

ART EDUCATION THROUGH GREEN PRACTICES: INSIGHTS FROM TEACHERS ON REPURPOSING MATERIALS AND FOSTERING CREATIVITY IN SLOVENIA

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Abstract

This study explores the innovative integration of waste materials into art education within Slovenian schools, emphasizing the potential for fostering environmental consciousness and sustainability among students. By conducting a survey among 27 art teachers who completed a five-step questionnaire, the aim of this pilot study was to assess how often and in what ways these teachers use waste materials in their projects, to interpret the mean and standard deviation of teachers' responses given on a Likert scale. The findings reveal a high level of innovation and environmental awareness among teachers, with waste materials often being employed to enhance the creative process and integrate sustainability themes into teaching practices. However, the study also identifies a significant variability in the support provided by educational institutions, highlighting the need for clearer guidelines and more substantial resources to facilitate this practice. Moreover, while teachers acknowledge the positive impact of using waste materials on students' creativity, interest in art, and understanding of environmental issues, challenges related to the accessibility of sustainable materials and the need for institutional support are evident. This underscores the importance of collaborative efforts between educational institutions and local communities to ensure the effective incorporation of sustainable practices into art education. The study suggests that integrating waste materials into art projects not only contributes to environmental education but also enhances financial accessibility for students from economically disadvantaged backgrounds, promoting inclusivity and equality in art education.

Key words: art education, environmental consciousness, Slovenian schools, sustainability, waste materials.

Introduction

Green practices are being adopted by people and companies all over the world in an effort to lessen their negative effects on the environment and, in case of companies, boost their financial performance (Miroshnychenko et al., 2017). It is consequently imperative that future generations (those who are educated today) to be able to comprehend and safeguard natural resources. They should also receive training on how to be environmental initiators in order to safeguard human health during this procedure (Aithal and Rao, 2016). Important is environmental education. Environmental education includes methods, resources, and initiatives that foster and support attitudes, values, awareness, knowledge, and abilities relevant to the environment and equip individuals to act responsibly (Monroe and Krasny, 2016; UNESCO, 1978).

The evolution of environmental concerns and issues and the definition and promotion of environmental education are closely related, as demonstrated by the history of environmental education. Growing concern about environmental and development issues in the 1990s resulted in a rise in support for an educational strategy that considers both long-term "sustainability" and immediate environmental improvement as legitimate goals (Tilbury, 1995). Studying and altering ingrained cultural beliefs and practices that contribute to the deterioration of the planet's natural systems will be vital. Environmental education can fundamentally represent a means of developing citizens who are capable of making informed decisions about the impact of human activities on the environment. One way to conceptualize this type of environmental education is as a focus on the obligations that come with people's unavoidable interaction with the natural world (Smith and Williams, 1999). Effective environmental education is a set of tools that fosters and improves environmental attitudes, values, and knowledge. Moreover, it develops skills essential for collective action within communities aimed at positive environmental action (Adroin et al., 2020). Environmental education addresses numerous environmental challenges (Knight et al., 2019), thereby cultivating environmentally literate citizens capable of engaging with and co-creating solutions to sustainability issues (Wheaton et al., 2018). By nurturing attitudes, values, knowledge, and skills to protect the environment, environmental education promotes participation in enhancing the sustainability of human-natural world relationships over time (Mastrangelo et al., 2019). The ever-evolving social and scientific landscape surrounding environmental and sustainability challenges underscores the critical need for lifelong engagement through continuous critical thinking, participation, and decision-making at both individual and collective levels (Ardoin & Bowers, 2020). Early education in environmental topics is crucial (Copple & Bredekamp, 2009), as it has a lasting impact on individuals (Wals & Benavot, 2014).

