



Reclaiming the Discarded: A Practice-Based Inquiry into Sustainable Materiality and Ecological Awareness in Preschool Visual Arts Education

Panagiotis Ferentinos

Ph.D., Department of Fine Arts and Art Sciences, School of Fine Arts, University of Ioannina
p.ferentinos@uoi.gr

Eleni Ferentinou

Ph.D. Candidate, Department of Medicine, School of Health Sciences, University of Patras; Department of Psychology, Metropolitan College
eferentinou@upatras.gr; eferentinou@mitropolitiko.edu.gr

► ABSTRACT

This study investigates the creative use of recyclable and everyday "waste" materials in early childhood education, approaching artistic practice as a meeting point of education, culture, and psycho-emotional development. Within the contemporary educational landscape of the twenty-first century, "waste" material is reconceptualized not merely as an instructional resource but as a cultural object and a carrier of values such as sustainability, ecological awareness, and creation under conditions of limited resources. The theoretical approach of the study is grounded in contemporary pedagogical and artistic learning theories, as well as in the current Curriculum for Early Childhood Education, which recognizes art as a fundamental field of aesthetic and cultural literacy. At the same time, psychological perspectives are integrated to highlight the contribution of artistic creation to children's self-expression, emotional regulation, collaboration, and social interaction. Particular emphasis is placed on the practice-based character of the research, through a laboratory case study involving early childhood education students, in which the artistic process is organized spirally: from continuous line drawing and linear gesture, through collage and the deconstruction of form, to three-dimensional construction using recyclable materials. This instructional trajectory draws inspiration from Cubism and the constructions of Pablo Picasso, foregrounding the significance of materiality, composition, and the transformation of the object within artistic practice. Through the creative processing of materials, participants develop skills of experimentation, collaboration, and symbolic thought, while simultaneously strengthening their ecological and cultural awareness. Artistic practice is recognized as a cultural practice of learning, capable of connecting the educational process with contemporary social and environmental challenges.

Keywords: Art Education in Early Childhood, Recyclable Materials, Collage and Construction, Psycho-Emotional Development, Cultural Learning, Practice-Based Research.

► INTRODUCTION

In the contemporary educational landscape of the twenty-first century, art is increasingly recognized as a fundamental field of learning that transcends the boundaries of aesthetic education, actively contributing to children's cognitive, social, and emotional development (Eisner, 2002; Efland, 2002). Art education, particularly in early childhood, is not confined to the production of "works", but functions as a process of meaning-making with respect to the world, a form of communication, and a means of developing creative and symbolic thought (Wright, 2012; Vaos, 2023). On this basis, artistic practice acquires a broader pedagogical and cultural role, linking personal expression with collective experience and cultural understanding.

At the same time, contemporary social and environmental conditions, characterized by overconsumption and the intensive use of material resources, bring to the fore the need to redefine humanity's relationship with the material environment. Within the field of education, the concept of sustainability and the creative reuse of materials acquires particular significance, as it is directly linked to the development of ecological awareness and a responsible stance toward the world (Inwood, 2013). Within this framework, "waste" or recyclable material ceases to be regarded as an inferior or secondary resource and is reconceptualized as a carrier of creative potential and cultural value.

The use of everyday and recyclable materials in art education is associated with pedagogical approaches that emphasize experiential learning and children's active participation. According to experiential learning theory, knowledge is constructed through action, experimentation, and reflective processing of experience (Kolb, 1984), while constructivism underscores the learner's role as an active producer of knowledge (Papert, 1993). Correspondingly, the theory of "loose parts" highlights the importance of open-ended, flexible, and non-prescriptive materials, which encourage imagination, discovery, and originality (Nicholson, 1972). In the same vein, Reggio Emilia pedagogy approaches material as a "language" of thought and expression, foregrounding the significance of materiality in the construction of knowledge (Vecchi, 2010).

The artistic use of "low-value" or everyday materials, however, does not constitute merely a pedagogical choice but is embedded in a broader artistic and cultural tradition. From the early twentieth century onward, avant-garde movements - Cubism in particular - introduced the use of unconventional materials into artistic practice, overturning established conceptions of art and form (Lampraki-Plaka, 2003). The emergence of collage and, subsequently, of three-dimensional constructions (assemblage) marked a radical shift: the everyday object was incorporated into the work of art, acquiring new meaning through the process of composition and transformation. In the work of Pablo Picasso, and particularly in his Cubist constructions, material ceases to function merely as a medium and becomes an active carrier of form and meaning.

The connection between art history and contemporary educational practice becomes especially fruitful when translated into instructional practices that allow for an experiential approach to artistic concepts. Within this field, the present study proposes a practice-based approach to art education, in which theory and practice are interwoven through a spiral learning process. This trajectory begins with the linear gesture of continuous line drawing and pattern-making (Ferentinos & Ferentinou, 2025a), continues with the deconstruction and reconfiguration of form through collage

(Ferentinos & Ferentinou, 2025b), and culminates in three-dimensional construction using recyclable and "low-value" materials (Ferentinos & Ferentinou, 2026), drawing inspiration from Cubist practices and Picasso's constructions.

