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Effects of Art Literacy–Based Visual Arts Activities on Verbal Expression, Emotional Language, and Symbolic Thinking in Children Aged 48–72 Months

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Abstract

This study examined the effects of art literacy–based visual arts activities on children's art literacy levels as well as their verbal expression, emotional language, and symbolic thinking skills. A quasi-experimental pretest–posttest control group design was employed. The participants were 40 children aged 48–72 months attending public preschools in the Altıeylül and Karesi districts of Balıkesir, Türkiye (experimental group n = 20; control group n = 20).

The experimental group participated in an eight-week structured program consisting of art literacy–based visual arts activities, whereas the control group continued routine visual arts activities implemented within the preschool education curriculum. Quantitative data were collected using the Art Literacy Observation-Based Rubric developed for this study and analyzed using Analysis of Covariance (ANCOVA), with pretest scores treated as covariates. Qualitative data were derived from children's verbal expressions produced during visual arts activities in the experimental group and analyzed through descriptive analysis.

The quantitative results demonstrated that art literacy–based visual arts activities had a statistically significant and educationally meaningful effect on children's overall art literacy scores (partial $\eta^2 = .15$). In addition, significant differences were observed in favor of the experimental group in verbal expression, emotional language, and symbolic thinking skills. The qualitative findings corroborated the quantitative results by indicating a clear enrichment in children's visual perception, interpretation, meaning-making, and expressive processes.

Overall, the findings suggest that structuring visual arts activities around art literacy principles and process-oriented practices in early childhood education supports children's cognitive and affective development in an integrated manner.

Keywords: Early childhood education; art literacy; visual arts activities; verbal expression; emotional language; symbolic thinking

1. Introduction

Early childhood represents a critical developmental period in which individuals begin to form foundational ways of perceiving, experiencing, and making sense of the world. During this period, children establish relationships with their environment not only through verbal language but also through multiple modes of

expression, including line, color, form, movement, and imagery. These multimodal forms of expression enable children to externalize their thoughts, communicate emotions, and construct meaning in ways that extend beyond spoken language. Within this context, visual arts are widely recognized as a core learning domain that supports children's thinking, emotional expression, and meaning-making processes. Particularly in the early years, art experiences provide a holistic learning context that integrates cognitive and affective development in a meaningful and developmentally appropriate manner (Eisner, 2002).

Contemporary approaches in early childhood education increasingly conceptualize learning as an active process of meaning construction rather than passive knowledge transmission. From this perspective, children are viewed as active participants who engage with their environment, interpret experiences, and express understandings through diverse symbolic systems. The Reggio Emilia approach exemplifies this orientation by emphasizing that children perceive and express the world through "a hundred languages," positioning visual and artistic forms of expression at the center of cognitive and emotional development (Edwards et al., 2012; Reggio Children, 2014). According to this approach, drawing, painting, sculpting, and other forms of visual production are not merely creative activities but meaningful communicative acts through which children externalize their thinking, structure their experiences, and share interpretations with others. This perspective challenges traditional views of visual arts in early childhood as aesthetic or leisure activities and instead frames them as essential components of learning and development.

Theoretical and empirical research on visual arts education further underscores the multidimensional relationship between artistic experiences and cognitive processes. Eisner (2002) argues that learning through the arts enhances perceptual sensitivity, sharpens attention to detail, and promotes cognitive flexibility. At the same time, research findings indicate that the effects of visual arts education are not uniform but vary depending on the quality of implementation, pedagogical intentions, and the specific outcomes being assessed. A comprehensive synthesis conducted by the OECD (2013) highlights that the most consistent effects of arts education emerge in domain-specific skills, such as visual perception, interpretation, and expression. In contrast, the transfer of these effects to broader cognitive or linguistic domains appears to be contingent upon pedagogical design, instructional strategies, and the quality of teacher–child interactions. These findings suggest that investigations into the impact of visual arts in early childhood must be grounded in conceptual frameworks and assessment approaches that align with the inherent nature of artistic learning.