Among the thematic categories of pedagogical practices reported in early childhood environmental education practices, Ardoin & Bowers (2020) also highlight creative arts, including the creation of artwork, watching puppet shows, and singing songs. Among these, art education particularly attracted the creators of Waste to Art project, offering a unique opportunity for emotional connection to environmental issues, fostering interdisciplinary understanding, and enabling active and experiential learning. Art education equips learners with diverse opportunities for creative expression, exploration, reflective thinking, and active participation (Farrington et al., 2019; Hetland et al., 2015), thereby cultivating students' creativity and their social and emotional competencies through direct engagement with the world and opportunities to reflect on those encounters (Farrington et al., 2019; Nagaoka et al., 2015). Artistic involvement generally strengthens the atmosphere in educational environments (Wang & Degol, 2016). Through various artistic activities across different areas, students may leverage these experiences to develop their interpersonal skills with peers, teachers, and other members of the school community while maintaining possibilities for individual autonomy (Barret & Bond, 2015; Farrington et al., 2019; McCammon et al., 2012). In art activities, individuals, in addition to the previously mentioned benefits, adjust their social relationships, collaborate, assist

each other, shape their relationship to truth, and enjoy being productive, while art education also impacts student wellbeing (Dinham, 2024).

The selection fields, themes, motifs, and methods by art teachers is diverse, yet there's a growing emphasis on integrating creative practices with current challenges emerging from contemporary questions, including sustainability and others. The literature most commonly identifies the incorporation of ecology into the field of art education by selecting themes or motifs of artistic work, often emphasizing sustainability, biodiversity, interdependence, conservation, and restoration by merging art with environmental education (Inwood, 2005). Gablik (1995) is recognized as a pioneering figure in environmental art research, advocating for art as a potent catalyst for social change if it were more closely linked to everyday life and could draw public attention through an original and creative approach to addressing societal issues. Several primary authors (e. g. Anderson & Milbrandt, 2004; Garoian, 1998) suggest a pedagogy based on community, interdisciplinary, experiential, interactive, dialogic, ideologically aware, and centered on environmental respect, sustainability, and empathy within the community.

Problem of Research

Integrating green practices into art education is achievable through the reduction of waste and the reuse of found materials (Inwood, 2010). The Waste to Art project illuminates key challenges within art education that, beyond the positive impacts on educational participants, are also associated with the excessive generation of waste and the consumption of natural resources, especially paper, cardboard, and paints. It foregrounds the incorporation of green practices, such as waste reduction and material reuse, which not only contribute to diminishing the ecological footprint of schools but also promote the development of environmental awareness among students. In addition to environmental sustainability, the project addresses social justice by focusing on the inclusion of marginalized students who lack access to necessary materials due to economic or geographical limitations. This interdisciplinary approach not only underscores the importance of sustainable development within art education but also equips students for active participation in a future that demand responsible and innovative solutions to environmental and social challenges.

Research Focus

The Waste to Art project is dedicated to ensuring the preservation of natural resources utilized in the production of materials for artistic activities, fostering the active involvement of underprivileged students who cannot afford the necessary materials for art classes, reducing the volume of waste generated in art-related lessons, and promoting the sustainable use of natural resources and waste management. The primary aim of this research is to explore sustainable practices in art education in Slovenia, with a focus on the use waste materials. The research questions posed are as follows:

RQ1: How frequently and in what ways do teachers in Slovenia incorporate waste materials in art projects?

RQ2: What role and support do educational institutions in Slovenia offer in encouraging the use of waste materials in art projects?

RQ3: How do teachers in Slovenia integrate sustainable practices and materials into art education, and what is the accessibility of these materials?

RQ4: What impact does the use of waste materials and the incorporation of environmental consciousness have on creativity, interest, and understanding of environmental issues among students in Slovenia?

RQ5: How does the use of waste materials in art projects contribute to making art activities financially accessible for students from economically disadvantaged backgrounds in Slovenia.

Methodology of Research

General Background of Research

The “Waste to Art” project endeavors to enable educators to abandon conventional teaching methods and techniques, fostering the development of innovative and creative lessons for their students. It aims for students to discover creative applications for waste they encounter in their surroundings, rather than perceiving it solely as refuse. This approach is intended to augment their creativity and sense of aesthetics. Prior to formulating guidelines and conclusions, it is crucial to explore the current state of waste material consumption and utilization within the realm of art education in Slovenia. The objective of the “Waste to Art” is to diminish the reliance on the traditional materials by promoting the use of waste materials in artistic activities within schools, thereby safeguarding natural resources and reducing the volume of waste discharged into the environment through the aesthetic repurposing of waste materials. Several scholarly and professional texts have been written about the use of waste materials in art class (Pinheiro Leite Munaretto & Silva, 2023; Sharma & Mallik, 2022; Suhardjono, et al., 2021; Uyanik et al., 2011; Yeboah et al., 2017; Yeboah et al., 2016), demonstrating the positive effects of reusing various materials in art education from both the students’ perspective and in terms of methods and techniques of work, which are practical, interactive, interesting, and real to students. However, there is a lack of research focusing on the role of the teacher, the school, and the local community. Such activities can significantly impact children’s environmental attitudes and behaviors (Collado et al., 2020). This pilot study will serve as a foundation within the project for further formulation of research objectives, themes, and areas, as well as instruments that will assist identifying effective strategies for integrating sustainable practices into art education, thereby enhancing the pedagogical approach towards environmental consciousness among students.