This approach does not constitute an isolated instructional proposal but is situated within a broader research direction that underscores the importance of artistic practice as a field of learning and psycho-social development. Previous studies have shown that artistic creation can function as a means of enhancing collaboration, empathy, and collective identity, particularly when organized within frameworks of collaborative and community action (Ferentinou & Ferentinos, 2025a; Ferentinou & Ferentinos, 2025b; Ferentinou & Ferentinos, 2025c). Moreover, the use of unconventional materials and the emphasis on process reinforce imagination, flexibility of thought, and problem-solving capacity.

The purpose of the present work is to investigate the role of recyclable and "waste" materials as means of learning and psycho-emotional development in early childhood education, through a practice-based case study. Specifically, it examines how the artistic processing of materials, in conjunction with references to art history and Cubism, can contribute to the development of creative, social, and cultural skills, both among learners and among future educators.

► THEORETICAL FRAMEWORK

"Waste" material as a cultural and pedagogical object

"Waste" or recyclable material, when incorporated into art education, ceases to be defined exclusively by its prior utilitarian function and is transformed into an open field of creative processing. Its pedagogical value lies not only in its low cost or ease of access, but primarily in its capacity to invite the child into acts of selection, transformation, composition, and meaning-making (Eisner, 2002; Gude, 2007). In this sense, material functions as a carrier of experience rather than a neutral means of construction, reinforcing creative thought and symbolic expression (Wright, 2012).

The use of everyday and low-value materials is associated with the theory of "loose parts," according to which open, movable, and non-prescriptive materials expand the possibilities for creative exploration and allow for multiple uses and rearrangements (Nicholson, 1972). At the same time, Reggio Emilia pedagogy presents materials as languages of thought and expression, through which children explore relationships, forms, narratives, and symbolic meanings (Vecchi, 2010). Thus, "waste" material is not merely an auxiliary resource but an active agent of the learning process.

At the cultural level, everyday material can be viewed as a trace of social practices, consumption habits, and environmental choices, situated within broader cultural and aesthetic contexts (Efland, 2002; Lampraki-Plaka, 2002). Its reuse within artistic practice allows its transition from the field of consumption to the field of expression, foregrounding the material's dynamic potential as a carrier of new meanings. In this way, art education activates a form of reflection on the relationship between child, material, environment, and culture. The environmental dimension of art education underscores this potential, as artistic practices employing reused materials can cultivate ecological awareness and a critical stance toward the material environment (Inwood, 2013).

Within the framework of the present study, the concept of "waste" material is also linked to prior practice-based approaches that revealed the creative dynamism of low-value media in art education. Specifically, the use of photocopy paper as a "low-value material" demonstrated that even an apparently simple and reproducible medium can serve as a starting point for deconstruction, restructuring, and the production of new artistic discourse (Ferentinos & Ferentinou, 2026). Similarly, the use of recyclable materials in early childhood education enables the creation of a field in which materiality, ecological sensitivity, and creative thought are directly connected to the learning experience.

Materiality, experimentation, and artistic practice

Artistic practice in early childhood education cannot be conceived independently of the materiality that constitutes it. Material is not merely a carrier of form but an active agent of the creative process, as it directly influences how the child thinks, acts, and expresses. Emphasis on the process of creation, rather than on the final outcome, constitutes a core principle of contemporary art pedagogy, reinforcing exploration, experimentation, and personal expression (Eisner, 2002; Hetland, Winner, Veenema, & Sheridan, 2013).

The concept of *studio thinking* highlights the significance of the artistic process as a field for developing cognitive and creative skills, such as observation, persistence, reflective thinking, and problem-solving capacity (Hetland et al., 2013). On this theoretical basis, engagement with different materials and techniques allows children to experiment with forms, textures, and structures, developing an experiential understanding of artistic language. The process of trial and error assumes a central role, transforming artistic activity into a field of inquiry rather than a process of reproducing predetermined models (Gude, 2007).

Gesture, as a fundamental element of artistic practice, functions as a meeting point of body, material, and thought, particularly in early childhood, where expression precedes verbal processing (Salla, 2006; Wright, 2012). From early forms of writing and drawing to more complex constructions, creative practice encompasses a bodily and experiential dimension, through which the child explores the world and the self (Vaos, 2023). The transition from linear rendering to composition, and from two-dimensional surface to three-dimensional form, constitutes not merely a technical progression but a cognitive and aesthetic shift, associated with the development of symbolic thought and spatial perception through gradual engagement with different materials and forms (Ferentinos & Ferentinou, 2025a).