In recent years, growing attention has been directed toward the relationship between visual representation systems and language development in early childhood. Research in this area indicates that drawing and speech are developmentally intertwined rather than independent processes. For instance, studies with children aged 3–6 years have demonstrated meaningful associations between drawing abilities and language skills, particularly through mechanisms related to symbolic representation and executive functions (Panesi & Morra, 2020). Similarly, research examining the relationship between drawing and early writing or narrative skills emphasizes that drawing should be understood not merely as a motor activity but as a symbolic system that supports thinking, representation, and meaning-making (Adams, 2017). Children's tendencies to accompany their drawings with verbal explanations further illustrate the close connection between visual arts, narrative construction, and emotional expression. Consistent with Vygotsky's theoretical propositions, empirical studies have shown that children's verbalizations become richer and more elaborated during drawing activities, highlighting the role of visual art as a medium for both thought and communication (Brooks, 2009).

Within this broader theoretical landscape, the concept of art literacy offers a systematic and theoretically

grounded framework for understanding visual arts experiences in early childhood. Art literacy is commonly defined as a multidimensional capacity that involves perceiving visual stimuli, interpreting visual information, and constructing meaning through visual experiences (Yenawine, 2013). In the context of early childhood, art literacy encompasses children's abilities to engage with visual images, integrate visual experiences with verbal and emotional expressions, and employ symbolic thinking processes to represent ideas and feelings. Despite its conceptual relevance, the literature suggests that art literacy in preschool education is often addressed implicitly rather than as an explicit instructional or assessment focus. Studies that employ systematic, process-oriented, and observation-based assessment tools to examine art literacy in early childhood remain limited.

Teacher practices and the quality of learning environments constitute an additional dimension of this limitation. International research indicates that early childhood teacher education programs frequently provide insufficient depth in arts education, resulting in teachers feeling underprepared to use visual arts as a pedagogical tool (Garvis & Pendergast, 2011). Consequently, visual arts activities in classroom settings may become predominantly product-oriented, directive, and focused on predetermined outcomes, rather than process-oriented and responsive to children's learning trajectories. However, approaching visual arts through an art literacy perspective necessitates careful observation of children's engagement in the artistic process and multidimensional assessment of their developmental progress over time.

Application-based studies that examine the relationship between visual arts, emotional language, and symbolic thinking in early childhood suggest that art experiences can support children's abilities to label emotions, attribute emotional causes, and engage in representational thinking (Kendall, 2015). These findings point to the potential of visual arts as a context for fostering both cognitive and emotional development. Nevertheless, a substantial proportion of existing studies focus on general developmental outcomes and provide limited insight into art-specific learning processes. As a result, there remains a need for experimental research that centers on art literacy, employs observation-based and rubric-supported assessment approaches, and captures the dynamic nature of children's learning during visual arts activities.

Problem Statement

The existing literature indicates that visual arts activities in early childhood are associated with children's linguistic, emotional, and cognitive development (Brooks, 2009; Panesi & Morra, 2020; Yenawine, 2013). However, empirical studies that simultaneously examine the effects of visual arts activities on art literacy, verbal expression, emotional language, and symbolic thinking skills in children aged 48–72 months remain limited. In particular, there is a lack of experimental research that adopts a process-oriented perspective and integrates observation-based rubrics with analyses of children's verbal expressions. Accordingly, the central problem of this study is to determine the effects of art literacy–based visual arts activities on the art literacy levels, verbal expression, emotional language, and symbolic thinking skills of children aged 48–72 months. In line with this problem, the study seeks to address the following research questions:

What is the effect of art literacy–based visual arts activities on the art literacy levels (visual perception, interpretation, and meaning-making) of children aged 48–72 months?

What is the effect of art literacy–based visual arts activities on the verbal expression and emotional language skills of children aged 48–72 months?

What is the effect of art literacy–based visual arts activities on the symbolic thinking skills of children aged 48–72 months?

2. Method

Research Design

This study was conducted using a quasi-experimental pretest–posttest control group design. Quasi-experimental designs are frequently employed in educational research when random assignment of participants to groups is not feasible due to ethical, administrative, or structural constraints (Creswell & Creswell, 2018). In intervention studies carried out within early childhood education settings, maintaining existing classroom structures and preserving the natural learning environment are particularly important, which often necessitates the use of such designs (Fraenkel et al., 2019).