Sample of Research

The sample consists of a convenience selection of 27 teachers, of which 4 (14.82 %) have up to 5 years of teaching experience, 11 teachers (40.74 %) have 6 to 15 years of experience, 6 teachers (22.22 %) have 26 to 35 years of experience, and an equal number have more than 36 years of experience. Among the participants, 2 (7.41 %) are preschool educators, 11 participants (40.74 %) are primary school teachers, 9 (33.33 %) are elementary school teachers at the subject-specific level, 3 teachers (11.11 %) teach in high school, and 2 (7.41 %) are university faculty members.

Instrument and Procedures

The study is based on a survey questionnaire comprised of two parts. In the first part, demographic data were collected, while the second part contained questions related to 5 investigated categories. Here, participants evaluated their agreement with statements on a scale from 0 or 1 to 5 (0 – don't know, cannot assess; 1 – strongly disagree; 5 – strongly agree). They responded to one open-ended question and a question allowing for multiple answers. In the first category, teachers evaluated their perception of the reuse of waste materials in artistic projects from a teacher's perspective. They assessed whether waste materials produced in the classroom are often used in artistic projects; their familiarity with the properties of waste materials used in artistic projects; the availability of sufficient examples of waste material reuse in artistic projects; the frequency of encountering obstacles and challenges when using classroom-produced waste materials; the reuse of waste materials produced in artistic projects in new artistic endeavors; the encouragement of students to use classroom-produced

waste materials in artistic projects; the availability of ample resources and ideas for creatively reusing materials in artistic projects; and the frequency of obstacles and challenges encountered when using classroom-produced waste materials. For the latter question, if respondents agreed or strongly agreed, they were encouraged to reflect on the barriers and challenges they often face when using waste materials in artistic projects. Teachers were also asked which types of materials they most frequently reuse. In the second category, teachers assessed the reuse of waste materials in artistic projects from the school's perspective. They considered whether the school organizes workshops or training for teachers on material reuse in artistic projects; provides adequate facilities for storing and sorting reusable materials; whether school leadership encourages the reduction of waste material produced in the classroom; and whether the school has a strategy for reducing the amount of classroom-produced waste material. The third set of questions pertained to sustainability in implemented artistic projects. Teachers evaluated whether artistic activities incorporate the theme of natural resource conservation; their awareness of alternative, environmentally friendly materials for classroom use; whether they educate students on the importance of choosing sustainable materials for artistic activities; the impact of using sustainable materials on students' creative process; and the accessibility of sustainable artistic materials in their school or community. In the fourth category, teachers assessed statements regarding the promotion of creativity and interest in art. They evaluated whether using various methods in artistic projects significantly fosters creativity among students; whether using waste materials in artistic projects increases students' interest in art; whether students are more engaged in artistic projects when waste materials are used, compared to projects using new materials; whether incorporating elements of environmental awareness into artistic projects positively affects students' understanding of environmental issues; and whether projects combining art and environmental awareness achieve greater interest and success among students. In the fifth category, teachers evaluated the accessibility of artistic activities through the reuse of materials. They expressed their agreement with statements that using waste material in artistic projects makes activities more accessible for students from financially disadvantaged families; that their school actively encourages the use of waste material to reduce the costs of artistic activities for students; that students have the opportunity to participate in artistic projects using materials available at the school without the need for purchasing new ones; and that the school organizes the collection and reuse of waste materials from the local community to support artistic activities for all students. Data were collected using the online tool Ika, an open-source application that provides web survey services and ensures anonymous use for respondents. The link to the survey questionnaire was posted in a group on one of the social networks, which brings together 14,000 teachers who were invited to complete the survey questionnaire.

