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ORIGINAL RESEARCH

Emergent Writing in Early Childhood: Developmental Patterns in Drawing, Scribbling, and Letter-Like Forms

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Abstract

This study explores the development of emergent writing skills in preschool children through a six-month, classroom-based educational intervention conducted in an urban kindergarten in Greece. The sample consisted of 42 children aged 4–5 years, including both monolingual and bilingual learners. Using a longitudinal design, children's writing development was assessed monthly through a structured rubric designed to capture both foundational representational skills (scribbling and drawing) and emerging symbolic writing abilities (letter-like forms and phonological representation). The intervention integrated authentic, developmentally appropriate writing experiences into daily classroom routines, emphasizing writing as a meaningful communicative practice rather than a formal instructional task. A total of 199 writing samples were collected and evaluated across two domains and ten sub-dimensions. Data were analyzed using descriptive statistics and repeated comparisons over time, complemented by paired-sample and independent-sample t-tests to examine developmental change and gender-related patterns. Findings revealed steady and statistically significant improvement in scribbling and drawing skills, reflecting gains in fine motor control, symbolic representation, and visual communication. In contrast, development in letter-like forms and symbolic writing showed greater variability and less consistent progress. These results highlight the non-linear nature of emergent writing development and underscore the importance of sustained, context-rich writing opportunities in early childhood education, particularly for supporting the transition from graphic representation to conventional symbolic writing.

Keywords Emergent writing · Early childhood literacy · Preschool education · Symbolic representation · Language assessment

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Introduction

The term "emergent writing" points to the early stages of writing development that involve the construction of meaning through the use of graphics, symbols, and language, which gradually progress from drawing and writing marks to the use of letter-like symbols, inventive spelling, and more conventional writing (Puranik & Lonigan, 2014; Rowe et al., 2022; Schickedanz & Collins, 2013). However, it is important to highlight that these initial writing attempts cannot be viewed solely as "pre-writing" activities, as they can also be regarded as a form of purposeful meaning-making, whereby the child is testing hypotheses about how writing works, how symbols can stand for sounds and meaning, and why writing is a form of communication (Puranik & Lonigan, 2014). Therefore, emergent writing can be regarded as a form of interaction between developing motor capabilities, expanding knowledge about print, and the developing awareness that writing is a form of symbolic representation.

Recent studies also continue to support the close association between early writing and literacy acquisition. Research that investigates writing among preschool and primary school children points to the fact that the early transcription skills of children, such as knowledge of letters, writing, and letter formation, can predict their spelling and reading abilities, emphasizing the role of writing in literacy acquisition rather than its role as a mere outcome of literacy acquisition (Piasta & Wagner, 2010; Pritchard et al., 2021). Longitudinal work also suggests that early writing development is shaped by multiple interacting factors—including language and cognitive skills, self-regulation, and learning opportunities—particularly as children move from informal mark-making toward more conventional representations (Puranik et al., 2014; Puranik & Al Otaiba, 2012). This perspective is especially relevant in linguistically diverse contexts, where children's early literacy trajectories may reflect both strengths and constraints linked to home language experiences and exposure to the majority language in preschool settings (Jiménez et al., 2024).

Positioned within this evolving evidence base, the present study investigates the developmental trajectory of emergent writing in preschool-aged children, with particular attention to the early representational stages and the transition toward symbolic written expression. Rather than treating drawing, scribbling, and letter-like forms as separate behaviors, the study approaches them as interconnected pathways through which children gradually refine both the form and function of written communication (Rowe et al., 2022; Puranik et al., 2014). By documenting children's progression across domains, drawing and scribbling as precursors to writing, and the emergence of letter-like forms and written symbols, the study aims to identify patterns of growth, variability, and developmental pacing. It further considers whether developmental pathways differ by gender and how individual differences may shape the consistency and rate of skill acquisition across the intervention period (DeBaryshe et al., 2023; Puranik & Li, 2022).