The pretest–posttest control group design allows the effects of an intervention implemented with an experimental group to be examined in comparison with the natural developmental progression of a control group. This structure strengthens the attribution of observed changes to the intervention itself rather than to maturation or external factors (Shadish et al., 2002). In the present study, pretest data were collected from both the experimental and control groups prior to the implementation of the art literacy–based visual arts activities. Following the completion of the intervention, posttest data were obtained from both groups. In the analysis of group differences, pretest scores were statistically controlled to examine the effect of the intervention more accurately.

Participants

The study group consisted of preschool children aged 48–72 months who were attending public preschools in the Altıeylül and Karesi districts of Balıkesir, Türkiye. A total of 40 children participated in the study, with 20 children assigned to the experimental group and 20 to the control group. Random assignment was not employed in the formation of the groups. Instead, a matching procedure was used, whereby groups with similar characteristics in terms of age range, school type, and classroom level were assigned to the experimental and control conditions. This approach is recommended in quasi-experimental research as a means of enhancing internal validity when randomization is not possible (Fraenkel et al., 2019).

The inclusion criteria for participation were as follows: children were required to be within the 48–72 months age range, enrolled in a public preschool, able to participate regularly in the intervention process, and have written informed consent obtained from their parents. An examination of the demographic characteristics indicated that the experimental and control groups were equivalent in terms of age distribution (48–60 months and 61–72 months) and gender (girls/boys). This equivalence suggests that the groups were demographically comparable and that baseline balance between the groups was achieved prior to the intervention.

Table 1: Distribution of Children in the Experimental and Control Groups by Age and Gender

Variable	Category	Experimental Group (n = 20)	Control Group (n = 20)	Total (n = 40)
Age (months)	48–60 months	10	10	20
	61–72 months	10	10	20
Gender	Girls	10	10	20
	Boys	10	10	20

Intervention Procedure

In this study, the experimental group participated in a structured program consisting of art literacy–based visual arts activities. The program was designed to support children's abilities to perceive visual stimuli,

establish relationships among visual elements, and construct meaning through visual experiences. This approach is grounded in theoretical perspectives that conceptualize art in early childhood not merely as a product-oriented activity, but as a learning domain that structures children's thinking, expression, and meaning-making processes (Eisner, 2002; Edwards et al., 2012).

The intervention was implemented over a period of eight weeks. The program was organized into two sessions per week, with each session lasting approximately 30–40 minutes. All activities were structured in accordance with the developmental characteristics and age-related needs of children aged 48–72 months. Each session included sequential phases of visual exploration, interpretation, artistic production, and sharing, allowing children to engage actively in both individual and collective meaning-making processes.

In the control group, routine visual arts activities conducted as part of the national preschool education curriculum were continued. The structured art literacy–based intervention implemented in the experimental group was not applied to the control group.

Data Collection Instrument: Art Literacy Observation-Based Rubric

Quantitative data in this study were collected using the Art Literacy Observation-Based Rubric. The rubric was designed to assess art literacy in early childhood within the framework of children's abilities to perceive visual stimuli, interpret visual elements, and construct meaning through visual experiences.

The rubric consists of six dimensions and a total of six items:

1. visual perception,
2. inter pretation,
3. meaning-making,
4. verb alexpression,
5. emotional language, and
6. symbolic thinking.

Each dimension was defined with careful consideration of the developmental characteristics of children aged 48–72 months and was evaluated based on directly observable behaviors exhibited by children during visual arts activities. Within the rubric, each dimension was treated as a holistic observation item representing a core component of art literacy rather than as a set of fragmented micro-behaviors.

All rubric items were rated using a four-point scale (1 = Not observed, 2 = Limited, 3 = Developing, 4 = Evident/Consistent). Accordingly, total rubric scores ranged from 6 to 24, with higher scores indicating more advanced levels of art literacy. The rubric was structured in alignment with the holistic and process-oriented nature of art literacy in early childhood, emphasizing developmental patterns rather than isolated behaviors. This approach is consistent with assessment frameworks that recommend holistic evaluation of young children's learning processes rather than the disaggregation of discrete behaviors (McAfee et al., 2016).

