



Institutional Support for Sustainable Art Education through Material Reuse

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Abstract

The sustainable transformation of education increasingly demands systemic approaches that connect environmental awareness, social equity, and creative learning. Art education offers a distinctive context where these dimensions converge through the creative reuse of materials and reflective, participatory practice. This study examines how schools enable or constrain sustainability-oriented initiatives in art education across four European countries—Italy, Latvia, Slovenia, and Türkiye. Drawing on a cross-national, cross-sectional survey with a quantitative descriptive-comparative design, the research uses descriptive statistics and non-parametric group comparisons to analyse teachers' responses on institutional support and social

accessibility. Results reveal significant cross-national differences in organisational conditions, with Slovenian teachers reporting particularly strong leadership engagement and strategic support, and Turkish teachers perceiving high levels of social accessibility in art education. Across all four countries, teachers widely recognise material reuse as an effective way to enhance accessibility for financially disadvantaged students and to promote inclusive participation in art projects. The findings indicate that sustainability in art education relies not only on teacher creativity but also on systemic conditions such as leadership, infrastructure, and community collaboration. The study highlights art education's dual role in fostering ecological responsibility and social inclusion, offering insights for school development and educational policy.

Keywords: art education, educational policy, institutional support, material reuse, social justice, sustainability, teacher development

1. Introduction

The sustainable transformation of education has become a central objective of contemporary educational policy. The UNESCO framework for Education for Sustainable Development (ESD) calls for a holistic integration of environmental, social, and economic concerns into teaching and learning, and emphasises that sustainability requires changes not only in curricular content but also in the everyday functioning of educational institutions (Laurie et al., 2016; UNESCO, 2020). This aligns with UNESCO's expert review, which emphasises that systemic learning processes, institutional commitment, and leadership routines are necessary conditions for embedding sustainability across school life (Tilbury, 2011). In this perspective, schools are expected to cultivate organisational cultures, leadership practices, and structures that encourage long-term and coherent engagement with sustainability.

Within this broader shift, art education represents a curricular field in which questions of sustainability, materiality, and social relations emerge in particularly concrete ways. Artistic processes allow for experimentation with materials, images, and meanings, offering space for students' personal engagement, reflection, and emotional response (Marques Ibanez, 2023; Pavlou & Vella, 2023). The creative reuse of materials is a telling example: it reduces the need for newly purchased resources, strengthens ecological awareness, and can at the same time reduce financial barriers for students, thus supporting more equitable participation in art activities (Inwood, 2013; Knif & Kairavuori, 2020).

Despite these potentials, studies repeatedly note that sustainable art practices are not yet systematically embedded in school life. Teachers often report limited institutional support, insufficient infrastructure, and a lack of strategic leadership regarding sustainability (Lee et al., 2021; Zemljak & Kerneža, 2023). Research in this area tends to focus on classroom practice or learner experiences (Inwood, 2013), while broader organisational conditions and processes of school-level learning remain insufficiently explored, particularly in cross-national perspective.

The social dimension of sustainable art education is similar: although existing research suggests that the creative reuse of materials can enhance inclusion and improve access for financially

disadvantaged students (Knif & Kairavuori, 2020), these aspects are rarely examined systematically. There is a need for studies that move beyond isolated classroom projects and explore how institutional arrangements shape both sustainability and social accessibility.

Responding to these gaps, this paper examines how schools—understood as learning organisations—enable or constrain sustainable and inclusive approaches in art education. Drawing on data collected within the Waste to Art project in four European countries, the study focuses on two interconnected areas: (1) institutional support for material reuse in art education and (2) teachers' perceptions of the accessibility of art activities when sustainable practices are used. By connecting the ESD framework and the concept of the learning organisation with concrete practices of material reuse, the study aims to illuminate how organisational conditions shape pedagogical possibilities.

Based on the literature review and the project's objectives, the following research questions (RQ) and hypotheses (H) were formulated:

RQ1: How do teachers evaluate institutional support for the reuse of materials in art education?

- H1: Teachers in schools where sustainability is perceived as strategically supported will report higher leadership support and better spatial conditions.

RQ2: To what extent do school infrastructure, professional training, and leadership influence the integration of sustainable practices into art teaching?

- H2: Stronger institutional support is associated with higher integration of sustainable practices.

RQ3: How is material reuse perceived to affect access for socially disadvantaged students?

- H3: Using waste materials increases access for financially less advantaged students.

RQ4: What is the relationship between institutional support and social accessibility?

- H4: Perceived institutional support positively correlates with perceived social accessibility.

In doing so, the article contributes to three interrelated areas of research. First, it extends debates on Education for Sustainable Development by examining how organisational learning processes and leadership arrangements influence a specific curricular domain that is still relatively underexplored in ESD scholarship: art education. Second, it connects the emerging literature on eco-art and social justice in art education with school-level conditions, showing how institutional support shapes the extent to which creative reuse practices can become both environmentally and socially transformative. Third, by adopting a cross-national design, the study provides indicative insights into how different educational systems support (or fail to support) sustainable art practices, thereby offering a basis for future comparative work and for context-sensitive policy discussions.

