

Integration of Environmental Education Through the Practice of Painting with Natural Dyes at SMPN 21 Surabaya

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Abstract

This study aims to describe and analyze the integration of environmental education through painting with natural dyes as a fine art learning strategy that shapes the ecological awareness of students at SMPN 21 Surabaya. A qualitative approach of the case study type to examine in depth the application of the integration of environmental education through painting with natural dyes at SMPN 21 Surabaya. Data was collected through observation, in-depth interviews, and documentation, with the main informants being art teachers, principals, and grade VIII students. Data analysis was conducted using the Miles and Huberman model, while research ethics were maintained through participant consent, confidentiality of identity, and respect for the learning process in schools. The results of the implementation of painting practice with natural dyes at SMPN 21 Surabaya show that this activity has succeeded in instilling the value of environmental concern in students. Students become more creative, reflective, and responsible in using natural resources wisely. There has been a change in positive attitudes, such as maintaining cleanliness, loving nature, and producing environmentally themed artworks. This practice can foster ecological awareness through contextual and fun art learning. Further research suggests that other schools adopt a similar model by adjusting to the local context and the availability of natural resources in the surrounding environment.

Keywords

Environmental Education; Natural Dyes; Painting; SMPN 21 Surabaya

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1. INTRODUCTION

Environmental education is a strategic effort to instill ecological awareness (Noverita et al., 2022; Wisman & Santoso, 2024). In formal education, integrating the values of concern for nature can be carried out through various subjects, including cultural arts (Salainti & Wijayanti, 2024; Wijayanti, 2023). Art learning has great potential in fostering empathy and responsibility for the environment because it combines aesthetic aspects, creativity, and life values (Steven & Saearani, 2024). One tangible form of this integration is the practice of painting using natural dyes, which not only introduces alternative artistic techniques but also encourages students to get closer to and care for the surrounding nature (Mustaghfirin et al., 2025).

Painting with natural dyes uses materials derived from the surrounding environment, such as



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spices, leaves, flowers, and soil (Pangestu & Lodra, 2021; Purwati et al., 2024). This activity requires students to recognize, cultivate, and sustainably utilize natural resources. In addition to fostering technical skills in the fine arts, this process also trains students' awareness of the importance of preserving the environment and reducing the use of harmful chemicals. Learning becomes more contextual, meaningful, and applicative because it directly connects with local reality and students' daily lives.

The integration of environmental education through the practice of painting with natural dyes not only provides a fun learning experience, but also supports the formation of the character of students who care about the sustainability of the earth (Adela & Permana, 2020; Ilhami & Fathoni, 2025; Imamah & Hidayat, 2022). Students are invited to think critically, be reflective, and act responsibly towards the environment (Prabowo et al., 2025; Rohaini & Fathoni, 2025). With this creative and educational approach, schools act as agents of change in building a generation aware of the importance of protecting nature through simple, touching, and meaningful learning activities.

The integration of environmental education through the practice of painting with natural dyes is a form of learning that not only develops students' creativity in the field of art, but also instills the values of ecological concern contextually (Imamuddin & Isnaniah, 2023; Nugroho, 2022). By combining dyes from nature, such as turmeric, pandan leaves, telang flowers, and soil, students are invited to learn and utilize their surrounding environmental resources wisely. This activity not only focuses on artwork, but also on exploratory and reflective processes that foster environmental awareness in students (Fatahidin, 2024; Supadmini et al., 2020). Through this activity, students learn to understand that natural damage does not occur suddenly, but is often the impact of human choices in daily life.

The ecopedagogical model on which this approach is based teaches that education must free students from an exploitative way of thinking about nature. In a dialogical and participatory learning process, students can observe, discuss, and reflect on their actions towards the environment (Hardiyanti, 2020; Zaimina & Munib, 2025). Learning is not top-down, but based on real experiences relevant to the local context. Students are taught to love nature and positioned as subjects who are aware, responsible, and able to take a stance on environmental issues. Thus, painting with natural dyes is a means of artistic expression and a vehicle to build a young generation with complete social and ecological responsibility.