Contextualizing the Study: The context in which the current study is located is the following: In the country of Greece, the system of early childhood education is divided into two levels. For the ages from birth up to the age of four, early years centers (Vrefonipiaki stathmoi) exist in the public as well as the private sector. For the ages ranging from four up to the age of six, kindergartens (Nipiagogia) exist. In

the country of Greece, the pre-primary education cycle that is compulsory lasts two years, starting from the age of four. This is in line with the current national profiles provided by Eurydice, as well as the relevant legislation in the country (such as Law 4521/2018). The national curriculum in the country of Greece focuses on the holistic development of the child, mainly through the medium of play, as well as the informal teaching of literacy skills, such as reading, mainly through storytelling, drawing, or other relevant practices. In this context, the teaching of early writing is promoted as a communicative practice, while opportunities are provided for drawing, writing, or playing with letters and symbols. In this context, the six-month intervention in the current study offers a means of tracing the development of writing in monolingual as well as bilingual children.

The objective of this study is to explore the longitudinal changes that take place in the emergent writing abilities of preschool children who participated in a classroom-based educational intervention that lasted for six months. The study aimed to explore the changes that take place in the two analytically distinct domains of emergent writing, which include scribbling and drawing, and letter-like forms and early symbolic writing. The study aimed to explore the changes that take place in the performance of the children, the stability, and the variability of their performance, and also aimed to explore whether the changes that take place differ between boys and girls. This study is important because it will provide empirical evidence that will show the non-linear nature of writing development.

Research Questions

1. What patterns of change are observed in preschool children's emergent writing skills across a six-month intervention period in the domains of (a) scribbling and drawing and (b) letter-like forms and early symbolic writing?
2. To what extent do developmental trajectories differ between the two emergent writing domains in terms of stability, variability, and overall magnitude of growth?
3. Are there statistically observable gender-related differences in initial performance levels and developmental change over time within each emergent writing domain?

Theoretical Foundations of Emerging Writing

Emergent writing is based on constructivist and sociocultural theories of learning and development, which emphasize that children are active learners and that their literacy development is socially and cognitively constructed. Thus, emergent writing is not an isolated skill that is learned by children; rather, they learn and develop this skill as they engage in social interactions and meaningful interactions with written language.

From a socio-cultural perspective, Vygotsky's theory emphasizes that higher mental functions, including writing, originate in social activity (Vygotsky, 1978). In this regard, when children are introduced to written language, they see others, such as their parents or teachers, use this tool in their daily lives and, as they engage in social interactions within their Zone of Proximal Development, they begin to understand and use written language as they mature cognitively and socially.

Constructivist contributions further highlight children's active role in making sense of print. Clay's (1975) work on Concepts About Print demonstrated that children develop understandings of how writing works through exploration and experimentation. As active "sense-makers," children form hypotheses about print features such as directionality and spacing, refining their understanding through use.

Emergent Literacy Theory builds on these perspectives by rejecting the notion of literacy readiness and instead framing literacy development as a continuous process beginning in early childhood (Teale & Sulzby, 1986). Writing is viewed as an integral part of this process, closely connected to oral language, play, and social interaction.

In this regard, emergent writing is socially, cognitively, and experientially constructed as children engage in social interactions and as they explore and experiment with written language and its connection with oral language and play. The above-mentioned theories form the basis of this study as I examine and analyze early written expressions as socially constructed and as socially symbolic expressions of meaning and knowledge.

Stages of Emerging Writing Development

Emergent writing is a process of development over time, but not necessarily in a linear fashion. Children go through a series of early writing stages, and these stages provide a framework for understanding children's writing development. Although children's progression is unique, these stages provide a framework for understanding children's writing development. (Schickedanz & Collins, 2013).