2. Theoretical Framework and Literature Review

2.1 From ESD to Organizational Learning

Education for Sustainable Development (ESD) forms the basis of many contemporary efforts to reorient education towards global sustainability goals. It goes beyond teaching about

environmental issues and includes changes in mental models, values, and organisational patterns in schools, with the aim of developing an institutional culture oriented towards sustainability (Laurie et al., 2016; UNESCO, 2020). In this understanding, sustainability is not an additional theme that can be simply added to existing curricula, but a guiding principle that should shape teaching methods, school management, and cooperation with the wider community. This whole-school orientation reflects the understanding that sustainability must be enacted not only through curriculum but through organisational practices and collective learning processes.

ESD aims to develop the capacity of learners and teachers for systems thinking, collaboration, and responsible action in complex socio-environmental contexts (Holst et al., 2020; Perwitasari et al., 2023). These competences cannot be developed through isolated lessons alone; they require school environments that systematically support experimentation, reflection, and cooperation. Research on ESD implementation emphasises that sustainability initiatives depend strongly on organisational structures, resource flows, and leadership routines that enable teachers to develop and sustain new pedagogical approaches (Leicht et al., 2018). According to a UNESCO expert review of ESD processes and learning, effective sustainability-oriented education depends not only on curricular content, but on systemic learning processes — participatory pedagogy, institutional commitment, resource allocation, and supportive leadership routines — in order to embed sustainable practices meaningfully in school life (Tilbury, 2011).

For this reason, the concept of the school as a learning organization (Hargreaves & Fink, 2004; Senge, 1990) has become an important reference in ESD discussions. Learning organizations are characterised by collaborative learning, systematic reflection, and openness to pedagogical innovation. They rely on structures such as professional learning communities, shared planning time, and participatory decision-making. In such settings, teachers can design, test, and gradually refine sustainability-oriented practices. Similar dynamics have been described in other knowledge-intensive contexts, where leadership of informal learning plays a crucial role in sustaining innovation and organisational adaptation (Vuorio et al., 2025). These insights underline the importance of distributed leadership, trust-building, and shared sense-making as organisational capacities that also support ESD implementation in schools.

Empirical research highlights that organisational factors—leadership vision, a culture of collaboration, ongoing professional learning, and material support—are crucial for implementing ESD (Müller et al., 2021; Verhelst et al., 2021; Yuan et al., 2022). Schools that are successful in this regard tend to connect sustainability aims with professional development, allocate time and resources, and introduce mechanisms for monitoring and evaluation.

At the same time, many studies note that these organisational dimensions are still insufficiently examined. Research frequently concentrates on classroom practices or student outcomes, whereas systemic conditions for school-wide transformation receive less attention (Berglund & Gericke, 2025; Gericke & Torbjörnsson, 2022). This gap points to the need for more holistic approaches that treat the school as an ecosystem of learning, leadership, and relationships, and that also include less frequently analysed subject areas such as art education. Recent work in the Slovenian context similarly shows that sustainability-oriented learning can be strengthened

through pedagogically well-designed activities that connect environmental themes with hands-on creative engagement (Škrobar et al., 2024).

2.2 Art Education as a Space for Sustainability and Social Innovation

Art education is increasingly seen as a curricular area in which sustainability values can be addressed in concrete, experience-based ways (Pavlou & Vella, 2023; Marques Ibanez, 2023). Within the ESD framework, art is not only a vehicle for illustrating environmental topics, but a context in which students can explore complexity, empathy, and the ethical dimensions of living together (Acevedo et al., 2022; Heras, 2022). Through artistic work, learners can articulate their views, doubts, and emotions related to environmental and social issues.

Eco-art education places particular emphasis on the use of recycled and waste materials. Such practices invite students to reflect on where materials come from, how they are normally used, and what happens to them when they are discarded (Inwood, 2013). In this process, learners develop what Golańska and Kronenberg (2020) describe as aesthetic sustainability literacy: the ability to work creatively and responsibly with materials and to understand their symbolic and social meanings.

Research indicates that collaborative and emotionally engaging art activities can increase students' motivation and deepen their understanding of sustainability-related topics (González-Zamar & Abad-Segura, 2021; Kakungulu, 2024). Empirical work also highlights the potential of arts-based approaches to activate both cognitive and affective dimensions of environmental learning. A case study of the "Tree-Mappa" project, which engaged primary-school children in exploring significant local trees, showed that arts-based strategies strengthened students' emotional connection to their immediate environments and enhanced their understanding of ecological concepts. Excursions, outdoor activities, and creative processes functioned as triggers for engagement, supporting the idea that caring about sustainability requires not only knowledge but also emotional investment and opportunities for expression (Davis, 2018). These findings reinforce the argument that art education can mobilise students' environmental agency by integrating sensory, reflective, and collaborative forms of learning. These activities often require negotiation of different perspectives, promote dialogue, and open space for joint problem-solving. In this way, art education reinforces the social dimension of learning by encouraging cooperation, exchange of experiences, and reflection on social and environmental issues (Ioannidou et al., 2024; Sanz-Hernández & Covaleda, 2021). In some contexts, such practices take the form of activism, which combines artistic expression with social engagement and concrete collective actions (Pavlou & Vella, 2023).

