativity Score Before and After Learning

| Indicator | Before Learning | After Learning |
|---|---|---|
| A1 – Fluency (Fluency of Ideas) | 25% | 57% |
| A2 – Flexibility (Flexibility of Ideas) | 22% | 53% |
| A3 – Originality (Authenticity of the Work) | 18% | 49% |
| A4 – Elaboration (Elaboration of Work) | 20% | 51% |

The increase in scores indicates that the use of plastic waste as a medium for art learning can stimulate students' creative thinking skills more optimally. Students are starting to be able to generate various alternative ideas, modify plastic materials into various forms of work, and develop the details of the work in a more detailed and interesting way. One student (S4) said, "*Previously I thought plastic bottles were just ordinary trash, but after art lessons I can make flowers, pencil cases, and decorations from used bottles*." This statement shows a change in the students' perspective on plastic waste, from an object of no value to a creative medium that has aesthetic benefits.

A similar sentiment was expressed by another student (S8) who stated, "*I am happy because I can create my own work without having to be the same as the teacher's example. I get a lot of ideas when I see plastic waste*." This statement indicates an increase in students' confidence in developing creativity independently. Based on observations, students also appeared to be more active in discussing with friends, exchanging ideas, and trying various variations of work forms during the learning process. Thus, learning Arts and Culture based on the utilization of plastic waste integrated with Islamic Ecological Ethics has been proven to be able to increase students' creativity in a contextual and meaningful manner.

## Ecological Awareness and Implementation

Ecological awareness was another important aspect identified in this study, particularly regarding students' understanding of their responsibility to protect the environment from an Islamic perspective. This dimension encompasses indicators of environmental concern (B1), responsibility in utilizing plastic waste (B2), and an understanding of Islamic ecological ethics as part of Islamic teachings (B3). The results showed that the integration of Islamic ecological ethics values into arts and culture learning significantly increased students' ecological awareness.

Prior to the learning process, most students still viewed plastic waste as worthless and therefore discarded without sorting or reusing it. Awareness of maintaining a clean school environment was also limited to school rules and not yet understood as part of moral and religious responsibility. However, after students participated in learning that linked waste management to Islamic values, attitudes changed significantly. Students began to understand that maintaining a clean environment is part of implementing Islamic teachings regarding humanity's mandate as caliphs on earth. This change can be seen from the increase in observation scores as shown in Figure 2 below.

**Table 3.** Average Ecological Awareness Score Before and After Learning

| Indicator | Before Learning | After Learning |
|---|---|---|
| B1 – Environmental Concern | 30% | 65% |
| B2 – Responsibility for Waste Utilization | 27% | 61% |

| | | |
|---|---|---|
| B3 – Comprehension*Islamic Ecological Ethics* | 24% | 67% |

This improvement indicates that students are beginning to understand the relationship between environmental stewardship and Islamic values. One student (S10) stated, "*After learning about environmental stewardship in Islam, I realized that littering can damage nature and is not good according to religion*." This statement indicates the internalization of moral and spiritual values in the learning process. Furthermore, another student (S12) also stated, "*Now I prefer to collect plastic bottles to make crafts rather than throwing them away*." This demonstrates the development of students' sense of responsibility and concern for the surrounding environment. Based on observations, students appeared more disciplined in maintaining classroom cleanliness, sorting plastic waste, and were more enthusiastic about utilizing used materials in learning activities. Thus, the integration of Islamic Ecological Ethics in Arts and Culture learning not only enhances students' creativity but also strengthens their environmental stewardship and social responsibility from an early age.

## Active Participation and Collaboration of Students in Learning

Students' active participation and collaborative skills were also important findings in this study. Project-based arts and culture learning utilizing plastic waste created a more interactive, enjoyable, and participatory learning environment. Throughout the learning process, students focused not only on their work but also actively engaged in discussions, group collaboration, and collaborative problem-solving.