Data Analysis

The collected data were anonymized using the open-source application in which data collection was conducted. Subsequently, the data were compiled and analyzed in IBM SPSS Statistics 29, where descriptive statistics were calculated, including means and standard deviations.

Results of Research

Detailed analyses of the data are presented in subsections according to the research questions.

Reusing Waste Materials in Art Projects from a Teacher's Perspective

Table 1

Reusing Waste Materials in Art Projects from a Teacher's Perspective

	M	SD
In art projects, we often use waste material that we produce in class.	4.00	1.155
I have knowledge about the properties of waste materials used in art projects.	4.50	.972
There are sufficient application examples on the use of waste materials in art projects.	3.80	1.476
I often encounter obstacles and challenges when using the waste material that we produce in the classroom.	2.20	1.033
The waste material produced in art projects is often reused in new art projects.	4.20	1.033
I encourage students to use the waste material we produce in the classroom in art projects.	4.60	1.075
There are plenty of resources and ideas for creative reuse of materials in art projects.	4.10	1.101
I often encounter obstacles and challenges when using the waste material that we produce in the classroom.	2.60	1.578

The results presented in Table 1 illustrate the attitudes of teachers towards the reuse of waste materials in artistic projects. It was revealed that teachers relatively frequently include waste materials in artistic projects ($M = 4.00$, $SD = 1.155$), with a notably high level of agreement that they are knowledgeable about the properties of these materials ($M = 4.50$, $SD = .972$). However, the results indicate that teachers perceive waste materials for use in artistic projects as not sufficiently accessible ($M = 3.80$, $SD = 1.476$), with considerable variability in responses. Teachers disagree that they often encounter obstacles and challenges when using waste material produced in the classroom ($M = 2.20$, $SD = 1.033$). Waste material generated in art projects is often reused in new projects ($M = 4.20$, $SD = 1.033$), and there is even stronger agreement with the statement that they encourage students to use waste materials produced in the classroom in art projects ($M = 4.60$, $SD = 1.075$). A significant number of teachers agree that there are plenty of resources and ideas for the creative reuse of materials in art projects ($M = 4.10$, $SD = 1.101$). They disagree, however, that they often encounter obstacles and challenges when using waste materials produced in the classroom ($M = 2.60$, $SD = 1.578$), noting a significant diversity in responses, which merits further investigation.

Teachers who agreed or strongly agreed that they frequently encounter obstacles and challenges when using classroom-produced waste material elaborated on the barriers and challenges they often face in utilizing waste material in artistic projects. Of the five such teachers, three mentioned storage of waste material as an issue, with one adding difficulty in coordination with other teachers; one teacher highlighted a lack of encouragement or previous consideration of this practice, and another identified the problem of worn-out or damaged material.

Teachers also responded to what types of materials they most often reuse. Of the 27 teachers, 26 most frequently reuse paper (26 teachers, 96.30%), making it by far the most commonly reused material. Less than half, but still more than a third, reuse natural materials (12 teachers; 44.44%), textiles (11 teachers; 40.74%), and plastics (10 teachers; 37.04%), with only a few reusing clay (2 teachers; 7.40%) and metal (2 teachers; 7.40%). None of the participants mentioned electronic waste.

Reusing Waste Materials in Art Projects from a School Perspectives

Table 2

Reusing Waste Materials in Art Projects from a School Perspectives

	M	SD
The school organizes workshops or trainings for teachers on the reuse of materials in art projects.	2.60	1.350
The school provides adequate storage and sorting facilities for reusable materials.	3.40	1.578
The school management encourages me to reduce the waste material produced in the classroom.	4.70	1.160
The school has a prepared strategy for reducing the waste material produced in classroom.	3.70	1.160

The data presented in Table 2 illustrate teachers' perspectives on reusing waste materials in art projects from a school standpoint. Schools infrequently organize workshops or trainings for teachers on the reuse of materials in art projects ($M = 2.60$, $SD = 1.350$). The provision of facilities for storage and sorting of waste materials is considered to be relatively well managed in schools ($M = 3.40$, $SD = 1.578$), yet there is significant variability in responses, indicating inconsistent practices across different schools. Responses related to the school's strategy for reducing waste materials also show a relatively good level of preparedness in this area ($M = 3.70$, $SD = 1.160$), with schools largely encouraging teachers to reduce waste material produced in the classroom ($M = 4.70$, $SD = 1.160$).