The ecological dimension of art education is also closely tied to local contexts and the lived environments of students. Critical place-based pedagogy argues that ignoring local human and natural communities contributes to alienation, loss of connection, and reduced ecological awareness, whereas art practices grounded in place can strengthen students' understanding of environmental issues and their sense of belonging (Graham, 2007). Such approaches position art education as a meaningful site for exploring relationships between community, ecology, and creative expression.

However, the scope and quality of these practices depend strongly on institutional conditions. To realise the potential of art education for sustainability and social innovation, schools need qualified teachers, appropriate facilities, access to diverse materials, and curricular frameworks that recognise and support art-based sustainability projects (Lee et al., 2021; Sokolova, 2025). Where these conditions are weak, innovative practices remain isolated and depend heavily on individual teachers' efforts.

2.3 Material Reuse as a Concrete Practice

The creative reuse of waste materials is one of the most tangible and pragmatic ways of integrating sustainability into art education. Working with low-threshold materials such as packaging, discarded textiles, or surplus office supplies encourages divergent thinking, improvisation, and problem-solving (Hassan, 2020; Inwood, 2013). Teachers and students learn to recognise value and potential in objects that are usually classified as waste, which can shift their perceptions of consumption, durability, and responsibility.

Reuse of materials also broadens access to artistic expression for students from less advantaged backgrounds, as it reduces the need for purchasing new supplies (Zainal Abidin et al., 2024). In this sense, material reuse has a direct economic effect: it lowers the costs of art activities and can contribute to more equal possibilities for participation.

Empirical studies show that hands-on work with waste materials supports collaboration, systems thinking, and creativity—competences that are often described as central for education in the 21st century (Avunduk, 2023; Nikoloudakis & Rangoussi, 2024). International research further suggests that creative reuse can foster a more critical stance towards consumer culture and encourage more responsible and reflective forms of artistic practice (Marquez-Borbon, 2024). Material reuse is therefore not only a technical solution for saving resources, but also a pedagogical approach that connects environmental, social, and aesthetic dimensions of sustainability.

2.4 Organizational Conditions and Research Gap

Although sustainability is increasingly present in education policy documents, the organisational conditions needed to translate these aims into everyday school practice are still not fully understood. The success of sustainability-oriented activities depends to a large extent on institutional factors such as leadership support, a collaborative culture, adequate infrastructure, and systemic incentives (Lee et al., 2021). Where these conditions are weak or inconsistent, sustainability tends to remain confined to isolated projects and does not become part of the core functioning of the school.

In many contexts, sustainable art initiatives depend primarily on individual teachers. As a result, the continuity and reach of such initiatives are vulnerable to staff changes, workload pressures, and competing school priorities. Reported obstacles include limited time for planning and coordination, insufficient storage and working space, restricted material resources, and weak

leadership engagement (Hunter et al., 2018; Zemljak & Kerneža, 2023). Opportunities for professional development that meaningfully integrate art, sustainability, and inclusion also remain relatively scarce (Pavlou & Castro-Varela, 2024). Evidence from other subject domains also confirms that structured professional development can play a decisive role in enabling teachers to adopt innovative pedagogical approaches (Flogie et al., 2025). At the same time, studies on virtual exchanges among teachers of engineering and technology show that well-designed cross-institutional collaboration can significantly enrich teachers' professional learning and support the implementation of innovative pedagogies (Zemljak et al., 2025).

Although many authors advocate a whole-school approach to sustainability, empirical studies show that such approaches are often implemented only partially (Boeve-de Pauw et al., 2020). Schools may adopt the language of sustainability or support individual projects without making corresponding changes in structures, incentives, or routines. Recent research therefore increasingly examines how schools as organisations create conditions for sustainable art education—for example, through provision of spatial and material resources, leadership policies, or partnerships with local communities (Amaral et al., 2023; Diaconu & Salaj, 2024).

Comparative empirical work at the intersection of ESD, organisational learning, and art education is still limited. This study contributes to this area by analysing teachers' perceptions of institutional support and social accessibility in four European countries, with a specific focus on material reuse in art teaching.

2.5 Linking Sustainability and Social Justice

The use of waste materials in art education can reduce costs and, in doing so, contribute to more inclusive learning environments. By decreasing reliance on purchased materials, schools can lower financial barriers and improve access to art activities for students from socially vulnerable groups (Knif & Kairavuori, 2020). At the same time, working with reused materials gives students the opportunity to experiment, shape their own ideas, and experience a sense of autonomy when creating artefacts from resources that are usually overlooked or discarded (Stojanović Stošić & Stajić, 2022).

Social justice in art education, however, goes beyond economic aspects. It also concerns who participates, whose experiences are recognised, and whose voices are heard. Taddeo (2021) shows that collaborative and community-based art projects can bridge the gap between the formal structures of school and students' everyday lives, and can support more participatory and less hierarchical forms of learning. Such projects may offer space for students to address social inequalities and environmental problems in ways that speak to their own experiences.

Collaborative artistic processes can strengthen empathy, solidarity, and social responsibility (Dosani et al., 2024; Travis et al., 2020). They provide a setting in which students jointly explore different perspectives and consider possible responses to the challenges they identify. In this sense, art education becomes a place where sustainability and social justice can be addressed together—through material reuse, cooperation, and engagement with local contexts.