In this direction, practice-based approaches to art education highlight the significance of the spiral organization of the learning process, in which each stage functions as a foundation for the next. The trajectory from continuous line drawing and pattern-making toward collage and, subsequently, toward construction with recyclable materials constitutes a characteristic pathway of gradual enrichment of artistic experience (Ferentinos & Ferentinou, 2025a; Ferentinos & Ferentinou, 2025b). Through this process, the learner does not merely acquire techniques but develops modes of thought and action associated with creativity, flexibility, and the capacity to transform materials and ideas.

Emphasis on experimentation and process is directly linked to the formation of an open and supportive learning environment, in which error is treated as an integral

part of inquiry and learning (Gude, 2007; Hetland et al., 2013). Within such an environment, art education functions as a field for strengthening self-confidence and self-expression, allowing children to develop a personal and creative relationship with material (Salla, 2006; Vaos, 2023). At the same time, the use of unconventional and recyclable materials enhances the potential for transformation and a new perspective on form, an element particularly evident in practice-based approaches to art education (Ferentinos & Ferentinou, 2025b; Ferentinos & Ferentinou, 2026). Thus, materiality and experimentation constitute not merely technical characteristics of artistic practice but core axes of a pedagogy that strengthens creativity, flexibility of thought, and experiential learning.

Art history: From primitivism to cubism

The artistic use of everyday and "low-value" materials is connected to a significant historical shift at the beginning of the twentieth century, when avant-garde art movements radically challenged traditional principles of representation. The shift from imitation toward structure and the process of image construction leads to a redefinition of the very concept of the artwork, in which material acquires an active role in the shaping of meaning (Lampraki-Plaka, 2003).

Decisive in this shift was the influence of so-called "primitive" art, and African sculpture in particular, which foregrounded the significance of schematization, symbolic rendering, and the expressive power of form. The departure from naturalism and the emphasis on the structural organization of the image deeply influenced artists such as Paul Gauguin, contributing to the formation of a new artistic vocabulary that paved the way for the radical developments of Cubism (Lampraki-Plaka, 2002).

This turning point culminates in Cubism, where form is deconstructed and recomposed through multiple viewpoints, abolishing single-point perspective and foregrounding the structure of the image as a fundamental field of artistic inquiry (Lampraki-Plaka, 2003). In the work of Pablo Picasso, and particularly in his artistic experimentations through Cubist form, the concept of composition is radically transformed, as form is not represented but constructed.

The introduction of collage by Picasso and Braque marks a decisive shift in art history, as for the first time heterogeneous and everyday materials are incorporated into the surface of the work, generating new relations of meaning through their coexistence (Ferentinos & Ferentinou, 2025b). Collage functions as a compositional process whereby elements not initially connected are repositioned within a new artistic context, activating unexpected interpretations and foregrounding the concept of polysemy (Ferentinos & Ferentinou, 2025b). As noted in the relevant literature, this practice concerns not only aesthetic innovation but also a broader cultural and cognitive shift, in which art functions as a means of reassembling reality (Freedman, 2003). The development of collage subsequently leads to three-dimensional constructions (*assemblage*), in which the object is fully released from its original function and reconceptualized through the process of assembly. Picasso's Cubist constructions, such as his guitars, constitute a characteristic example of this practice, as they are composed of simple and "low-value" materials that acquire new form and meaning through composition. The use of such materials is associated with a broader artistic stance that recognizes the creative dynamism of reuse and transformation,

approaching material as a carrier of meaning rather than merely a technical medium (Taylor, 2004; Ferentinos & Ferentinou, 2025b).

For art education, these shifts carry practical significance: they allow educators to transfer core principles of modern art into instructional practice. The use of recyclable and everyday materials is not merely a practical choice but is embedded within an artistic and pedagogical logic that promotes creative inquiry, polysemy, and the meaning-making of experience through composition (Eisner, 2002; Gude, 2007). Consequently, in this approach, art history functions as an active pedagogical tool, supporting the development of creative and critical skills through experiential engagement with materials and forms.

Contemporary artistic practices and the reconceptualization of material

The transition from Cubism to contemporary artistic practices is accompanied by an even more radical expansion of the concept of material, in which the everyday object ceases to function merely as a compositional element and becomes a carrier of experience, memory, and cultural reference. In the work of Robert Rauschenberg, and particularly in his so-called *combines*, painting and construction coexist within a unified field, where materials such as fabric, wood, photography, and everyday objects are organically incorporated into the work (Taylor, 2004). The selection of materials is not neutral but functions as a means of producing meaning, shifting emphasis from subject matter to materiality itself.

This practice is associated with the concept of the *found object*, whereby the object is detached from its original function and repositioned within a new artistic and conceptual context. Thus, artistic practice becomes a process of selection and reassembly, in which meaning is produced through the relationship between material, form, and viewer (Efland, 2002; Gude, 2007). As noted in contemporary art theory, the use of heterogeneous materials activates processes of multiple readings, whereby the work does not offer a single, fixed interpretation but functions as a field of dynamic meaning-making (Gude, 2007).