Prior to the implementation of the learning model, student participation in Arts and Culture lessons was relatively low. Only a few students actively asked questions or offered opinions during the learning process. Others tended to be passive and awaited teacher direction. However, after the implementation of project-based learning utilizing plastic waste, student participation and engagement significantly increased.

**Table 4.** Average Score of Student Participation and Collaboration

| Indicator | Before Learning | After Learning |
|---|---|---|
| Active Participation | 32% | 70% |
| Collaborative Interaction | 28% | 68% |
| Confidence in Conveying Ideas | 25% | 63% |

Observations show that plastic recycling-based project activities encourage students to be more active in communicating, collaborating, and respecting each other's ideas. One student (S15) stated, "*We help each other create projects from used plastic and give each other ideas to improve the results*." This statement demonstrates that project-based learning can strengthen students' social and collaborative skills.

The arts and culture teacher also explained that students appeared more enthusiastic and motivated when learning using recycled materials compared to conventional learning. Students became more active in asking questions, discussing, and demonstrating a strong curiosity about the art-making process. Furthermore, learning linked to Islamic Ecological Ethics values helped students more easily understand the importance of environmental protection through concrete actions in their daily lives.

Thus, the integration of Islamic Ecological Ethics in the utilization of plastic waste in Arts and Culture learning has a positive impact on increasing creativity, ecological awareness, active participation, and collaborative skills of students at MIS Al-Falah Nipa. Environmental-based learning integrated with Islamic values has been proven to create more contextual, innovative, and meaningful learning experiences for elementary school students.

# DISCUSSION

The implementation of arts and culture learning based on the utilization of plastic waste integrated with Islamic Ecological Ethics at MIS Al-Falah Nipa demonstrates that contextual learning innovations have a significant contribution to enhancing students' creativity and ecological awareness. The research findings demonstrate that students' direct involvement in processing plastic waste into works of art creates a more active, reflective, and meaningful learning experience. However, the implementation process is not free from various dynamics and challenges that influence the effectiveness of learning activities in the field.

One of the main obstacles encountered in this study was the limited learning time. During the implementation process, the allocation of one lesson hour per meeting was not fully able to optimally accommodate the process of idea exploration, creative practice, group discussions, and value reflection. This condition indicates that project-based learning requires more flexible time management than conventional learning. In the context of Project-Based Learning, students' creative processes require stages of exploration, planning, implementation, and evaluation that cannot be done instantly. Therefore, time constraints are a factor that influences the depth of students' learning experiences in developing creativity and ecological awareness simultaneously.

In addition to time constraints, this study also found that some students still had limited idea variation in the early stages of learning. Some students tended to imitate examples of work provided by the teacher without further exploration. This condition indicates that students' divergent thinking skills have not developed optimally, particularly in the aspects of flexibility and originality. From the perspective of Guilford and Torrance's creativity theory, creativity requires the ability to generate varied, unique, and original ideas [8], [9], [10], [21]. The low variation in students' initial ideas indicates that the previous learning process was still dominated by a reproductive approach and did not provide enough space for students to explore freely. Therefore, a more open learning strategy is needed through the use of provocative questions, cross-media exploration, and creative discussions to encourage students to generate more innovative ideas.

Limited tools and supporting materials also influence the quality of students' work. Field findings indicate that not all groups have equal access to adhesives, paint, or additional decorative materials, resulting in some works lacking aesthetic variety. From a constructivist perspective, optimal learning experiences require adequate environmental support to enable students to construct knowledge through direct experience. Zajda asserts that knowledge is formed through the processes of assimilation and accommodation as individuals interact with their environment [22]. Thus, limited resources can affect the quality of students' learning experiences in exploring their creativity.