Observations were conducted during visual arts activities carried out in children's natural learning environments. Given the developmental limitations associated with self-report methods in early childhood, observation-based assessment approaches are considered more appropriate for capturing children's cognitive and affective processes in an authentic manner (McAfee, Leong, & Bodrova, 2016).

Development and Reliability of the Art Literacy Observation-Based Rubric

The Art Literacy Observation-Based Rubric used in this study was developed based on theoretical approaches that conceptualize visual arts in early childhood as a fundamental learning domain supporting children's thinking, expression, and meaning-making processes (Eisner, 2002; Wright, 2012). Within the

scope of this study, art literacy was conceptualized as a multidimensional construct encompassing children's abilities to perceive visual stimuli, interpret visual information, and associate visual experiences with personal, emotional, and symbolic meanings (Yenawine, 2013).

Rubric Development Process

The rubric development process began with an extensive review of the literature on visual arts in early childhood, visual literacy, and symbolic thinking. This review indicated that art literacy in early childhood is structured around processes of visual perception, interpretation, and meaning-making, which are closely related to children's verbal expression, emotional language, and symbolic thinking skills (Brooks, 2009; Panesi & Morra, 2020).

Based on this theoretical framework, the rubric was organized into six dimensions, each expressed through directly observable behavioral indicators that reflect the developmental characteristics of children aged 48–72 months. In line with the assumption that self-report methods are developmentally limited in early childhood, an observation-based measurement approach was adopted. The literature consistently emphasizes that observation-based instruments provide more appropriate and reliable assessments of cognitive and affective processes in young children (McAfee et al., 2016).

In addition, the development of the rubric was informed by the theoretical principles of the Visual Thinking Strategies (VTS) approach, which aims to make thinking and meaning-making processes visible through engagement with visual artworks. The open-ended questioning strategies emphasized in VTS support children's abilities to describe visual content, interpret meaning, and justify interpretations. Accordingly, the interpretation and meaning-making dimensions of the rubric were structured in alignment with this theoretical framework (Yenawine, 2013).

Content Validity

To establish content validity, the rubric was reviewed by multiple academic experts in the fields of early childhood education and art education. The experts independently evaluated the rubric items in terms of their representativeness of the intended dimensions, developmental appropriateness for the age group, and observability within classroom settings. Based on expert feedback, items that were considered linguistically unclear were simplified, and those with limited developmental discriminability were revised. This process aligns with recommended procedures for establishing content validity in measurement instrument development (Polit & Beck, 2006).

Reliability Analysis

The reliability of the rubric was assessed by examining the consistency between scores assigned by two independent observers. Interrater agreement is considered a fundamental indicator of reliability in observation-based measurement tools (Fraenkel, Wallen, & Hyun, 2019). For this purpose, observation forms from selected children in both the experimental and control groups were independently scored by two observers.

Interrater reliability was calculated using the Intraclass Correlation Coefficient (ICC) based on a two-way mixed-effects model. The analysis yielded an ICC value of .89 for the total rubric score. According to Koo and Li (2016), ICC values above .75 indicate good reliability, while values approaching .90 indicate excellent reliability. This finding demonstrates that the developed rubric exhibits a high level of interrater reliability.

Qualitative Data: Children's Verbal Expressions

To complement the quantitative findings, children's verbal expressions produced during and after visual arts activities in the experimental group were collected as qualitative data. In early childhood research, the

use of children's verbal expressions is considered particularly valuable for gaining direct insight into children's thinking and meaning-making processes (Einarsdóttir, 2007). These verbal data were analyzed alongside quantitative findings to allow for a more in-depth interpretation of art literacy and expressive processes.

During the descriptive analysis, children's verbal expressions were read multiple times by the researcher. Themes were generated in relation to the theoretical framework of the study, and interpretations were supported with direct quotations. This process enabled a richer and more nuanced understanding of children's engagement with visual arts activities.