Whether this potential is realised depends to a large extent on how school organisations support such practices. Institutional conditions—leadership priorities, allocation of time and space, professional learning opportunities, and links with communities—shape what teachers can realistically do in their classrooms. Investigating these conditions is therefore an important step towards more inclusive and sustainability-oriented school environments. The empirical study presented in the following sections contributes to this goal by examining how teachers in four countries assess institutional support and the social accessibility of art education when material reuse is integrated into teaching.

3. Methodology

3.1 General Background

The study was carried out within the international Waste to Art (WatA) project (Waste to Art, 2024), which aims to integrate sustainability principles into art education through the creative reuse of materials. Alongside pedagogical development, the project also includes a research component designed to explore the organisational conditions that shape the implementation of sustainable practices in schools. The present study focused on teachers' perceptions of these conditions, with particular attention to leadership, opportunities for professional learning, spatial arrangements, and school-level strategies. A separate analysis based on the same project dataset has previously examined only one thematic component of the questionnaire—teachers' views on green art practices and creative material repurposing in Slovenia (Zemljak et al., 2024). The present article builds on the broader dataset and analyses different questionnaire sections, including a four-country comparison that was not addressed in earlier publications.

The decision to use a descriptive–comparative survey design was based on the aim to capture teachers' perceptions across different organisational and cultural contexts. Comparative designs are widely used in international ESD and art education research, as they allow researchers to identify how systemic factors shape pedagogical practices and to highlight contextual differences that may otherwise remain invisible in single-country studies. Because institutional support structures vary substantially between educational systems, the present design enables the identification of patterns that are not tied to one national policy or cultural setting. While the approach does not permit causal inference, it provides an analytically meaningful basis for examining associations between organisational conditions and socially inclusive art practices.

Data were collected between March and June 2024 in four participating countries: Italy, Latvia, Slovenia, and Türkiye. The study followed established ethical procedures and received approval from the Ethics Committee of the Institute of Contemporary Technologies, Faculty of Natural Sciences and Mathematics, University of Maribor (October 2023). Participation was voluntary, and no personal or sensitive data were gathered.

3.2 Sample

The sample included 357 teachers of art or visual arts working in different educational settings, from preschool to tertiary institutions. Participants were recruited through professional

networks, partner institutions, mailing lists, and national project coordinators. The survey was available in all four national languages to ensure clarity and contextual relevance.

Country participation was as follows: Italy ($n = 60$), Latvia ($n = 62$), Slovenia ($n = 31$), and Türkiye ($n = 204$). Teaching experience generally ranged from six to fifteen years, although Latvian preschool teachers tended to report shorter professional experience. The unequal group sizes reflect differences in project reach and teacher availability across countries. Since the sample was non-probability based and heterogeneous, the findings are interpreted as indicative rather than representative of national populations. These differences were considered in the selection of non-parametric analyses, which are more robust to unequal group sizes.

A further consideration concerns the non-probability nature of the sample. Participation depended on teachers' willingness and availability, which may introduce self-selection bias, particularly among teachers already interested in sustainability or art education. Differences in national project networks also influenced recruitment, resulting in varying sample sizes. Although these characteristics limit statistical generalisability, they are typical for exploratory cross-national studies in education, and the diversity of teaching levels and institutional types provides a broad and informative overview of existing practices.

3.3 Instrument and Data Collection

Data were collected using a structured questionnaire developed within the project. The instrument consisted of five sections, of which two are analysed in this paper:

- (1) institutional support for sustainable practices (teacher training, spatial conditions, leadership encouragement, and school strategies) and
- (2) social accessibility of art activities (cost reduction, availability of school-provided materials, and collaboration with the local community).

The questionnaire was developed collaboratively by project partners and informed by prior research on ESD implementation, sustainable art practices, and organisational learning. Item formulation drew on constructs identified in earlier studies, such as leadership support, resource availability, and inclusive pedagogical practices. An expert panel consisting of researchers in art education, sustainability, and educational psychology reviewed the items to ensure face and content validity. Feedback from the panel informed revisions to item wording, response formats, and conceptual clarity prior to pilot testing.

Items were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with an additional response option coded as 0 (don't know/cannot assess). The inclusion of a zero-option was intended to reduce central-tendency bias and to differentiate between genuine neutrality and a lack of information. The instrument was translated into Italian, Latvian, Slovenian, and Turkish. To ensure linguistic and conceptual equivalence, translations were reviewed by experts in art education and sustainability, and small pilot tests were conducted in each country before wider deployment.

Internal consistency of each scale was assessed during pilot testing, and minor revisions were made to improve clarity and conceptual alignment across national versions.

The survey was anonymous, required approximately ten minutes to complete, and could be accessed via a secure web link.

3.4 Data Analysis

The analysis combined descriptive and inferential statistical procedures suitable for ordinal data and unequal group sizes. Descriptive statistics (means and standard deviations) were calculated for all items by country to identify broader patterns of institutional support and social accessibility. Responses coded as “0” were excluded from mean calculations but retained in frequency analyses, as they offer insight into teachers’ uncertainty about institutional arrangements.