Following the practices of collage and *assemblage*, contemporary artistic approaches foreground the significance of reuse and transformation as core elements of the creative process. The concept of reconceptualization concerns not only the aesthetic dimension of the work but also the possibility of reflecting on the very social and cultural conditions of material production. Within this conceptual field, "waste" material is not treated as residue but as a dynamic element of creation, capable of acquiring new function and meaning through artistic practice (Ferentinos & Ferentinou, 2025b).

This shift acquires particular significance in the twenty-first century, as art becomes increasingly connected to issues of sustainability and environmental awareness. The use of recyclable and reused materials is not merely an aesthetic or technical choice but is embedded within a broader cultural stance that challenges overconsumption and redefines the relationship between humanity and the material world (Inwood, 2013). In the field of education, this approach allows for the connection of artistic creation with contemporary social challenges, strengthening the development of ecological awareness and critical thought (Ministry of Education and Religious Affairs, 2021; Vaos, 2023). These approaches function as a theoretical

bridge toward understanding reuse not only as an artistic practice but also as a cultural stance toward material—an issue developed in the following section.

Ecology, material, and contemporary culture

In the contemporary world, the use of materials is not merely a technical choice but is directly connected to social, cultural, and environmental conditions. Overconsumption and the mass production of objects have led to a crisis that is not only ecological but also cultural, as humanity's relationship with the material environment is radically transformed. From this perspective, the concept of sustainability acquires particular significance in education, linking learning with the development of responsible attitudes and practices toward available resources (Inwood, 2013).

The artistic use of "waste" and recyclable materials is situated within this condition as a pedagogical and cultural practice that transcends the functional use of objects. Material is not treated as a neutral medium but as a carrier of meaning, experience, and values, through which children are invited to redefine their relationship with the world around them (Vaos, 2023). The process of reuse thus functions as an act of transformation, in which creation is linked to the re-evaluation of the value and use of objects.

In early childhood education, this approach acquires particular significance, as it allows for the connection of artistic creation with the development of ecological awareness and social responsibility. Through the creative management of simple, everyday materials, children develop not only skills of experimentation and composition but also attitudes related to collaboration, respect for the environment, and critical understanding of consumption (Ministry of Education and Religious Affairs, 2021). Artistic practice functions as a field in which creativity meets ecology, transforming learning into a process of active participation and responsible action. The use of recyclable materials is not merely a means of producing works but constitutes a form of cultural practice that embeds values and modes of thought related to sustainability and contemporary social reality (Eisner, 2002; Gude, 2007).

► METHODOLOGY-A PRACTICE-BASED APPROACH

Research approach

The present study is situated within the framework of a practice-based and arts-based research approach, in which artistic practice is not treated merely as a field of application but as a fundamental mode of knowledge production. Within this framework, the artistic process functions as a research tool, enabling an understanding of learning through creative engagement with materials, forms, and processes (Eisner, 2002; Hetland et al., 2013).

This approach focuses on the process of creation rather than exclusively on the final outcome, foregrounding the significance of experimentation, inquiry, and participants' reflective engagement. In art education, and particularly within the context of early childhood pedagogy, knowledge is constructed through action, gesture, and the management of materiality-elements that render artistic practice a substantive field of learning (Vecchi, 2010; Wright, 2012). At the same time, this methodology is

connected to the authors' prior research work, which has demonstrated the dynamic potential of artistic practice as a means of developing creative, social, and psycho-emotional skills through processes of experimentation, collaboration, and collective creation (Ferentinos & Ferentinou, 2025a; Ferentinos & Ferentinou, 2025b; Ferentinos & Ferentinou, 2026; Ferentinou & Ferentinos, 2025a; Ferentinou & Ferentinos, 2025b).

Educational context and participants

The research application was conducted within the framework of the laboratory course "Lab 1: Creative Early Childhood Placement Activities 1", part of the BA (Hons) Early Childhood Education programme at Metropolitan College, Patras campus. The course addresses first-year students (first semester), who are being trained as prospective early childhood educators.

The laboratory setting was organized as an open field of artistic exploration, in which participants were afforded the opportunity to actively engage in processes of experimentation with materials, forms, and techniques. Emphasis was placed on experiential learning, collaboration, and the gradual construction of knowledge through artistic practice, in keeping with the principles of contemporary art pedagogy (Eisner, 2002; Gude, 2007). Particular importance was attached to linking artistic creation with educational practice, as the students functioned not only as creators but also as future educators called upon to transfer analogous approaches into the context of early childhood education. In this way, the artistic process acquired a dual character: on the one hand, as a learning experience, and on the other, as a pedagogical tool.

Pedagogical design: The spiral development of the artistic process

The instructional design of the present application was grounded in a spiral development of the artistic process, whereby each stage does not function in isolation but evolves and is redefined through the stage that follows. This approach allows for participants' gradual deepening of understanding regarding form, material, and composition, through a sequential progression from the two-dimensional to the three-dimensional.