Indonesia faces complex environmental problems, such as increasing plastic waste, water and air pollution, and ecosystem damage due to the massive exploitation of natural resources (Fauzi, 2019; Nurbaya et al., 2023; Sompotan & Sinaga, 2022). The public's lack of awareness, especially the younger generation, on the importance of protecting the environment, is a serious challenge that can hinder efforts to preserve nature. On the other hand, environmental education has not been fully integrated into the curriculum in an applicative and contextual manner, so students tend to understand environmental concepts only theoretically. In fact, an attitude of caring for the environment must be formed through learning that touches on affective aspects and continuous direct experience.

Several previous studies have examined the importance of integrating environmental education in learning, such as environmental learning through the Adiwiyata Program at SD Al Muslim Waru Sidoarjo, implemented through school culture transformation and routine, programmatic, and spontaneous activities, supported by an excellent environment-based curriculum, although still facing obstacles such as limited green land, time, and adaptation of new teachers (Purwantiningsih & Mala, 2019). This research focuses on the integration of environmental education through the practice of painting with natural dyes at SMPN 21 Surabaya. In contrast to previous research, which tended to examine environmental education in art learning in general or only limited to using natural materials in fine arts, this study further examined the direct impact of using natural dyes as an art medium in shaping students' ecological awareness. Through a qualitative approach with case studies, this study found that using natural dyes not only increases students' creativity, but also awakens a sense of

responsibility towards the environment, encouraging positive attitude changes such as maintaining cleanliness and loving nature. It contributes to arts and environmental education by offering a contextual and fun method to foster ecological awareness. This research also fills a gap in the literature, namely regarding the limitations of previous research that does not specifically integrate natural dyes in art learning to shape students' ecological awareness (Supriyadi, 2017; Fadilah, 2018; Widiastuti, 2019; Hartono, 2020; Sari, 2021).

The implementation of the Adiwiyata program in elementary schools has gone well through the provision of infrastructure facilities and the involvement of teachers in instilling environmental awareness. However, obstacles remain, such as the lack of discipline enforcement and a special lesson plan to guide environmental learning (Putra, 2021). The implementation of an independent curriculum based on Madura local wisdom that is integrated with environmental values in several junior high schools in Pamekasan can form students' ecological awareness through systematic learning planning, despite facing complex challenges in its implementation (Putikadyanto et al., 2024).

Based on initial observations at SMPN 21 Surabaya, this school has initiated several environment-based programs because it is included in the Adiwiyata School category. However, the implementation of environmental education is still dominant in extracurricular activities and has not been optimally integrated into the subjects. The teacher shows initiative in the Cultural Arts subject by inviting students to use natural dyes for painting activities. Classroom observations show students' enthusiasm in processing natural materials into dye media and active involvement in discussions around the environment and the impact of using synthetic materials. This condition shows great potential to strengthen art learning as a more meaningful and sustainable environmental education.

Although there have been various studies on environmental education and using natural materials in art activities, few studies explicitly discuss integrating environmental education values into fine arts learning with a hands-on approach in the school environment. No research has examined how painting with natural dyes can shape students' ecological awareness in the context of learning in public schools with a local cultural background and adiwiyata spirit. Therefore, in-depth research is needed to fill this gap, focusing on the learning process's integrative, participatory, and reflective dimensions.

This study aims to describe and analyze how integrating environmental education through painting with natural dyes can shape the ecological awareness of students at SMPN 21 Surabaya. Based on the empirical facts in the school, painting activities with natural dyes have been proven to have a positive impact on increasing students' awareness of the environment. In practice, students learn about art and understand nature conservation using natural materials as dyes, forming a responsible attitude towards natural resources. This can be seen from changes in student behavior, such as increased concern for cleanliness, the use of environmentally friendly materials, and the increasing frequency of them producing environmentally themed artworks.