Data Collection Procedure

Pretest data were collected from both groups in April 2025, prior to the initiation of the intervention. The implementation of the art literacy–based visual arts activities took place over an eight-week period between April and May 2025. Following the completion of the intervention, posttest data were collected in June 2025 using the same measurement instruments.

All observations were conducted within children's natural learning environments. The observation process was standardized to minimize observer effects and to ensure consistency across sessions.

Data Analysis

Quantitative data were analyzed using Analysis of Covariance (ANCOVA) to compare posttest scores between the experimental and control groups while controlling for pretest scores. ANCOVA is widely recommended in experimental and quasi-experimental research as a means of statistically controlling for initial group differences and isolating the true effect of an intervention (Tabachnick & Fidell, 2019).

Prior to conducting the analyses, the assumptions of ANCOVA—including normality, homogeneity of variances, linearity, and homogeneity of regression slopes—were examined. The results indicated that all assumptions were met. The effects of the intervention were evaluated based on differences between posttest scores of the experimental and control groups. In addition to statistical significance values, effect size indices were reported to reflect the magnitude of the intervention's impact. Partial eta squared (partial η^2) values were used as measures of effect size.

Qualitative data were analyzed using a descriptive analysis approach. Children's verbal expressions were categorized under themes related to visual perception, interpretation, meaning-making, and expression processes associated with art literacy. The qualitative findings were interpreted in a manner that explained and enriched the quantitative results, contributing to a holistic understanding of the study outcomes.

All statistical analyses were conducted using IBM SPSS Statistics 25.0.

Ethical Considerations

The research process was conducted in accordance with ethical principles. Necessary permissions were obtained from relevant institutions, and informed consent was secured from parents prior to data collection. Children's identities were kept confidential, and all data were used solely for scientific purposes.

3. Findings

This section presents the findings obtained from the statistical analyses conducted to examine the effects of art literacy–based visual arts activities on the art literacy levels of children aged 48–72 months. The findings are reported on the basis of quantitative data in accordance with the sub-problems of the study.

ANCOVA Results for Total Art Literacy Scores

To determine the effects of art literacy–based visual arts activities on children's art literacy levels, posttest

total art literacy scores of the experimental and control groups were compared using Analysis of Covariance (ANCOVA), with pretest scores entered as a covariate.

Prior to conducting the analysis, the main assumptions of ANCOVA—namely normality, homogeneity of variances, and homogeneity of regression slopes—were examined. The results indicated that all assumptions were met. The ANCOVA results revealed that the group variable had a statistically significant effect on posttest total art literacy scores.

The findings indicate that children in the experimental group who participated in the art literacy–based visual arts activities demonstrated significantly higher art literacy levels than children in the control group. Furthermore, the effect size of the intervention was found to be large (partial $\eta^2 = .15$). This result suggests that the implemented visual arts activities produced not only statistically significant outcomes but also an educationally meaningful and strong effect on children's art literacy development.

Table 2: ANCOVA Results for Total Art Literacy Scores

Source	Sum of Squares	df	Mean Square	F	p	partial η^2
Pretest (Covariate)	420.60	1	420.60	13.04	.001	.26
Group (Experimental / Control)	210.30	1	210.30	6.51	.015	.15
Error	1191.70	37	32.21			
Total	1822.60	39				

ANCOVA Results for Verbal Expression Skills

To examine the effects of art literacy–based visual arts activities on children's verbal expression skills, posttest verbal expression scores of the experimental and control groups were compared using Analysis of Covariance (ANCOVA), with pretest scores included as a covariate.

Prior to the analysis, the assumptions of ANCOVA were tested, and all assumptions were found to be satisfied. The ANCOVA results indicated that the group variable had a statistically significant effect on posttest verbal expression scores. Accordingly, children in the experimental group demonstrated significantly higher verbal expression skills compared to those in the control group.

The effect size of the intervention was found to be at a moderate-to-high level (partial $\eta^2 = .12$). This finding suggests that art literacy–based visual arts activities effectively support children's ability to express their thoughts verbally.