Because group sizes varied considerably, comparisons between countries were conducted using the non-parametric Kruskal–Wallis test. When significant differences were identified, Dunn’s post-hoc test with Bonferroni correction was applied to minimise the risk of Type I error. Effect sizes were calculated using epsilon squared (ϵ^2), which provides an indication of the practical relevance of between-group differences.

To explore the relationship between institutional support and accessibility, two composite indices were calculated: the Institutional Support Index (average of four items) and the Accessibility Index (average of four items). Pearson’s correlation coefficient was used to examine associations at the country level. Given the small number of aggregated data points, the correlation was interpreted with caution.

Missing data were handled through pairwise deletion. All analyses were performed using IBM SPSS Statistics 29, with statistical significance set at $p < .05$.

3.5 Ethical Considerations

The study followed the Helsinki Declaration and the ethical guidelines of the Institute of Contemporary Technologies, Faculty of Natural Sciences and Mathematics, University of Maribor (October 2023). Participation was voluntary, informed consent was obtained electronically, and participants could withdraw at any point. No identifiable or sensitive information was collected, and data were stored and processed securely.

4. Results

4.1 Institutional Support for Sustainable Art Education

The first part of the analysis examined how teachers assess institutional support for material reuse in art education. Four dimensions were included: opportunities for teacher training, availability of suitable spaces for storing and sorting materials, leadership encouragement of

waste reduction, and the presence of a school-level waste-reduction strategy. Mean scores and standard deviations by country are presented in Table 1.

Table 1: Institutional Support for Material Reuse in Art Education

	Italy		Latvia		Slovenia		Türkiye	
	M	SD	M	SD	M	SD	M	SD
The school organizes teacher training on material reuse.	2.26	1.10	2.22	1.13	2.60	1.35	2.44	1.34
The school provides adequate spaces for storing and sorting materials.	2.55	1.23	2.47	1.27	3.40	1.58	2.85	1.37
Leadership encourages waste reduction in teaching.	2.62	1.21	2.56	1.22	4.70	1.16	2.94	1.35
The school has a waste-reduction strategy.	2.12	1.08	2.08	1.08	3.70	1.16	2.81	1.28

These descriptive differences already suggest variation in how sustainability is institutionalised across national contexts, particularly regarding leadership engagement and spatial infrastructure. Across the sample, teachers reported moderate levels of institutional support, although with notable differences between countries. The Kruskal–Wallis test confirmed statistically significant differences ($H(3) = 21.84$, $p < .001$, $\varepsilon^2 = .08$), indicating that organisational conditions for sustainable art education vary meaningfully across contexts.

Slovenian teachers in this sample reported the highest levels of support on all four dimensions, especially regarding leadership encouragement ($M = 4.70$). These findings may reflect the presence of national sustainability initiatives or more structured collaboration between teachers and school management. Higher ratings for school strategies ($M = 3.70$) suggest that sustainability principles may be more systematically embedded in institutional documents and everyday practice.

By contrast, teachers in Italy and Latvia reported lower levels of support ($M \approx 2.3$). The limited availability of designated spaces for storing materials and the relatively rare organisation of training indicate that sustainable art practices are predominantly implemented at individual teacher level rather than through coherent school-wide approaches.

Türkiye displayed an intermediate profile ($M \approx 3.4$). Leadership was perceived as relatively supportive, while spatial conditions and school strategies were rated somewhat lower. This may suggest that a positive orientation towards sustainability exists, but has not yet been fully translated into organisational structures.

Overall, the findings indicate that institutional support is uneven and, in some settings, relatively underdeveloped. While individual teachers may engage in creative reuse practices, limited organisational backing appears to constrain their broader implementation across schools.

4.2 Accessibility of Art Activities and Social Justice

The second part of the analysis focused on teachers' perceptions of how material reuse affects the social accessibility of art activities. Four indicators were examined: increased access for students from low-income families, efforts to reduce costs through reuse, availability of school-provided materials, and collaboration with the local community. The results are shown in Table 2.

Table 2: Social Accessibility of Art Activities through Material Reuse

	Italy		Latvia		Slovenia		Türkiye	
	M	SD	M	SD	M	SD	M	SD
Reusing waste materials increases access for students from low-income families.	3.95	1.12	3.91	1.17	5.00	0.67	4.30	.91
The school promotes material reuse to reduce costs.	3.28	1.19	3.31	1.18	3.10	1.45	3.56	1.18
Students can use school-available materials without buying new ones.	3.55	1.11	3.53	1.10	3.60	1.51	3.94	1.11
The school collects materials from the local community.	2.65	1.25	2.72	1.20	2.90	1.52	3.29	1.32

Teachers in all four countries attributed an important social dimension to material reuse. The Kruskal–Wallis test again confirmed significant differences between countries ($H(3) = 26.13$, $p < .001$, $\varepsilon^2 = .09$), suggesting that perceptions of accessibility vary across contexts.

In this sample, Slovenian and Turkish teachers reported the highest overall values ($M \geq 3.7$). In these contexts, reuse was perceived as particularly beneficial for students from financially less advantaged backgrounds, which aligns with the broader view of art education as a space where environmental and social aims can converge. These results may indicate more established practices of material sharing or stronger traditions of collective resource use.