Sustainability in Art Projects

Table 3

Sustainability in Art Projects

	M	SD
I include the topic of protecting natural resources in artistic activities.	4.30	1.059
I know alternative, environmental friendly materials to use in the classroom.	4.90	.568
I educate students about the importance of choosing sustainable materials for artistic activities.	4.50	1.178
The use of sustainable materials affects the creative process of students.	3.70	1.636
Sustainable art materials in our school or communities are adequately accessible.	4.10	1.197

Table 3 pertains to sustainability in art projects. Teachers expressed a considerable level of agreement with the statement that the use of sustainable materials affects the creative process of students, though the standard deviation indicates significant differences in the responses of participants ($M = 3.70$, $SD = 1.636$). Conversely, teachers show a high degree of agreement with the statement that sustainable art materials in their school or communities are adequately accessible ($M = 4.10$, $SD = 1.197$), that they include the topic of protecting natural resources in artistic activities ($M = 4.30$, $SD = 1.059$), and that they educate their students about the importance of choosing sustainable materials for artistic activities ($M = 4.50$, $SD = 1.178$). A high level of agreement and a low standard deviation were observed in response to teachers' knowledge of alternative, environmentally friendly materials to use in the classroom ($M = 4.90$, $SD = .568$).

Encouraging Creativity and Interest in the Arts

Table 4

Encouraging Creativity and Interest in the Arts

	M	SD
Using a variety of methods in art projects greatly encourages creativity among students.	5.30	.483
Using waste materials in art projects increases students' interest in art.	4.10	1.287
Students are more engaged in art projects when we use scrap materials compared to new materials.	3.70	1.160
Incorporating elements of environmental awareness into art projects has a positive effect on students' understanding of environmental issues.	4.30	1.829
Projects that combine art and environmental awareness achieve greater interest and success among students.	3.80	1.549

From Table 4, it is evident how teachers encourage creativity and interest in the arts. A high mean score and a low standard deviation ($M = 5.30$, $SD = .483$) indicate that teachers recognize that a variety of methods used in art projects greatly encourages creativity among their students. They largely agree that incorporating elements of environmental awareness into art projects has a positive effect on students' understanding of environmental issues ($M = 4.30$, $SD = 1.829$), where a high standard deviation was observed, reflecting the diverse experiences of teachers in implementing such approaches. Teachers also largely agree with the statement that using waste materials in art projects increases students' interest in art ($M = 4.10$, $SD = 1.287$). Teachers were somewhat less in agreement that projects combining art and environmental awareness achieve greater interest and success among students ($M = 3.80$, $SD = 1.829$), where a high level of variability in responses suggests that teachers may have had varied experiences in implementing such approaches. Similarly, teachers agree that students are more engaged in art projects when they use scrap materials compared to new materials ($M = 3.70$, $SD = 1.160$).

Accessibility of Artistic Activities Through the Reuse of Materials

Table 5

Accessibility of Artistic Activities Through the Reuse of Materials

	M	SD
The use of waste material in art projects makes activities more accessible for students from financially disadvantaged families.	5.00	.667
Our school actively encourages the use of waste material in order to reduce the cost of art activities for students.	3.10	1.449
Students have the opportunity to participate in art projects using materials available at school without having to purchase new ones.	3.60	1.506
The school organizes the collection and reuse of waste materials from the local community to support artistic activities for all students.	2.90	1.524

Table 5 addresses the accessibility of artistic activities through the reuse of materials. A high average score with a low standard deviation ($M = 5.00$, $SD = .667$) indicates that participants strongly agree that using waste materials in art projects makes activities more accessible for students from financially disadvantaged backgrounds. However, there is less agreement with other statements regarding the accessibility of artistic activities through the reuse of materials. There is moderate agreement that students can participate in art projects using materials available at school without having to purchase new ones, with a relatively high standard deviation indicating greater variability in teachers' opinions ($M = 3.60$, $SD = 1.506$). A similar result is observed in teachers' agreement with the statement that their school actively encourages the use of waste materials to reduce the cost of art activities for students ($M = 3.10$, $SD = 1.449$). Teachers agree less with the statement that the school organizes the collection and reuse of waste materials from the local community to support artistic activities for all students, where again a high degree of variability in the responses is noted ($M = 2.90$, $SD = 1.524$).