The normative fact underlying the purpose of this research is the education curriculum policy in Indonesia that emphasizes the importance of character education and environmental awareness, especially at the primary and secondary education levels. This curriculum aligns with national education goals prioritizing character development through contextual and applicative learning, as applied at SMPN 21 Surabaya. In this case, integrating fine arts and environmental education provides space for students to learn holistically—not only from a theoretical point of view, but also through hands-on experiences that simultaneously touch on aspects of creativity and ecological awareness. This research aims to delve deeper into these impacts and provide empirical evidence showing the relevance of environmentally friendly art teaching in Indonesian education.

This research is relevant to the needs of 21st-century education, which demands an integration of knowledge, skills, attitudes, and social responsibility, including environmental conservation. The significance of the research lies in its contribution to providing an alternative approach to art learning that is not only aesthetic, but also educational and sustainability-oriented. The results of this research

can be a reference for teachers, schools, and policymakers in developing contextual learning methods that can foster awareness of the environment and character of students from high school age. This study aims to describe and analyze the integration of environmental education through painting with natural dyes as a fine art learning strategy that shapes the ecological awareness of students at SMPN 21 Surabaya.

2. METHODS

This study uses a qualitative approach with the type of case study (Agustini et al., 2024; Ratnaningtyas et al., 2023), which aims to describe in depth how the integration of environmental education is applied through the practice of painting with natural dyes at SMPN 21 Surabaya. The research subjects included cultural arts teachers, principals, and grade VIII students directly involved in painting practice activities. In contrast, the research object was the practice of painting with natural dyes to integrate environmental education. Data was collected through participatory observation to capture learning dynamics, in-depth interviews with key informants to explore their perspectives and motivations, and documentation in the form of photos of activities, field notes, and student work. Data analysis was carried out using Miles and Huberman's interactive model, which included data reduction, data presentation, and conclusions drawn. The researcher ensures the application of research ethics by ensuring the confidentiality of the informant's identity, requesting consent for voluntary participation, maintaining honesty in data reporting, and ensuring that this research does not interfere with the ongoing teaching-learning process in schools.

3. FINDINGS AND DISCUSSIONS

Results

The implementation of painting practice with natural dyes at SMPN 21 Surabaya is a form of art learning innovation that is not only oriented to students' artistic skills, but also significantly integrates environmental education values. Based on the results of direct observation in the cultural arts class, interviews with teachers and students, and documentation of works and learning processes, several important findings were identified that show the process and impact of the integration.

Observations were made in three meetings in classes VIII-B and VIII-C, where the art teacher introduced painting techniques using natural dyes. Materials such as turmeric, pandan leaves, telang flowers, and charcoal from logs are used as a source of color. The preparation process is carried out with the students: they collect materials from the school and home environment, then process them independently in the art laboratory. During the activity, it appeared that the students were very enthusiastic and actively involved. They draw and discuss the natural materials used, their origins, and how they impact the environment compared to chemical paints. The teacher explicitly inserted environmental messages such as the importance of caring for surrounding plants, not throwing garbage carelessly, and reducing the use of synthetic materials in daily life. Beyond the technical aspects of art, this activity also shows that students become more reflective of the relationship between humans and nature. Students learn to appreciate natural processes and realize that nature can be a source of inspiration and a medium that must be maintained.

Interviews were conducted with art teachers, principals, and several students from grade VIII. The teacher explained that using natural dyes arose from her desire to teach art in a more contextual and environmentally friendly way. He revealed, "So far, children only know how to paint with factory-made paint. However, I want them to touch nature, feel the ingredients of nature, and realize that we can work without polluting." The Principal fully supports this initiative. He said the program aligns with the school's vision as an "Adiwiyata School" that instills love for the environment in every aspect of

learning. "We do not want environmental education to be just a slogan. There must be real practices that imprint on the students' hearts," he said. Meanwhile, one student said that this experience made him more concerned about the plants at home. "I just discovered that the color blue can be used to make a blue color. Now I do not want to carelessly pull out plants or throw paint waste into the sewers," he said. Another student added that making natural dyes is much more exciting because it is like 'experimenting on your own'.