Children's writing is primarily composed of scribbles and drawings at the first stage. Although these scribbles do not necessarily represent letters and words, they show children's growing awareness of their capability to create marks that can convey meaning. As children continue their development, scribbles become more controlled and even follow a direction, similar to conventional writing. (Brooks & Pahl, 2022). As children continue their development, they start using letter forms, using shapes similar to letters, and even using them with scribbles and drawings. Although these letter forms are not conventional, they show children's growing awareness of their capability to create marks that can convey meaning. (Pinto et al., 2021).

Subsequently, children start to use actual letters, mostly those they have learned from their names or familiar environmental prints. At this point, the letters are randomly arranged and not necessarily associated with sounds. However, they comprehend the idea that writing involves the use of letters, but they are not ready to move beyond the experimentation with the visual aspects, not the sounds and symbols (Temple et al., 2013). A significant developmental milestone for the child is the appearance of invented spelling, where they start to use existing letters to describe sounds they hear while speaking. Although this is not standard spelling, the child is exhibiting an increased level of phonological awareness and an emerging understanding of the alphabetic code (Bear et al., 2015).

Gradually, children move toward conventional writing, using more standard spellings, familiar word patterns, and basic punctuation. While invented spelling may still appear, it decreases as children rely more on stored word knowledge and orthographic patterns. This stage reflects the ongoing integration of phonological, visual, and linguistic knowledge as writing becomes increasingly conventional (Bahr & Silliman, 2020; Pollo et al., 2023).

It is essential to understand that the stages are not necessarily linear, and the child might regress to an earlier stage or exhibit traits from more than one stage, depending on the context.

Although there have been significant strides in the development and understanding of emergent writing, there are some challenges associated with the field, such as the lack of access to rich and significant early literacy learning opportunities, especially for those from poor backgrounds and those exposed to linguistically diverse environments. There are challenges associated with differentiating instruction to meet the needs of all the children, despite the developmental differences, in the same classroom. There is the need for a balance between the child's creative expression and the standard writing forms (Wohlwend & Peppler, 2022).

Further research should be conducted on the long-term effect of early intervention in writing on later academic outcomes, especially for children at risk of literacy problems. There is also a need for further research on the neurological basis of early development in writing, the impact of digital technologies on the development of early writing, and culturally responsive practice in early writing development.

Conceptual Framework

The study is informed by an integrative conceptual model that combines current emergent literacy research, sociocultural theory, and current perspectives on early writing development. These frameworks collectively conceptualize emergent writing development as a multi-dimensional, socially situated, and developmentally dynamic process that unfolds through children's active engagement with representational and symbolic forms of written language.

Current emergent literacy research suggests that early writing development begins before formal instruction and is closely interwoven with drawing, oral language, play, and early print experiences. Current research also conceptualizes emergent writing development as a process in which children engage in meaning-making through the use of graphic, symbolic, and linguistic forms, rather than a linear process leading towards developing writing skills per se (Bingham et al., 2017; Puranik & Lonigan, 2014; Rowe et al., 2022). This perspective informed the study's focus on two analytically distinct yet interconnected domains of emergent writing: (a) scribbling and drawing as foundational representational practices, and (b) letter-like forms and early symbolic writing behaviors.

Sociocultural theory extends this foundation by emphasizing social interactions and guided participation in literacy development. From this perspective, writing is conceived as a socially mediated activity that young children appropriate through meaningful social participation in everyday classroom events. Recent applications of sociocultural theory in early literacy research emphasize authentic purpose in writing, teacher scaffolding, and dialogic interactions in facilitating young children's development within their Zones of Proximal Development (Neumann et al., 2011). These principles guided the design of the classroom-based intervention, which embedded writing into daily routines and emphasized writing as a functional tool for communication and expression.

Moreover, recent developmental studies of emergent writing development emphasize its non-linear and non-uniform nature, particularly with regard to the differential development of foundational skills and symbolic and linguistic components of writing, such as phonological representation and knowledge of scripts (Puranik & Al Otaiba, 2012). This perspective informed the study's longitudinal design and justified the examination of developmental trajectories across domains rather than reliance on single time-point assessments.