Discussion

The conducted study elucidates the perception of utilizing waste materials in art projects, including the approaches taken in this domain. With regard to the research question on how frequently and in what ways teachers in Slovenia incorporate waste materials into art projects, the results indicate that teachers quite often employ waste materials in art projects. This demonstrates their innovative approach towards art, prioritizing environmental consciousness, thereby not only enhancing the creative process but also integrating the theme of sustainability into their teaching. By using waste materials, teachers align with global environmental education goals by fostering environmental responsibility among students, thus acting on the premises established by Monroe and Krasny (2016),

and UNESCO (1978). Through their responses, teachers evaluate their level of innovation and environmental awareness in incorporating waste materials as high, enabling students to develop a different perspective on waste materials. The use of these materials not only encourages students' imagination but also educates them on the importance of recycling and reuse. A significant diversity in teachers' responses highlights the need for supporting teachers in finding and utilizing waste materials for educational purposes.

The research interest also focuses on what role and support educational institutions in Slovenia offer in encouraging the use of waste materials in art projects. Findings suggest that while individual teachers are proactive in incorporating waste materials into art lessons, support among schools appears inconsistent, indicating the need for developing clearer guidelines to assist teachers in selecting and using waste materials in art projects. While some schools provide adequate facilities for storing and sorting waste materials, teachers report that education on the use of waste materials in art projects is rare. This presents an opportunity for educational institutions to strengthen their role in promoting sustainable thinking and environmental education among students by investing more in teacher education and providing necessary resources. The inconsistency in institutional support for integrating waste materials in art education, as our study reveals, highlights a critical gap that needs addressing. Referencing the tools and approaches for effective environmental education discussed by Ardoin et al. (2020) and Knight et al. (2019), it becomes evident that Slovenian educational institutions have the opportunity to play a more active role. By developing clearer guidelines and providing more substantial resources, schools can align more closely with these studies' recommendations for fostering environmental literacy through education, thus enabling teachers to more effectively contribute to the environmental discourse through art.

Slovenian teachers also helped answer how they integrate sustainable practices and materials into art education and the accessibility of these materials. It appears that teachers are aware of the importance of sustainable practices and materials in art projects and actively incorporate them into their teaching. Despite reporting a high level of awareness and knowledge about the environment, differences in the accessibility of materials among various teachers and schools were noted, indicating challenges in sustainable practices in art classes. Thus, both local communities and educational institutions should more thoughtfully care for and support teachers in ensuring the accessibility of sustainable materials. Acknowledging the significant awareness among Slovenian teachers about the importance of sustainable practices, as highlighted in our findings, it's pertinent to draw parallels with the discussions by Wheaton et al. (2018) and Mastrangelo et al. (2019) on the cultivation of environmentally literate citizens. The noted disparities in material accessibility underline the necessity for a concerted effort from both local communities and educational institutions, suggesting a move towards the comprehensive engagement models these authors advocate. This ensures not only the incorporation of sustainable materials into art projects but also the embedding of a culture of sustainability within the educational system.

Slovenian teachers report that the use of waste materials and the incorporation of environmental consciousness in art projects positively impact creativity, interest, and understanding of sustainability issues among students. Participating teachers recognize that this approach encourages students' critical and creative thinking and expression, reinforcing the importance of personal and collective responsibility towards the environment. Significant differences in opinions and experiences among teachers suggest the need for better integration of environmental consciousness into the educational environment. Our findings on the positive impact of using waste materials in art projects on students' creativity and environmental awareness find resonance in the work of Ardoin & Bowers (2020). This congruence illustrates the capacity of art education, when infused with principles of sustainability, to nurture critical and creative thinking among students towards environmental issues, advocating for a more inclusive pedagogical strategy that harnesses art's potential to foster a deeper connection with environmental concerns.