Teachers in Italy and Latvia reported moderate but generally positive ratings ($M \approx 3.4$). While they recognised the potential of reuse for improving accessibility, the findings suggest that such practices may not yet be consistently integrated across schools.

The lowest scores across countries were observed for community involvement. Ratings between 2.7 and 3.3 indicate that partnerships with families, local organisations, or businesses—for example, through the donation or collection of materials—are not yet well developed. This observation corresponds with broader findings that time constraints, limited coordination mechanisms, or insufficient leadership engagement often hinder school–community collaborations.

Overall, the results show that material reuse is widely viewed as a practical approach that can strengthen the social dimension of art education. However, the extent to which this potential is realised appears to depend on institutional conditions.

4.3 Relationship Between Institutional Support and Social Accessibility

To explore the relationship between institutional support and the social accessibility of art activities, two composite indices were constructed: the Institutional Support Index and the Accessibility Index. Mean values by country are shown in Table 3.

Table 3: Mean Values of Institutional Support and Accessibility Indices by Country

	Institutional Support Index	Accessibility Index
Italy	2.39	3.36
Latvia	2.33	3.37
Slovenia	3.60	3.65
Türkiye	2.76	3.77

A moderate positive correlation was observed between the two indices at the country level ($r = .64$). Although the small number of aggregated data points requires careful interpretation, the correlation suggests a consistent pattern: countries with higher levels of institutional support also tend to report greater social accessibility in art education.

This relationship indicates that teachers' ability to use reused materials in ways that enhance equity is shaped by broader organisational conditions. Where schools provide suitable spaces, leadership encouragement, and strategic guidance, sustainable practices appear easier to implement and more likely to benefit students from financially disadvantaged backgrounds.

The descriptive trends support this interpretation. Slovenia, which received the highest ratings for institutional support, also reported relatively high accessibility scores. Italy and Latvia displayed lower ratings on both indices, while Türkiye showed intermediate institutional support but high accessibility, possibly reflecting cultural or pedagogical orientations that facilitate reuse even in the absence of strong organisational structures.

Overall, the results underline the interplay between organisational and social dimensions of sustainable art education. Strengthening institutional conditions may therefore enhance the social impact of sustainable practices in classrooms.

5. Discussion

The study explored how teachers in four European countries perceive institutional support for sustainable art education and how they assess the contribution of material reuse to social accessibility. The findings show notable differences between national contexts and highlight the importance of organisational conditions for the development of sustainability-oriented practices in everyday teaching.

Teachers generally reported moderate levels of institutional support, although the extent of support varied considerably. Within this sample, Slovenia stood out with higher ratings for leadership encouragement, available spaces, and the presence of school strategies. These results correspond with literature suggesting that leadership, professional learning structures, and a collaborative school culture are important factors in enabling Education for Sustainable Development (Müller et al., 2021; Verhelst et al., 2021). Where such conditions are more firmly established, teachers appear to experience a greater sense of alignment between their pedagogical work and broader school directions, which may facilitate the integration of sustainable practices into art education. These differences also point to broader sociocultural understandings of sustainability, which shape how teachers interpret their professional responsibilities and possibilities for action.

In Italy and Latvia, teachers reported lower levels of structural support. This reflects challenges often highlighted in studies of sustainability implementation, such as limited infrastructure, insufficient training opportunities, or a lack of coordinated strategic guidance (Lee et al., 2021; Zemljak & Kerneža, 2023). In such contexts, sustainability-oriented art practices often rely on individual teachers' enthusiasm rather than on school-wide arrangements. This reliance makes practices more vulnerable to everyday constraints such as workload, competing demands, or changes in staffing.

Across all countries, teachers viewed the reuse of materials as a meaningful way to strengthen social accessibility in art education. They emphasised that material reuse reduces costs and can therefore broaden participation among students from financially disadvantaged backgrounds. These perceptions align with research showing that low-cost materials help reduce economic barriers and support more equitable learning conditions (Knif & Kairavuori, 2020; Zainal Abidin et al., 2024). Teachers also noted pedagogical benefits such as enhanced creativity, improvisation, and collaboration—features that resonate with contemporary conceptions of sustainability-oriented learning and inclusive pedagogy (Inwood, 2013; González-Zamar & Abad-Segura, 2021).

At the same time, the findings indicate relatively low levels of community involvement. Despite the potential of partnerships with families, local organisations, or businesses to expand material resources and strengthen the social dimension of sustainability, these forms of cooperation appear to be limited. Similar constraints are described in the literature, where lack of coordination structures or insufficient leadership engagement often hinder community-based initiatives.

A positive association emerged between institutional support and the perceived social accessibility of art activities. Although based on aggregated data and therefore interpreted with caution, this relationship suggests an important tendency: in environments where teachers experience clearer organisational support—whether through leadership, professional learning

opportunities, spatial conditions, or strategic frameworks—they appear better able to implement practices that enhance equity. This observation corresponds with theoretical conceptions of the school as a learning organisation, in which collective reflection, shared vision, and coordinated action are central elements of sustainable school development (Senge, 1990; Hargreaves & Fink, 2004).