In the first stage, artistic exploration centres on the linear gesture through continuous line drawing, in which the line functions as the primary means of expression and form-generation. This process is linked to pattern-making and the use of spontaneous mark-making, foregrounding the significance of gesture and movement as elements of artistic thought (Ferentinos & Ferentinou, 2025a).

In the second stage, emphasis shifts to the process of collage, in which form is deconstructed and reconstituted through the use of multiple, heterogeneous materials. This practice enables an understanding of composition as a dynamic process, through which disparate elements are combined and acquire new meaning, reinforcing the concepts of polysemy and artistic inquiry (Ferentinos & Ferentinou, 2025b). In the third stage, the artistic process expands into three-dimensional space through construction, in which materials acquire volume, structure, and spatial presence. This transition from surface to space enables an understanding of form as object and reinforces participants' creative engagement with materiality and its transformative potential (Ferentinos & Ferentinou, 2026).

The final stage of the process is linked to artistic reference to Cubism and to the constructions of Pablo Picasso, particularly his guitars, in which form is deconstructed and recomposed through geometric and heterogeneous elements. Participants were invited to draw on recyclable and everyday materials to create three-dimensional compositions that derive formal and conceptual elements from Cubist practice, thereby transferring core principles of art history into contemporary educational practice (Lampraki-Plaka, 2003; Taylor, 2004). This spiral structure does not aim at the reproduction of artistic models but at understanding the artistic process as an open field of inquiry. Through the gradual transition from line to composition, and from surface to space, participants develop skills in experimentation, composition, and transformation, while simultaneously becoming familiar with the use of unconventional and recyclable materials as carriers of meaning.

Materials and procedure

The artistic process was grounded in the use of simple, everyday, and recyclable materials, such as cardboard boxes, cardstock, paper, bottle caps, fabric, and other available objects. The selection of materials was not dictated solely by aesthetic or technical criteria but by a logic of reuse and the creative repurposing of everyday elements, foregrounding the dynamic potential of "low-value" material as a carrier of artistic expression (Nicholson, 1972; Inwood, 2013).

The process was organized as an open field of experimentation, in which participants were able to explore the properties of materials through cutting, composing, assembling, and transforming. Emphasis was placed on process rather than final outcome, encouraging freedom of choice, creative initiative, and personal interpretation of form (Vecchi, 2010; Hetland et al., 2013).

Particular importance was attached to the gradual transition from two-dimensional to three-dimensional form, as well as to the development of spatial awareness through construction. Materials functioned as means of exploring form and volume, while the assembly of diverse elements led to the creation of complex constructions referencing the logic of assemblage. The process was documented through photographic recording of both intermediate stages and final works, enabling reflective analysis of the artistic practice. This material is subsequently employed as the basis for the case study that follows, in which the application of the above approach is examined through concrete examples of constructions (Figs. 1–4).

► CASE STUDY: FROM COLLAGE TO THREE-DIMENSIONAL CONSTRUCTION

The implementation of the proposed approach, grounded in practice-based artistic inquiry, was carried out within the laboratory course *Creative Early Childhood Placement Activities 1 (Visual Arts)*, focusing on the creation of three-dimensional constructions inspired by the form of the guitar, with direct reference to the artistic experimentations of Cubism and, in particular, to Picasso's constructions. The selection of the guitar as a thematic axis was by no means arbitrary, as it constitutes an emblematic motif within Cubist production, both at the level of collage and in assemblages (Lampraki-Plaka, 2003; Taylor, 2004).

The instructional process was organized in successive stages, allowing for a gradual transition from two-dimensional to three-dimensional artistic thinking. Initially, the students worked on the creation of two-dimensional compositions through collage, drawing on heterogeneous materials (papers of varying textures, newspaper, fabric, discarded materials), either independently or in combination with painting (mixed media). These compositions displayed notable variation in density and structure: some moved toward abstraction and economy of form, leaving deliberate voids within the pictorial space, while others developed denser surfaces extending to the very edges of the paper, while nonetheless retaining an abstract character.

This stage functioned as an intermediate space for exploring the relationship between form and material, facilitating familiarization with the logic of collage as a process of composition and reassembly. At the same time, the students drew on their prior experience with continuous line drawing exercises using markers, and with the generation of distinct patterns within their shapes, in which the organization of form relied on linear gesture and rhythmic repetition. The transition from drawing to collage marked an expansion of expressive means-from line as trace and shape variation toward materiality and texture as carriers of form within a new compositional plasticity.

Subsequently, the students proceeded to three-dimensional construction, using cardboard boxes of varying sizes -selected by the students themselves- as the primary structural element. This choice had a direct impact on the scale and morphology of the resulting works, giving rise to a variety of constructions with differing proportions and spatial solutions. The process entailed cutting, assembling, and repositioning materials, as well as decisions regarding adhesive media (liquid glue, glue sticks, hot glue), thereby foregrounding the significance of materiality and technique in the shaping of form.