The use of waste materials in art projects is also recognized by Slovenian teachers as contributing to the financial accessibility of artistic activities for students from economically disadvantaged backgrounds. They agree that the use of waste materials significantly reduces costs for students and their parents in providing resources, materials, and tools for art education. The value of using waste materials is primarily recognized from the perspective of democratizing art education and promoting inclusivity and equality. Teachers report challenges such as the organization of collecting and reusing waste materials by schools, indicating the need to identify areas where educational institutions and local communities could play a key role in supporting the practice of using waste materials in art projects. The democratization of art education through the use of waste materials, as evidenced by our study, reflects the principles of early education's lasting impact discussed by Copple & Bredekamp (2009) and Wals & Benavot (2014). This approach not only mitigates the financial barriers to art education but also aligns with the broader educational goals of fostering inclusivity and equity. By lowering the costs associated with art supplies through the reuse of waste materials, we advocate for a model of art education that is both environmentally sustainable and socially just, reflecting a commitment to both environmental and educational equity.

Exploring the domain of using waste materials in art projects also reveals areas that require further research in future studies. It would be valuable to investigate specific positive strategies and practices that could facilitate greater inclusion of waste materials in art lessons, addressing logistical and infrastructural limitations. It would also be essential to examine the long-term effects of such practices on environmental awareness and behavior among students and the environmental impacts, in the Slovenian context. Additionally, investigating the reasons for significant differences in teachers' responses could indicate broader challenges schools face in integrating sustainable practices, underscoring the need for additional support and guidance at the school, local environment, and broader levels. The sustainability field itself calls for longitudinal studies to further understand the long-term effects of integrating waste materials and sustainable practices into art education. Such studies could provide insights into how environmental consciousness and behavior among students evolve over time and how schools and teachers can best support this development. The primary limitation of the study stems from the sample, which may not be representative of all teachers in Slovenia, reflecting the views and attitudes of a smaller fraction of all Slovenian art teachers. Self-reported data also report limitations due to the possibility of bias, such as socially desirable responding. Teachers might answer questions in a way that portrays them in a more positive light, which could affect the authenticity and accuracy of their responses. Although the study addresses various aspects of using waste materials in art education, incorporating additional topics, such as specific strategies for overcoming challenges in collecting and storing waste materials, could offer a more comprehensive view of this area. The lack of a more detailed analysis of the impact of the socio-economic background of schools and teachers on their ability and readiness to incorporate sustainable practices could represent an additional limitation, as understanding these differences could help design targeted programs and interventions better addressing the needs and challenges of different schools and teachers.

Conclusions

The conducted study emphasizes the crucial role that waste materials can play in art education, not only in fostering creativity and innovation but also in promoting and nurturing environmental awareness among students. The findings reveal that Slovenian teachers incorporate waste materials into their art projects, reflecting their awareness of the importance of sustainable practices in teaching. This approach not only supports and enhances the creative process but also provides students with practical experience in recycling and reusing materials, which is vital for developing a responsible attitude towards the environment.

Despite the proactivity of individual teachers, a need for greater consistency among institutions is evident. The variability in the availability of waste materials and related educational opportunities highlights a chance for schools to strengthen their role as supporters of sustainable thinking and environmental education. This could significantly contribute to the successful integration of these practices into the educational system through better storage and sorting of waste materials, clearer guidelines, and the provision of training.

In ensuring the accessibility of sustainable materials and supporting art education, not only schools but also local communities and parents play a crucial role. Their collaboration could further enrich the educational experience of students and increase the effectiveness of sustainable practices. The study's results suggest that using waste materials in art education presents a promising approach to encourage creativity, sustainability, and environmental awareness among students. To fully realize this approach's potential, it is essential to provide support to teachers, develop clear pedagogical guidelines, and promote the cooperation of all stakeholders in the educational process. Future studies should explore specific strategies that could more systematically and effectively incorporate sustainable practices into school environments, thereby further improving the educational process and contributing to the development of a responsible attitude towards our planet.

Ultimately, it is important to understand that this study, set within the Slovenian context, is just one step towards understanding global trends in education that are moving towards greater sustainability and environmental consciousness. The growing global focus on environmental issues and the need for sustainable development require educational systems worldwide to reassess their methods and approaches. Incorporating waste materials into art projects not only addresses the practical aspects of recycling and reuse but also serves as a tool for educating future generations to be more aware of their role and impact on the environment. Thus, this study contributes to a broader global dialogue on education, sustainability, and environmental responsibility, which is crucial for achieving sustainable development goals and creating a greener, more inclusive, and sustainability-oriented world.

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