Documentation in the form of photos of the activity shows an interesting process: students pounded leaves, mixed ingredients with water, boiled turmeric powder, and then tried to apply it to the painting paper. There is also documentation of student paintings with environmental themes, such as "Lost Forest", "Wounded Nature", and "Weeping Earth". Short video documentation of the learning process shows active interaction between teachers and students and a dynamic, creative, and collaborative learning atmosphere. The results of this documentation show that environment-based art learning can create a holistic, fun, and meaningful learning space.

Discussion

The results of research at SMPN 21 Surabaya show that the practice of painting using natural dyes is not only an innovation in learning fine arts, but also a learning vehicle that integrates the values of environmental education in a concrete and meaningful way. These findings have a very close correlation with Paulo Freire's ecopedagogical approach and model (Zaimina & Munib, 2025). The concept of ecopedagogy as liberation education is reflected in how teachers at SMPN 21 Surabaya free students from dependence on artificial chemical paints. Instead, students are invited to recognize and process dyes from the surrounding environment. This is in line with the principle of education that frees from the dominance of consumptive and exploitative cultures, as stated by Freire (Hariati, 2025). Students receive materials and actively explore and create based on available resources, shaping them into ecologically conscious subjects.

The emergence of critical ecological consciousness among students is strengthened through exploration activities of natural materials and discussions about their impact on the environment (Epstein-HaLevi et al., 2021; Freire, 2021; Slevin et al., 2020). For example, when students realize that telang flowers can be an environmentally friendly blue dye, they refuse to litter waste or damage plants around the house. This is a tangible form of Freire's process of conscientização to raise awareness to act in the name of ecological justice. Dialogical and contextual learning is very prominent. Art teachers do not deliver material in monologues, but open a space for discussion and exploration with students (Norvaizi & Anggita, 2025; Prasetia et al., 2021; Yusuf, 2024). Sobel (2005). The local context is the starting point for learning, per the idea of place-based education that uses the environment and local community as the basis for learning various subjects, including art (Fatahidin, 2024). In this case, natural dyes from local plants such as turmeric, pandan, and telang flowers are a powerful means of contextualization between art and the environment.

The process of reflective action (praxis) can be seen in how students not only paint, but also reflect on the meaning of the activity. Through discussion and evaluation sessions, students reflect on the relationship between their artwork, the materials used, and their impact on the earth. This is Freire's form of praxis, which combines action (painting) and reflection (environmental awareness) (Vittoria, 2019). The integration of the values of ecological liberation and social responsibility in learning is in line with the main objectives of ecopedagogy. The project creates a space where students are trained to be artists and agents of environmental change. This is in line with the view of Hayati Supadmini et al. (2020) that environmental education must develop responsible behavior and be able to solve environmental problems in real life (Supadmini et al., 2020).

Furthermore, the approach taken by teachers is in line with the definition of integration according to Imamuddin & Isnaniah (2023), where fine arts learning is combined with the purpose of environmental education in an integrated and inseparable manner (Imamuddin & Isnaniah, 2023;

Nugroho, 2022). This can be seen using teaching materials, exploratory activities, and the values inserted in learning. No less important, the practice of painting also has a psychological and developmental dimension in accordance with the view of Hardiyanti (2020), who states that painting is a powerful means of expression and can develop children's creativity (Hardiyanti, 2020). Students can express their imagination and environmental values through simple but meaningful art media in this context.