The final constructions clearly capture the transition from two-dimensional composition to the three-dimensional constitution of form, adopting core principles of Cubism and *assemblage*. In Figure 1, the use of the cardboard box as the primary structural element generates a construction that unfolds across successive planes, with its different facets revealing alternating chromatic relationships and new spatial readings. The form functions as an artistic object, in which the interplay of void and solid reinforces the sense of depth and multi-perspectival perception. In Figure 2, the construction acquires a more sculptural character, as it is organized as an autonomous composition in space. The use of pronounced chromatic contrasts, geometric surfaces, and actual strings transforms the guitar into a three-dimensional whole, in which the relationship of volume, balance, and construction takes precedence over naturalistic representation.

In Figure 3, the flat treatment of the guitar's body is combined with three-dimensional elements, such as the raised soundboard, the string-like cords made of twine, and the rear support base, creating an intriguing balance between surface and volume. The alternative presentation of the construction from a side view reveals that the work is activated through peripheral observation rather than through a single frontal viewpoint alone. By contrast, in Figure 4, emphasis shifts toward the objecthood of the guitar itself. The treatment of the lateral and rear surfaces, combined with the deliberate retention of the visible cardboard structure, approaches the logic of constructing an object rather than a sculptural form, foregrounding the creative transformation of the recyclable material.

This process is not confined to the production of objects; rather, it constitutes a learning experience that activates creative thinking, decision-making, and the subject's relationship with material. Artistic practice thus emerges as a field of inquiry, in which material functions not merely as a medium but as an active constituent of thought and form-giving, in direct continuity with the principles articulated in the theoretical framework.



Figure 1. Guitar construction with multiple facets and successive compositional planes



Figure 2. Three-dimensional guitar with autonomous sculptural organization in space

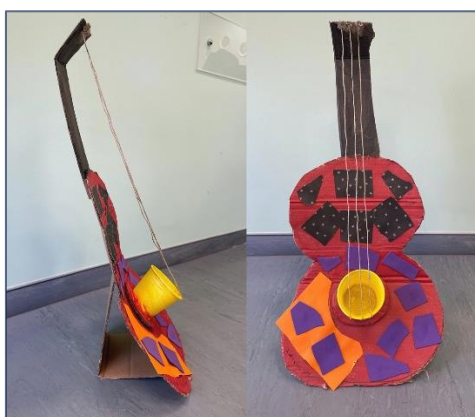


Figure 3. Guitar construction combining flat and three-dimensional elements



Figure 4. Three-dimensional guitar construction with fully developed treatment of form

► PSYCHO-PEDAGOGICAL AND PSYCHOLOGICAL IMPLICATIONS OF UTILIZING RECYCLABLE MATERIALS IN ART EDUCATION

The artistic use of recyclable and everyday materials in early childhood education constitutes not merely a creative and pedagogically flexible practice, but also a framework carrying significant psychological and psycho-pedagogical implications. Artistic engagement in early childhood has been associated with dimensions of socio-emotional development, well-being, and children's active participation, while contact with open-ended, non-prescriptive materials fosters forms of learning in which action, choice, and transformation become bound up with self-expression, emotional regulation, and social engagement (Malchiodi, 1998; Drake, 2023; Rumble et al., 2024; Birrell et al., 2025).

To begin with, artistic practice offers the child a field of symbolic expression through which thoughts, desires, and emotions can be rendered in ways that often precede mature verbal articulation. Particularly at preschool age, where thought and emotion are frequently expressed through action, image, and gesture, the creative processing of materials functions as an alternative mode of communication and meaning-making with respect to experience (Malchiodi, 1998; Wright, 2012). This observation is further reinforced by more recent approaches, according to which participation in artistic creation activities can contribute positively to young children's socio-emotional well-being, insofar as it provides space for expression, representation, and the sharing of experience (Rumble et al., 2024).

At the same time, the process of selecting, processing, and transforming materials can contribute to emotional regulation and to the enhancement of self-efficacy. The child's capacity to experiment, revise, and retry generates an environment in which internal experience can be externalized and creatively organized, while simultaneously reinforcing the experience of "being able to create" and to confer new meaning upon an everyday object. Related studies on painting and drawing indicate that artistic activity can support the regulation of negative emotions and mood improvement, when it offers the child a safe means of creative engagement and attentional shift (Hetland et al., 2013; Yan et al., 2021; Drake, 2023).

Furthermore, working with recyclable materials can support the development of a positive self-image and creative self-confidence, as the child experiences the capacity to transform an everyday object into something new and personally meaningful. In parallel, reviews of early childhood art programs report positive

outcomes with respect to children's well-being and active engagement in the learning process (Birrell et al., 2025).