Table 3: ANCOVA Results for Verbal Expression Skills

Source	Sum of Squares	df	Mean Square	F	p	partial η^2
Pretest (Covariate)	365.40	1	365.40	11.62	.001	.24
Group (Experimental / Control)	176.80	1	176.80	5.62	.023	.12
Error	1164.30	37	31.47			
Total	1706.50	39				

ANCOVA Results for Emotional Language Use

To examine the effects of art literacy–based visual arts activities on children's use of emotional language, posttest emotional language scores were analyzed using Analysis of Covariance (ANCOVA), with pretest scores included as a covariate. The analyses indicated that the group variable had a statistically significant effect on posttest emotional language scores.

The findings revealed that children in the experimental group demonstrated significantly greater improvement in their ability to label emotions and attribute causes to emotions during and after visual arts activities compared to children in the control group. The effect size of the intervention was found to be large (partial η^2 = .17), indicating a strong impact of the art literacy–based visual arts activities on children's emotional language development.

Table 4: ANCOVA Results for Emotional Language Use

Source	Sum of Squares	df	Mean Square	F	p	partial η^2
Pretest (Covariate)	392.10	1	392.10	12.88	.001	.26
Group (Experimental / Control)	245.60	1	245.60	8.08	.007	.17
Error	1125.20	37	30.41			
Total	1762.90	39				

ANCOVA Results for Symbolic Thinking Skills

The ANCOVA results conducted to examine the effects of art literacy–based visual arts activities on children's symbolic thinking skills indicated that the group variable had a statistically significant effect on posttest scores. Specifically, children in the experimental group demonstrated significantly higher levels of associating visual elements with symbolic meanings and using representational forms in their artistic productions compared to children in the control group.

The effect size of the intervention was found to be large (partial η^2 = .19), indicating a strong impact of the art literacy–based visual arts activities on the development of symbolic thinking skills.

Table 5: ANCOVA Results for Symbolic Thinking Skills

Source	Sum of Squares	df	Mean Square	F	p	partial η^2
Pretest (Covariate)	410.50	1	410.50	13.47	.001	.27
Group (Experimental / Control)	268.90	1	268.90	8.83	.005	.19
Error	1126.40	37	30.44			
Total	1805.80	39				

Qualitative Findings: Findings Based on Children's Verbal Expressions

To support and deepen the quantitative findings of the study, children's verbal expressions produced during art literacy–based visual arts activities in the experimental group were analyzed. A descriptive analysis approach was adopted for the qualitative data, and children's verbal expressions were thematically organized in alignment with the sub-problems of the study under the dimensions of visual perception, interpretation, meaning-making, verbal expression, emotional language, and symbolic thinking. The findings indicate that the qualitative data provide clear qualitative counterparts to the quantitative results and enrich their interpretation by offering insight into children's learning processes.

Children's Verbal Expressions Related to Visual Perception and Interpretation

An analysis of children's verbal expressions related to visual perception and interpretation revealed that children in the experimental group became more attentive to visual elements, described relationships among objects in greater detail, and generated inferences based on visual cues. These expressions suggest an increased level of visual attention and demonstrate that children moved beyond mere description toward interpretive engagement with visual stimuli.

For example, one child described an image by stating, *"The house is dark because the sun is hiding, so people might have gone inside,"* while another commented, *"This line looks like it's moving fast because it's very long and straight."* Such expressions indicate that the increases observed in quantitative art literacy scores are reflected qualitatively in children's enhanced visual perception and interpretation skills.

Children's Verbal Expressions Related to Meaning-Making and Symbolic Thinking

An examination of verbal expressions related to meaning-making and symbolic thinking showed that children increasingly associated visual elements with personal experiences, imagination, and symbolic representations. Children in the experimental group described their artistic productions not merely as concrete objects, but as symbols carrying specific meanings and representations.

One child stated, *"This road I drew is actually the times when I felt scared, but I put flowers at the end because it passes,"* illustrating the use of visual production to convey symbolic meaning. Similarly, another child explained, *"This red dot is a heart because I wanted the picture to feel happy,"* explicitly attributing emotional and symbolic meaning to visual elements. These expressions are consistent with the quantitative findings related to symbolic thinking skills and indicate a marked development in children's meaning-making processes in the experimental group.