However, this study also shows that limitations are not always an absolute barrier to creative learning. In some groups, students actually tried to maximize the available materials by combining various types of plastic into more unique works. This phenomenon shows that creativity can grow through limited situations if supported by a conducive learning environment. This finding aligns with Zimmerman's view that the creative process requires space for exploration and freedom of thought so that students can produce authentic ideas [23]. In other words, limited resources can stimulate creativity if teachers are able to create a supportive and reflective learning environment.

In terms of positive impacts, learning based on plastic waste utilization has been proven to make a real contribution to reducing plastic waste in the school environment. Based on observations, the amount of plastic waste scattered around the classroom environment decreased after the learning activities took place. Students began collecting plastic bottles, food wrappers, and plastic bags to reuse as materials for their creations. This behavioral change demonstrates that contextual learning can build students' ecological awareness through direct experience. From the perspective of Islamic Ecological Ethics, protecting the environment is a form of

implementing humanity's mandate as caliphs on earth [24], [25], [26]. Therefore, this learning not only has a pedagogical dimension, but also a moral and spiritual dimension that strengthens students' environmentally conscious character [27].

The research findings also showed a significant increase in student creativity after participating in the learning process. Students were not only able to produce functional works, but also demonstrated a greater variety of shapes and designs compared to before the learning process. The arts and culture teacher stated that students were "more daring to try new ideas and not just following the examples given." This statement indicates developments in the fluency and elaboration aspects of student creativity. These findings support Almulla's view that constructivist learning can improve creative thinking skills through contextual and problem-based experiences [28]. Thus, learning based on the utilization of plastic waste can create a space for exploration that encourages students to think more flexibly and innovatively. In addition to enhancing creativity, this learning also provides additional economic value for students. Some of the resulting works, such as pencil holders, flower vases, and table decorations, have the potential to be used in everyday life and can even be developed into simple creative products. This shows that environment-based learning not only contributes to ecological aspects but also introduces the values of productivity and entrepreneurship to students from an early age. This finding aligns with the concept of Education for Sustainable Development (ESD), which emphasizes the integration of environmental, social, and economic aspects in the educational process [29], [30], [31]. In this way, students not only learn about art, but also understand the utility value and economic potential of plastic waste.

Students' environmental awareness also increased significantly after participating in the learning process. Based on observations, students began to demonstrate more disciplined behavior in maintaining environmental cleanliness, not littering, and reusing waste materials that could still be used. These behavioral changes indicate that the learning process has succeeded in gradually internalizing ecological values through real-world experiences. From an environmental education perspective, Debrah et al. emphasize that environmental education must be able to develop awareness, knowledge, and skills in maintaining environmental sustainability [2]. Therefore, the integration of Islamic Ecological Ethics into Arts and Culture learning is a relevant strategy in building students' ecological awareness holistically. Despite its positive impact, this study also found potential negative impacts that need attention, namely the emergence of secondary pollution from poorly managed plastic scraps. Furthermore, the practice of burning plastic scraps by some students has the potential to produce hazardous substances that can pollute the environment and harm health. This condition indicates that waste-based learning needs to be complemented with education on safe and environmentally friendly waste management. From the perspective of sustainable environmental education, learning should not only focus on waste utilization, but also on comprehensive and responsible waste management [2], [32], [33].

Social interactions between students during group work also significantly contribute to the development of creativity and environmental awareness. Throughout the learning process, students actively discuss, exchange ideas, and help each other complete their work. From Vygotsky's perspective, social interactions play a crucial role in students' cognitive development through the process of scaffolding [34]. Through group work, students have the opportunity to learn from their peers, develop creative ideas, and build a shared understanding of the importance of environmental protection. Thus, collaborative learning is a crucial element in developing students' creativity and ecological awareness.

The findings of this study also strengthen Kolb's concept of experiential learning, namely that knowledge is built through concrete experience, reflection, conceptualization, and active experimentation [35]. In this learning, students not only receive theoretical explanations about the environment but also directly participate in the process of transforming plastic waste into works of art. This experience helps students develop a deeper

understanding of the importance of protecting the environment through concrete actions. Furthermore, this approach aligns with Paulo Freire's ecopedagogy concept, which emphasizes that education must foster critical awareness and encourage social transformation through reflective experiences [36].