Finally, even when artistic production takes place at the individual level, the workshop setting can support important forms of social learning. The exchange of ideas, observation of others' choices, and coexistence within a shared creative environment reinforce empathy, social understanding, and a sense of belonging. More recent synthetic studies on young children's engagement with the visual arts likewise conclude that such activities can function supportively for socio-emotional connection, collaboration, and engagement, when organized within safe and participatory educational settings (Vygotsky, 1978; Rumble et al., 2024; Birrell et al., 2025). The artistic use of recyclable materials can therefore be understood not only as a vehicle for aesthetic and cognitive development, but also as a substantive field of psycho-emotional empowerment within early childhood education.

► DISCUSSION AND CONCLUSIONS

The present study has demonstrated the dynamic potential of art education as a field in which theory and practice do not operate as discrete domains but are interwoven within a unified, experiential learning process. Artistic practice, conceived as a means of practice-based inquiry and experimentation, has shown that knowledge is not constituted exclusively through verbal or theoretical approaches, but through manual engagement and direct contact with materials, the process of decision-making, and the gradual shaping of form. The progression from continuous line drawing to collage and, ultimately, to three-dimensional construction confirms the significance of spiral learning, in which each stage functions as a precondition for the next (Ferentinos & Ferentinou, 2025a; Ferentinos & Ferentinou, 2025b; Ferentinos & Ferentinou, 2026).

Particular significance attaches to the relationship between the subject and material. Recyclable and "low-value" material do not function merely as an economical or practical choice, but as a fundamental source of meaning and creative inquiry. Materiality activates sensory, cognitive, and symbolic processes, enabling subjects to grasp form through action and experimentation. From this perspective, the study confirms the importance of open-ended, non-prescriptive materials for the development of creativity and flexibility of thought (Nicholson, 1972; Vecchi, 2010), while artistic practice emerges as a process of meaning-making rather than the mere production of objects (Eisner, 2002).

At the same time, the artistic use of recyclable materials is directly connected to contemporary environmental and social challenges. The reuse of materials embeds within educational practice values pertaining to sustainability, responsibility, and ecological awareness, shifting the focus from consumption toward the creative re-evaluation of the material world (Inwood, 2013). In this respect, art functions not merely as an aesthetic or pedagogical activity, but as a cultural practice responsive to the pressing concerns of the twenty-first century.

The psycho-social dimension of artistic creation likewise emerges as particularly significant. Although the constructions were carried out at the individual level, the laboratory setting fostered collaboration, the exchange of ideas, and interaction among the students. This process aligns with findings that identify artistic practice as a means of enhancing empathy, collaborative capacity, and social development (Ferentinou & Ferentinos, 2025a; Ferentinou & Ferentinos, 2025b; Ferentinou & Ferentinos, 2025c).

Moreover, engagement with material and freedom in shaping form reinforce self-expression, self-confidence, and a sense of belonging-factors associated with the prevention of social and psycho-emotional difficulties (Ferentinou & Ferentinos, 2026).

Taken together, the present work supports the view that art education, when organized through the processes of practice-based inquiry and grounded in the use of recyclable materials, can function as a multidimensional field of learning that integrates creativity, cognitive development, ecological awareness, and psycho-social empowerment. The integration of art history with contemporary educational practice is not merely a theoretical preference but a substantive pedagogical strategy, one that enables the transposition of artistic concepts into experiential learning environments, thereby fostering the formation of active, creative, and socially and environmentally conscious individuals.

Bibliographic references

- Birrell, L., Field, A., Fleury, M., & Egan, S. J. (2025). The impact of arts-inclusive programs on young children's mental health and wellbeing: A rapid review. *International Journal of Play*, 14(1), 5–32. Retrieved from <https://doi.org/10.1080/21594937.2024.2449074>
- Drake, J. E. (2023). How children can use drawing to regulate their emotions. *Theory Into Practice*, 62(3), 243–250. Retrieved from <https://doi.org/10.1080/00405841.2023.2195833>
- Efland, A. D. (2002). *Art and cognition: Integrating the visual arts in the curriculum*. New York, NY: Teachers College Press.
- Eisner, E. W. (2002). *The arts and the creation of mind*. New Haven, CT: Yale University Press.
- Ferentinou, E., & Ferentinos, P. (2025a). Collaborative mural creation in primary education: Pedagogical approaches and psychological effects on the development of social skills and empathy through art. In E. Kantartzi & A. Fourgatsiotis (Eds.), *Proceedings of the 5th Panhellenic Conference: Educational Play and Art in Education and Culture* (Vol. C). Athens, Greece: Museum of School Life and Education of EKEDISY, 399–410.
- Ferentinou, E., & Ferentinos, P. (2025b). The transformative power of community art: Cultural and psychosocial dimensions in the formation of collective identity. In E. Kantartzi, E. Tsimekas, & A. Fourgatsiotis (Eds.), *Proceedings of the 10th Panhellenic Conference: Education and Culture in the 21st Century* (Vol. D). Athens, Greece: Museum of School Life and Education of EKEDISY, 314–324.
- Ferentinou, E., & Ferentinos, P. (2025c). Collaborative school murals as experiential art practice: Enhancing creativity, empathy, and social skill development in primary education. *Culture: Journal of Culture in Tourism, Art and Education*, 5(4), 61–70. Retrieved from <https://doi.org/10.26220/cul.5582>
- Ferentinou, E., & Ferentinos, P. (2026). Educational artistic play as a means of preventing school bullying and strengthening psychosocial skills. In E. Kantartzi, E. Tsimekas, & A. Fourgatsiotis (Eds.), *Proceedings of the 6th International Conference: Educational Play and Art in Education and Culture* (Vol. D). Athens, Greece: Museum of School Life and Education of EKEDISY, 378–387.
- Ferentinos, P., & Ferentinou, E. (2025a). Experimental artistic approaches through continuous line drawing: The use of children's scribbling through the form of