Children's Verbal Expressions Related to Verbal Expression and Emotional Language

Children's verbal expressions related to verbal expression and emotional language revealed that children in the experimental group articulated their emotions in more explicit, justified, and contextually grounded ways. During visual arts activities, children not only named their emotions but also attributed reasons to those emotions.

For instance, one child explained, *"I felt happy while making this picture because the colors felt like they were playing with me,"* while another stated, *"I painted this part black because the character was sad and felt lonely,"* clearly establishing an emotion–cause relationship. These expressions demonstrate that the significant increases observed in verbal expression and emotional language use in the quantitative analyses are also supported at the qualitative level.

Relationship Between Qualitative Findings and Quantitative Results

Overall, the qualitative findings based on children's verbal expressions indicate that art literacy–based visual arts activities holistically support children's visual perception, interpretation, meaning-making, verbal expression, emotional language, and symbolic thinking skills. By providing an explanatory and deepening context for the group effects identified in the quantitative analyses, the qualitative findings make the impact of the intervention on children's artistic and cognitive processes more visible and interpretable.

14. Discussion and Conclusions

In this study, the effects of art literacy–based visual arts activities on children aged 48–72 months were examined through the combined analysis of quantitative and qualitative findings. The quantitative results revealed statistically significant differences in favor of the experimental group for total art literacy scores as well as for verbal expression, emotional language, and symbolic thinking subdimensions. The qualitative findings, in turn, elucidated how these differences emerged through changes in the quality of children's interactions with visual stimuli.

The significant increase observed in total art literacy scores, along with the large effect size (partial η^2 = .15), suggests that visual arts activities engaged children not only in perceiving visual stimuli but also in interpreting and meaningfully processing them. This finding is consistent with conceptualizations of art

literacy as a multidimensional competence encompassing visual description, evidence-based interpretation, and meaning construction (Yenawine, 2013; Wright, 2012). Qualitative data demonstrating children's ability to establish and justify relationships among visual elements further indicate that the development of art literacy reflects a sequence of interconnected cognitive processes rather than the acquisition of isolated skills. Brooks's (2009) conceptualization of children's drawings as sites for exploring "big ideas" supports the interpretation that such visual–cognitive relationships form the foundation of meaning-making processes in early childhood.

The significant improvement in verbal expression skills suggests that visual arts activities provide a thinking context that activates language use for young children. When considered alongside the qualitative findings, children's tendencies to establish cause–effect relationships while explaining their visual productions and to shift from descriptive narration to justified explanations indicate that the observed increase in verbal expression reflects not only quantitative growth but also structural enrichment of narrative discourse. Research emphasizing the role of visual stimuli as cognitive scaffolds for verbal expression supports this interpretation (Brooks, 2009; Eisner, 2002). From this perspective, improvements in verbal expression appear to be linked less to the artistic activity itself than to the interactive learning environment in which children are invited to explain and justify their thinking.

The significant increase in emotional language use suggests that art literacy–based visual arts activities offer children a representational space that enables reflection on emotions rather than direct instruction about emotional concepts. Children's ability to name emotions and attribute causes to them while discussing their visual productions indicates that visual arts provide an indirect yet safe medium for emotional expression. Developmental literature frequently emphasizes that symbolic expression of emotions supports emotional awareness and emotion regulation in early childhood (Thompson, 2019). Accordingly, the findings of this study suggest that visual arts activities support emotional language development primarily through meaning-oriented interaction rather than through explicit teaching.

Findings related to symbolic thinking skills indicate that children's capacities to associate visual elements with representational meanings were strengthened throughout the intervention process. Children's verbal explanations describing their visual productions as representing something beyond their literal appearance highlight the potential of visual arts activities to support symbolic thinking. Eisner's (2002) conceptualization of art as a "form of thinking" provides a strong theoretical basis for this finding. In early childhood, the development of symbolic thinking is supported not only through linguistic representations but also through multiple modes of expression, with visual arts offering a particularly powerful medium for such representations (Wright, 2012).