Collectively, this conceptual framework portrays emergent writing as a developmentally progressive and non-uniform process that is affected by cognitive, linguistic, and social factors. This conceptual framework guides the theoretical basis of this study's assessment model, intervention structure, and findings, which will enable an exploration of the development of preschool children's writing skills in authentic and linguistically diverse educational settings.

Methods

Purpose

The main objective of the current study is to explore the longitudinal changes that take place in the emergent writing abilities of a group of preschool children who participated in a six-month educational program. More specifically, the study attempted to explore the longitudinal changes that take place within two analytically differentiated skill domains of emergent writing, namely, scribbling and drawing, and letter-like forms/symbolic writing. The study, through the use of a rubric-based assessment, attempts to explore the magnitude, stability, and diversity of the changes that take place within the emergent writing abilities of the children, and also whether there is a gender difference with regard to the changes that take place within the emergent writing abilities of the children. The study, through its focus on domain-specific changes, attempts to add empirical support to the non-linear nature of writing development within a preschool setting.

Methodology

The current study utilized a longitudinal descriptive research design with a focus on exploring the development of emergent writing skills in preschool children. An educational intervention was implemented in a naturalistic kindergarten classroom, and children's writing development was assessed through repeated rubric-based writing assessments at one-month intervals. A mixed research paradigm was utilized in this study, incorporating elements of descriptive and inferential statistical analysis of children's writing development with qualitative research insights based on children's writing products. This research design was useful in exploring children's development in two dimensions of emergent writing skills, i.e., scribbling/drawing and letter-like forms/symbolic writing, over a period of time.

The study participants were 42 preschool children ranging in age from 4 to 5 years, enrolled in a public kindergarten in an urban area of Greece. During the study

period, children were exposed to a specially designed classroom-based educational intervention aiming at encouraging their active engagement in meaningful and authentic early literacy practices. Purposive convenience sampling was utilized in this study. All children in the selected classroom were invited to be part of this study, based on regular attendance in the classroom. A total of 199 writing samples were collected, with each child participating in multiple writing samples over a period of six months.

Children's emergent writing development was assessed using the *Writing Development Rubric for Emergent Literacy Children* (Papadopoulos, 2026, in press). The rubric consists of two analytically separate dimensions, with the first dimension, A, consisting of the sub-dimensions of Scribbling and Drawing, including (A1) the control of marking tools, (A2) the representation of ideas, (A3) the use of language, (A4) the communication of ideas, and (A5) the level of engagement and creativity, while the second dimension, B, consists of the sub-dimensions of Letter-like Forms and Shapes, including (B1) the formation of shapes, (B2) the recognition of scripts, (B3) the integration of language, (B4) the representation of sound, and (B5) the level of engagement with texts.

The *Writing Development Rubric for Emergent Literacy Children* was designed to capture developmental variation in emergent writing behaviors among preschool-aged children. It integrates assessment of motor and representational components (e.g., scribbling and drawing) with emerging symbolic dimensions of writing, including the production of letter-like forms and early phonological representation. Although the rubric is a newly developed instrument, it is theoretically grounded in well-established frameworks of emergent literacy and early writing development and closely aligns with seminal developmental models proposed by Clay (1975, 2014), Sulzby (1986), and Schickedanz and Collins (2013). Content validity was established through expert review by three specialists in early childhood literacy, who confirmed alignment with established developmental frameworks. Inter-rater reliability was assessed through independent scoring of 20% of the writing samples ($n=40$) by two trained researchers, yielding strong agreement (Cohen's $\kappa=0.82$). Internal consistency was examined using Cronbach's alpha across all sub-dimensions ($\alpha=0.87$), indicating high reliability. Together, these procedures support the credibility and methodological rigor of the data collection process.