The results also point to a persistent gap between individual practice and systemic support. In many settings, creative reuse is carried out despite limited infrastructural or organisational conditions. This mirrors broader patterns in sustainability research, where innovative practices often emerge at the classroom level but remain fragile in the absence of structural support (Kopnina & Meijers, 2014; Hunter et al., 2018). Strengthening leadership engagement, improving spatial arrangements, and offering targeted professional development could help shift sustainable art practices from isolated efforts toward more stable, school-wide approaches.

The findings also have implications for school leadership and educational policy. If sustainable art education is to move beyond isolated projects, institutional conditions need to be approached as a core component of school development rather than as a peripheral add-on. Leadership teams play a key role in signalling that sustainability and social justice in art education are not optional enrichment activities but part of the school's strategic priorities. This involves integrating sustainability aims into school development plans, clarifying expectations regarding the reuse of materials and inclusive practices, and allocating time and resources for collaborative planning.

From a policy perspective, the results suggest that support for sustainable art education cannot be limited to curricular guidelines or project funding alone. System-level frameworks that encourage schools to develop whole-school approaches to sustainability need to explicitly acknowledge the role of art education and provide incentives for cross-curricular and community-based initiatives. This may include funding schemes for shared material spaces, recognition of schools that develop innovative reuse practices, and targeted professional development programmes that connect ESD, art education, and equity.

For school leaders, one practical implication is the importance of viewing teachers' creative initiatives not as isolated "extra" efforts, but as starting points for organisational learning. When individual experiments with material reuse are documented, discussed, and gradually embedded into routines—for example through shared guidelines, joint planning, or peer observation—they can evolve into more stable practices that benefit a larger number of students. Creating spaces for such collective reflection may be particularly important in contexts where formal strategies or infrastructural support are still emerging.

The cross-national patterns observed in this study suggest that sustainability in art education emerges from the interplay of organisational conditions and pedagogical practices. To synthesise these relationships and clarify the mechanisms through which schools can foster sustainability-oriented creativity, we propose a conceptual model that integrates our empirical findings with previous research on whole-school sustainability approaches and inclusive art practices (Figure 1).

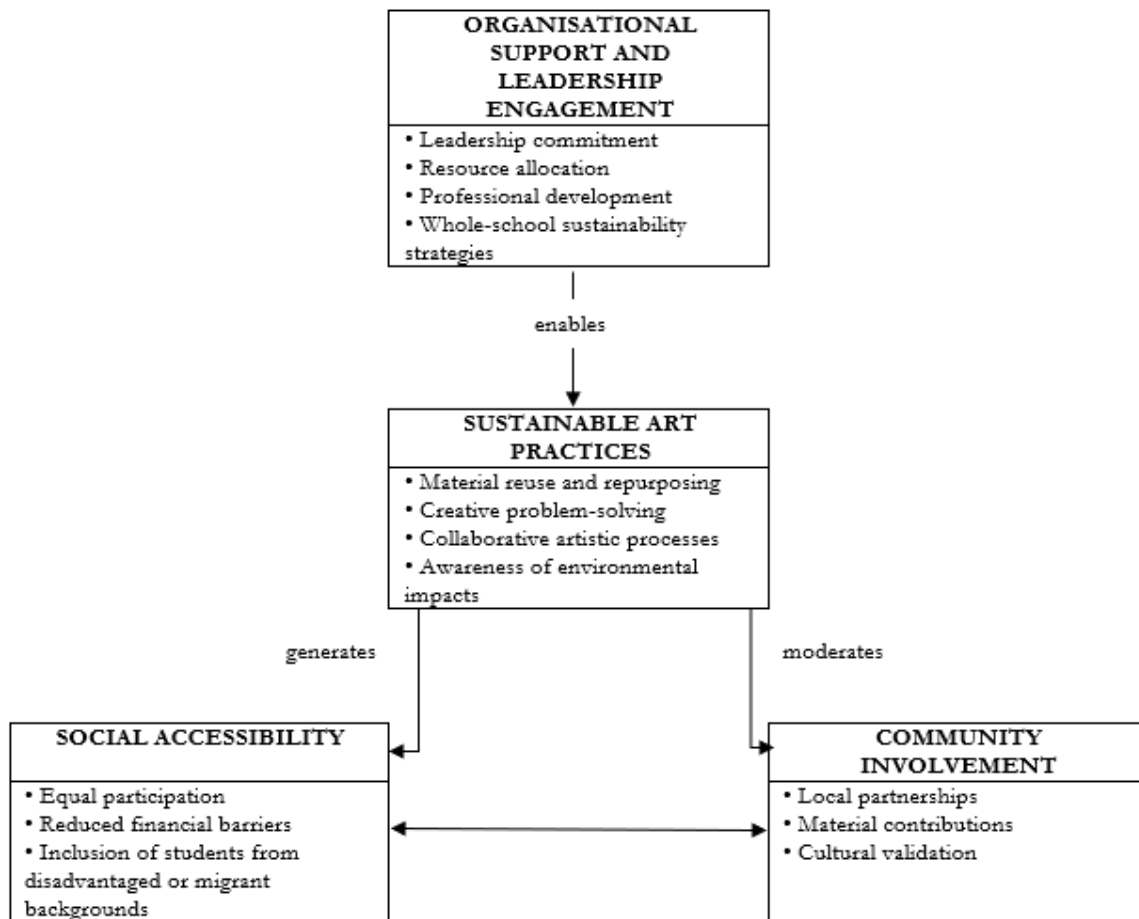


Figure 1. Conceptual Model of Organisational Conditions Enabling Sustainable and Socially Inclusive Art Education

Figure 1 presents a model with three interconnected domains:

- (1) *Organisational Support and Leadership Engagement*,
- (2) *Sustainable Art Practices*, and
- (1) *Social Accessibility and Inclusion*.