The implications of this research demonstrate the need to develop a more structured, sustainable, and integrative learning model. Arts and culture learning based on plastic waste utilization cannot be done incidentally but needs to be part of a systematic learning strategy within the school curriculum. Furthermore, supporting facilities, teacher training, and curriculum strengthening are crucial factors in ensuring the sustainability of learning implementation [37], [38]. The integration of Islamic values-based environmental education also needs to be expanded into other subjects so that students' ecological character development can take place in a more holistic and sustainable manner.

In broader implementation, this learning approach has the potential to be replicated in various schools with different characteristics. However, successful implementation depends heavily on teacher readiness, resource availability, and institutional support. Therefore, training and mentoring are necessary for teachers to develop innovative, contextual, and sustainability-based learning. Therefore, the integration of Islamic Ecological Ethics into Arts and Culture learning is not only a creative learning strategy but also an educational effort to shape a creative, reflective, and ecologically conscious generation.

The strengthening of this research's findings becomes even more relevant when linked to the concept of Islamic Ecological Ethics, which positions humans as caliphs with a moral responsibility to maintain the balance of nature. From an Islamic perspective, the environment is not simply an object of exploitation, but a trust that must be maintained and utilized wisely for the sustainability of life [39], [40]. The integration of these values into Arts and Culture learning provides a spiritual dimension that strengthens students' ecological awareness from an early age. The results of the study showed that students not only understand the importance of maintaining environmental cleanliness theoretically, but also begin to internalize it in their daily behavior, such as reducing littering and reusing plastic waste as a medium for creative work. This condition indicates that environmental-based learning integrated with Islamic values can form a reflective relationship between students' knowledge, moral awareness, and concrete actions towards the environment [41], [42], [43]. In the character education, this approach is important because the formation of an attitude of environmental concern is not sufficient only through verbal delivery of material, but requires direct experience that allows students to construct meaning through concrete and reflective activities on an ongoing basis [44], [45].

From a pedagogical perspective, this study also shows that plastic waste-based learning can create a more participatory, collaborative, and student-centered learning environment than conventional learning. During the learning process, students were seen to be more active in discussions, expressing their opinions, and collaborating on completing art projects [14], [31], [46]. This active involvement demonstrates that contextual learning can increase students' intrinsic motivation because they feel they have a learning experience that is close to everyday life. From the perspective of Vygotsky's social constructivism theory, a learning process that involves social interaction allows students to obtain scaffolding naturally through collaboration with peers and teachers [34]. This is evident when students exchange design ideas, help solve technical problems, and provide feedback on other groups' work. This type of interaction not only enriches the students' learning experience but also strengthens their communication, collaboration, and creative problem-solving skills.

However, the potential for problem-based learning Islamic ecological ethics enhancing students' creativity and ecological awareness will not develop optimally if the learning process is still delivered verbally, textually, and solely memorization-oriented. Teachers have a strategic role in actualizing Islamic ecological values through contextual and reflective learning experiences. Learning materials need to be connected to the realities

of students' daily lives, environmental issues around the school, and the ecological challenges they face directly. In this context, teachers function not only as conveyors of information but also as facilitators capable of creating spaces for exploration, dialogue, and critical reflection through open-ended questions that encourage students to think creatively and discover the meaning of learning independently. Therefore, arts and culture learning based on the utilization of plastic waste must be developed through a participatory and reflective approach so that students not only understand the concept of protecting the environment but are also able to internalize it in real actions and daily habits.