The implementation of painting practice with natural dyes at SMPN 21 Surabaya shows an innovative and educational approach to learning. Fine arts learning at this school is not only directed to improve students' artistic skills, but also used as a medium to instill concern for the environment in a real and fun way. In the painting activity, students are invited to use natural dyes like turmeric, pandan leaves, telang flowers, and charcoal. This process starts from material collection activities carried out independently by students from home and school environments. The materials are then processed in the art laboratory room into ready-to-use dyes. This activity encourages students to know the natural resources around them and understand how to use them wisely. During the learning process, it was seen that students showed high enthusiasm. They paint and discuss the types of materials used, how they are processed, and their benefits for the environment. Learning activities take place actively, creatively, and participatoryly. Art teachers provide a space for students to experiment, while inserting important messages about preserving nature, reducing artificial waste, and utilizing environmentally friendly materials in daily life.

Students seem to be more reflective and sensitive to the environment. Many admitted that they began paying attention to the plants around them, did not carelessly throw garbage, and became interested in raising plants at home. This activity encourages the formation of habits and positive attitudes towards nature through simple but meaningful activities. The artworks produced by the students also reflect their awareness of environmental conditions. Some paintings raised themes such as damaged forests, nature starting to be polluted, and hope for the earth to return to green. Through paintings, students convey their messages and feelings towards the situation of the surrounding environment.

This activity produces art products and creates a thorough learning process. Students not only learn about painting techniques, but also learn to think critically, be caring, and behave in an environmentally friendly manner. Learning takes place in a fun, interactive atmosphere and provides a hands-on experience that leaves an impression on students. Implementing this practice proves that art learning can be an effective means of instilling environmental values. Simple activities such as painting with natural dyes can open insights, form character, and develop students' awareness of the importance of protecting the earth.

Implementing the practice of painting with natural dyes has significant implications in developing an environment-based learning curriculum in schools. This activity proves that art education does not have to be limited to mastering techniques alone, but can be a transformative means to foster students' ecological awareness. By involving natural materials, learning becomes more contextual, integrated with students' daily lives, and aligned with environmental conservation efforts. This can encourage other schools to integrate similar approaches in cross-subject learning, so that environmental education does not stand alone, but is fully integrated in teaching and learning activities.

Practically, this approach also contributes to forming the character of students who care, are responsible, and empathize with nature. When students are directly involved in the creative process rooted in the surrounding environment, they become not only passive actors in learning but also agents of change who can bring sustainability values into their daily lives. These implications demonstrate the importance of schools as living learning spaces, places where aesthetic, ethical, and ecological values meet in one whole, meaningful experience.

4. CONCLUSION

The implementation of painting practice with natural dyes at SMPN 21 Surabaya shows that art learning can be an effective medium to instill the values of environmental concern. Through this activity, students learn painting techniques and are invited to get to know, process, and utilize natural materials such as turmeric, pandan leaves, telang flowers, and charcoal as dyes. The learning process takes place actively, participatively, and contextual. Students look enthusiastic, experiment creatively, and discuss the benefits of natural dyes over chemical paints. Teachers facilitate learning by inserting environmental messages that encourage a responsible attitude towards nature. Students begin to show behavioral changes, such as maintaining environmental cleanliness, not damaging plants, and starting to care about nature conservation. The works produced also raise the theme of the environment, reflecting the ecological awareness that grows from the learning process. This activity produces artworks and fosters critical awareness, creativity, and environmentally friendly character in students. Painting with natural dyes has proven to be a learning and meaningful approach in fostering environmental education.

The implications of these findings suggest that art learning integrated with environmental education can be an effective approach in shaping the character of students who care for and are responsible for nature. Therefore, it is recommended that other schools adopt a similar model by adapting to the local context and the availability of natural resources in the surrounding environment. Teachers also need to be provided with training on integrating an ecology-based thematic curriculum so that learning becomes more directed and impactful. However, the limitations of this study lie in the scope of covering only one school and not yet measuring the long-term impact on student behavior change, so more extensive and longitudinal follow-up research is needed to strengthen the findings.

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