The first domain captures institutional factors—strategic orientation, resource allocation, and leadership involvement—that set the enabling conditions for teachers’ work. These structures influence the extent to which teachers can implement environmentally responsible practices, particularly those centred on material reuse and creative repurposing. The second domain reflects the pedagogical layer, in which teachers transform sustainability principles into concrete creative processes. Our findings show that when organisational conditions are supportive, teachers are more likely to integrate reuse practices systematically rather than episodically. Finally, the third domain foregrounds the social dimension of sustainability: by minimising material costs and encouraging collective making, art activities become more accessible to students who may otherwise face financial barriers.

The model illustrates a dynamic pathway in which organisational support enables sustainable art practices, which in turn strengthen social accessibility. This pathway reinforces the idea—highlighted in prior work on sustainable art education—that ecological responsibility and social inclusion are not separate agendas but mutually reinforcing dimensions of creative learning environments. The proposed model therefore provides a conceptual scaffold for future empirical work and offers schools a clearer orientation for designing sustainability-aligned art programmes.

The findings have implications for the role of art education within ESD. Art education emerges as an area in which environmental, creative, and social dimensions intersect in a particularly concrete form. Recognising this potential at the level of school development and policymaking could encourage a more systematic integration of sustainable practices into curricula, professional learning programmes, and collaboration with local communities. Such approaches align with the broader aims of the ESD for 2030 framework.

The study has limitations. Reliance on self-report measures may introduce subjective bias, and the absence of observational data limits insight into how sustainable practices unfold in classrooms. The cross-sectional design cannot capture changes in institutional support over time, and the small number of aggregated country-level observations restricts the precision of the correlations. Additionally, the uneven sample sizes across countries, particularly the smaller Slovenian sample, may affect the stability of mean estimates and should be considered when interpreting between-country differences. Future research could combine survey data with qualitative case studies, classroom observations, or longitudinal designs to explore how sustainable art practices develop and stabilise within specific organisational contexts.

Despite these limitations, the study offers an empirically grounded insight into the organisational and social dimensions of sustainable art education. It shows that material reuse is widely recognised as both a pedagogical and social resource, while also illustrating that its implementation is closely connected to the institutional environments in which teachers work. Strengthening these environments—through leadership, infrastructure, professional learning, and community partnerships—could support the transition from individual initiatives to practices that are embedded, sustainable, and accessible to all students.

6. Conclusion

This study examined teachers' perceptions of the organisational conditions that support sustainable art education and their views on how material reuse contributes to social accessibility. The findings show that while teachers across countries recognise the educational and social value of creative reuse, the institutional environments in which they work differ considerably. In this sample, Slovenia stands out with more developed leadership engagement, spatial arrangements, and strategic orientations, whereas in Italy and Latvia sustainable practices often rely on individual initiative. Türkiye presents a mixed profile, with supportive leadership but less consistent infrastructural and strategic conditions. These differences suggest that the implementation of sustainability principles in art education is shaped not only by teachers' pedagogical intentions but also by the organisational frameworks within which they operate.

Across all contexts, teachers highlighted that material reuse reduces costs and supports broader participation in art activities, especially among students from financially less advantaged backgrounds. This confirms the potential of art education to connect environmental responsibility with social inclusion in practical and meaningful ways. At the same time, the generally low levels of community involvement indicate an underused opportunity for expanding material resources and strengthening the social dimension of sustainability. The positive association between institutional support and perceived social accessibility further suggests that supportive organisational conditions—leadership, professional development, spaces, and strategies—enable teachers to implement practices that contribute to more equitable learning environments.

The findings also point to areas that require further attention. Reliance on self-reported data limits insights into how sustainable practices are enacted in classrooms, and the cross-sectional design does not capture changes over time. Future research could therefore integrate qualitative approaches, longitudinal perspectives, or school-level case studies to examine how sustainable art practices develop within specific organisational contexts. Despite these limitations, the study contributes to a clearer understanding of the organisational and social dimensions of sustainable art education. It highlights that strengthening institutional conditions—through leadership engagement, infrastructural support, professional learning, and links with local communities—can help move sustainable art practices from isolated efforts to more stable and accessible components of everyday school life.

Beyond its empirical results, the study offers a conceptual lens for understanding how organisational support, sustainable art practices, and social accessibility are intertwined. By foregrounding art education as a site where environmental and social dimensions of sustainability intersect, the article invites both researchers and practitioners to consider how school organisations can more deliberately create conditions for such integrative practices. In this sense, the conceptual model and cross-national findings may serve as a starting point for further empirical studies as well as for school-based dialogues on how to align leadership, infrastructure, and community partnerships with the everyday realities of art classrooms.

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