- monogrammic drawing. In E. Kantartzi & A. Fourgatsiotis (Eds.), *Proceedings of the 5th Panhellenic Conference: Educational Play and Art in Education and Culture* (Vol. C). Athens, Greece: Museum of School Life and Education of EKEDISY, 389–398.
- Ferentinos, P., & Ferentinou, E. (2025b). Collage as a cultural means of expression and its role in primary education in the 21st century. In E. Kantartzi, E. Tsimekas, & A. Fourgatsiotis (Eds.), *Proceedings of the 10th Panhellenic Conference: Education and Culture in the 21st Century* (Vol. D). Athens, Greece: Museum of School Life and Education of EKEDISY, 302–313.
- Ferentinos, P., & Ferentinou, E. (2026). Photocopy paper as a "low-value material" in art education: A practice-based approach in early childhood and primary education. In E. Kantartzi, E. Tsimekas, & A. Fourgatsiotis (Eds.), *Proceedings of the 6th International Conference: Educational Play and Art in Education and Culture* (Vol. D). Athens, Greece: Museum of School Life and Education of EKEDISY, 368–377.
- Freedman, K. (2003). *Teaching visual culture: Curriculum, aesthetics, and the social life of art*. New York, NY: Teachers College Press.
- Gude, O. (2007). Principles of possibility: Considerations for a 21st-century art & culture curriculum. *Art Education*, 60(1), 6–17. Retrieved from <https://doi.org/10.1080/00043125.2007.11651198>
- Hetland, L., Winner, E., Veenema, S., & Sheridan, K. M. (2013). *Studio thinking 2: The real benefits of visual arts education*. New York, NY: Teachers College Press.
- Inwood, H. (2013). Cultivating artistic approaches to environmental learning: Exploring eco-art education in elementary classrooms. *International Electronic Journal of Environmental Education*, 3(2), 129–145.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.
- Lambraki-Plaka, M. (2002). *Istoria tis technis: Apo tin proistoria eos ton 20o aiona* [History of art: From prehistory to the 20th century]. Athens, Greece: Kastaniotis.
- Lambraki-Plaka, M. (2003). *I techni tou 20ou aiona* [The art of the 20th century]. Athens, Greece: Kastaniotis.
- Malchiodi, C. A. (1998). *Understanding children's drawings*. New York, NY: Guilford Press.
- Ministry of Education and Religious Affairs. (2021). *Programma spoudon gia tin proscholiki ekpaidefsi* [Curriculum for early childhood education]. Athens, Greece: Institute of Educational Policy (IEP).
- Nicholson, S. (1972). The theory of loose parts: An important principle for design methodology. *Studies in Design Education Craft & Technology*, 4(2), 5–14.
- Papert, S. (1993). *Mindstorms: Children, computers, and powerful ideas* (2nd ed.). New York, NY: Basic Books.
- Rumble, H. F., Jindal-Snape, D., & Ross, J. (2024). Visual arts participation and young children's social emotional wellbeing: A scoping review. *Education* 3–13. Advance online publication. Retrieved from <https://doi.org/10.1080/03004279.2024.2374186>
- Salla, E. (2006). *I paidiki zografiki: Exelixi kai ermeneia* [Children's drawing: Development and interpretation]. Athens, Greece: Ellinika Grammata.
- Taylor, B. (2004). *Modernism, postmodernism, realism: A critical perspective for art*. Winchester, England: Winchester School of Art Press.

- Vaos, M. (2023). *Eikastiki agogi kai paidi* [Art education and the child]. Athens, Greece: Topos.
- Vecchi, V. (2010). *Art and creativity in Reggio Emilia: Exploring the role and potential of ateliers in early childhood education*. London, England: Routledge.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Wright, S. (2012). *Children, meaning-making and the arts* (2nd ed.). Frenchs Forest, NSW, Australia: Pearson.
- Yan, W., Lee, H. Y., & Kim, N. (2021). Regulatory effect of drawing on negative emotion. *The Arts in Psychotherapy*, 74, 101798. Retrieved from <https://doi.org/10.1016/j.aip.2021.101798>