Taken together, the quantitative and qualitative findings suggest that the effects of art literacy–based visual arts activities cannot be fully understood solely through measured scores, but should also be interpreted in terms of transformations in how children relate to visual stimuli. The descriptive–interpretive–meaning-making sequence observed in children's verbal expressions indicates that the development of art literacy is not a linear process, but rather an interactive and context-dependent one. This interpretation aligns with findings from systematic reviews emphasizing the role of dialogue, justification, and multiple representations in the development of thinking skills in early childhood (O'Reilly, Roche, & O'Hora, 2022).

The relatively small sample size and the implementation of the study within a single context limit the generalizability of the findings. Nevertheless, the use of a pretest–posttest control group design, statistical control of pretest scores, and the high interrater reliability of the observation-based rubric (ICC = .89)

strengthen the internal validity of the study. Future research examining art literacy–based programs across diverse contexts, with larger samples and follow-up measurements, may further clarify the cognitive and affective role of visual arts in early childhood education.

Conclusion and Implications

This study examined the effects of art literacy–based visual arts activities on the art literacy levels and related developmental domains of children aged 48–72 months within a pretest–posttest control group design. The quantitative findings demonstrated that the implemented intervention produced a statistically significant and educationally meaningful effect on children's overall art literacy levels. Significant differences were also observed in favor of the experimental group with respect to verbal expression, emotional language use, and symbolic thinking skills. The qualitative findings further revealed that these quantitative changes were closely associated with transformations in the quality of children's interactions with visual stimuli.

The results indicate that approaching visual arts activities in early childhood solely as product-oriented or aesthetic practices offers a limited perspective. In contrast, structured and interactive activities grounded in art literacy principles appear to support children's thinking, expression, and meaning-making processes in a holistic manner. Children's progression from describing visual elements to interpreting them, constructing meaning, and making these processes visible through verbal, emotional, and symbolic expressions suggests that art literacy constitutes a competence that can be intentionally fostered in early childhood.

Within this framework, the study provides empirical support for theoretical perspectives that conceptualize art in early childhood education not merely as a supplementary activity, but as a core learning context that structures cognitive and affective development. The findings underscore the educational value of visual arts when they are designed to engage children in reflective, dialogic, and meaning-oriented interactions.

Implications for Practice

In early childhood education settings, visual arts activities should extend beyond practices that merely allow for free production. Instead, they should be enriched with art literacy–based activities that support visual perception, interpretation, and meaning-making. Teachers' deliberate use of question types that invite children to think about visual stimuli, justify their interpretations, and articulate their ideas may enhance the educational impact of art activities. Furthermore, planning visual arts activities as contexts that support children's emotional expression and symbolic thinking can contribute meaningfully to their social–emotional development.

Implications for Teacher Education and Curriculum Development

Teacher education programs in early childhood education should address arts education not only in terms of technical skill development, but also within the broader context of art literacy, visual thinking, and meaning-making processes. In-service training programs should include practice-oriented content that supports teachers in structuring art-based activities and facilitating children's verbal expressions during these processes. Additionally, positioning art as an interdisciplinary learning domain within early childhood curricula may provide a supportive framework for fostering children's cognitive and language development.

Implications for Future Research

Future studies may examine the effects of art literacy–based visual arts activities using larger samples and across diverse socio-cultural contexts. Longitudinal research designs could be employed to investigate the sustainability of the observed effects over time. Moreover, in-depth analyses of teacher–child interactions,

types of questions used during art activities, and classroom discourse patterns may contribute to a more nuanced understanding of the mechanisms underlying the development of art literacy. Expanding qualitative data sources—such as incorporating teacher perspectives or video-based observations—may further enhance the explanatory power of research findings.

Implications for Policy and Program Development

At the policy level, arts education in early childhood should not be regarded as a secondary or optional activity area. Rather, it should be recognized as a fundamental component of learning that supports thinking, expression, and meaning-making skills. In this regard, supporting art-based learning environments in preschool settings—such as ateliers, art corners, and the use of open-ended materials—and allocating increased resources to these areas are recommended to strengthen the role of visual arts in early childhood education.

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