In the context of 21st-century education, which emphasizes creativity, critical thinking, collaboration, value literacy, and ethical decision-making, the integration of Islamic ecological ethics into arts and culture learning holds a highly strategic position. Through environmentally based creative activities, students not only learn to produce works of art but also learn to understand the relationship between humans, the environment, and spiritual values in Islam. Strengthening the dimensions of creativity, ecological awareness, and students' reflective abilities demonstrates that learning is no longer merely oriented towards academic outcomes, but has evolved into an educational process that shapes character, social awareness, and ecological responsibility holistically. Thus, the development of a learning curriculum based on Islamic Ecological Ethics is highly relevant and urgent in addressing the challenges of modern education, particularly in shaping a creative, reflective, and innovative generation with a strong awareness of environmental sustainability amidst various global ecological issues today.

## Research Limitations

This study has several limitations that need to be considered in order to understand the results more comprehensively. First, the scope of the study is still limited to one educational institution, namely MIS Al-Falah Nipa, so the results cannot be broadly generalized to other schools with different social, cultural, and environmental characteristics. Furthermore, this study does not fully separate the influence of Islamic Ecological Ethics-based learning materials from the pedagogical methods or strategies implemented by teachers during the learning process. In fact, the success of improving student creativity is not only influenced by the content of the material, but also greatly influenced by the learning approach, the teacher's ability to facilitate discussions, and the interaction patterns formed in the classroom. The use of qualitative instruments such as observation and interviews also has limitations related to the subjectivity of data interpretation and external validity, so the results are still highly dependent on the researcher's interpretation of the phenomena found in the field. Furthermore, the relatively short duration of the study means that the development of students' creativity and ecological awareness cannot be observed in depth over the long term. Creativity and the formation of environmentally conscious character are processes that develop gradually and require continuous habituation and reinforcement. This study also failed to fully consider individual student factors such as family background, religious experience, socioeconomic conditions, and home environmental habits, which may influence the development of students' creativity and ecological awareness. Therefore, future research is expected to broaden the scope, employ a mixed methods approach, and examine the relationship between learning strategies, student characteristics, and the implementation of Islamic Ecological Ethics more comprehensively to obtain more in-depth and representative results.

## CONCLUSION

Research on the integration of Islamic Ecological Ethics in the utilization of plastic waste in Arts and Culture learning at MIS Al-Falah Nipa shows that environmental-based learning linked to Islamic values can be an effective educational strategy in enhancing student creativity. The use of plastic waste as a creative medium provides a contextual, reflective, and meaningful learning experience so that students not only learn to produce works of art, but also learn to understand

the importance of protecting the environment as part of human moral and spiritual responsibility. The results of the study showed an increase in aspects of student creativity including fluency, flexibility, originality, and elaboration. In addition, project-based learning can also increase active participation, collaborative skills, and students' confidence in developing creative ideas independently. The integration of Islamic Ecological Ethics values also strengthens students' ecological awareness through the habituation of environmentally conscious behaviors such as sorting waste, reusing plastic waste, and maintaining a clean school environment. However, the implementation of learning still faces several challenges such as time constraints, limited variety of students' initial ideas, and limited tools and learning support materials. However, these limitations are not entirely obstacles, but can generate new creativity through the process of exploration and collaboration between students. The findings of this study confirm that arts and culture learning based on the utilization of plastic waste is not only relevant for developing student creativity but also plays a significant role in building sustainable education (education for sustainable development) based on Islamic values. Therefore, the development of a more systematic learning model, adequate support facilities, and strengthening of teacher competencies are needed so that the integration of Islamic Ecological Ethics into learning can be implemented optimally and sustainably across various primary education contexts.

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## Author Contribution

Nadia Putri contributed to the conceptualization of the study, development of the research design, field observation, data collection, data analysis, and drafting of the manuscript. Yayuk Kusumawati contributed to the literature review, development of research instruments, interview organization, validation of data interpretation, and refinement of the discussion section. Hermansyah contributed to methodological supervision, analysis of Islamic Ecological Ethics, critical revision of the manuscript, and final editing. All authors read and approved the final version of the manuscript and agreed to be accountable for all aspects of the workk.

## Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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