Within this theoretical context, drawing and scribbling are seen not only as a means of expression but also as an essential part of the development of emergent writing, providing insight into the symbolic, cognitive, and communicative potentialities of the child. Past research has proven the potential of visual representation to function not only as a means of communication but also as a diagnostic tool in the field of education, providing valuable information regarding the cognitive and emotional development of the child. Creative drawing has been proven to have a positive effect on the cognitive, emotional, and motivational development of the child, contributing to the development of the capacity for adaptive responses to new challenges, along with the development of the capacity for effective communication (Roberts & McFarlane, 2011; Wright, 2021).

Moreover, open-ended drawing tasks allow children to explore ideas without externally imposed constraints, fostering originality, initiative, and sustained engage-

ment. Such experiences contribute to the development of creative problem-solving skills and support long-term engagement in learning across both artistic and educational domains (Leggett & Ford, 2013; Lucas, 2018). Within the present study, these theoretical considerations informed the inclusion of drawing and scribbling as foundational dimensions of the emergent writing assessment.

Each sub-dimension was rated using a four-point rating system, with the higher rating reflecting the more advanced level of performance. The entire assessment framework, along with the performance descriptors for each rating level for each sub-dimension, is presented in the Assessment Table.

Writing Development Rubric for Emergent Literacy Children

	Stage	1	2	3	4
A. Scribbling and Drawing	**A1. Control of Marking Tools**	Random marks, uncontrolled	Some control, beginning to show purpose	Controlled marks, intentional	Controlled and purposeful marks
	A2. Representation of Ideas	Marks do not resemble any objects	Marks sometimes resemble objects or ideas	Marks often resemble objects or ideas	Marks consistently resemble objects or ideas
	A3. Language Use	Limited to no use of language	Single language use in storytelling	Both languages are used occasionally	Both languages are used frequently
	A4. Communication of Ideas	No discernible message	Simple messages communicated with assistance	Clear messages communicated	Detailed and coherent messages communicated
	A5. Engagement and Creativity	Little interest or effort in scribbling/drawing	Some interest and creative attempts	Active engagement and creativity	High levels of engagement and creativity
tter-like Forms and Shapes	**B1. Formation of Shapes**	Random shapes	Shapes occasionally resemble letters	Mix of letter-like forms and shapes	Clear letter-like forms and shapes
	B2. Recognition of Scripts	No recognition of different scripts	Some recognition of one script	Recognition of both scripts	Correct use of both scripts
	B3. Language Integration	No integration	Single language dominant	Occasional integration of both languages	Frequent integration of both languages
	B4. Representation of Sound	No representation of sounds	Some marks represent sounds	Many marks represent sounds	Marks consistently represent sounds

Assessment Table

In order to enhance the methodological soundness of the study, a series of procedures were employed to assess the validity and reliability of the *Writing Development Rubric for Emergent Literacy Children*. For purposes of content validity, the Writing Development Rubric for Emergent Literacy Children was reviewed and validated by experts. Three experts with extensive knowledge and experience in the field of emergent literacy reviewed the rubric. The experts confirmed that the dimensions and performance descriptors of the Writing Development Rubric for Emergent Literacy Children were appropriate and consistent with existing theoretical frameworks on emergent writing.

Inter-rater reliability was also employed, whereby two researchers rated the writing samples independently. A random selection of 20% of the total writing samples (n = 40) was rated. The level of inter-rater reliability was determined using Cohen's kappa, with a value of $\kappa = .82$, which is generally considered a strong measure of reliability. Internal consistency reliability was also employed, whereby Cronbach's alpha reliability test was administered on ten sub-dimensions of the Writing Development Rubric for Emergent Literacy Children, with a value of $\alpha = .87$, which is a high level of reliability. Despite the fact that observational measures always involve a level of subjective bias, the Writing Development Rubric for Emergent Literacy Children is a sound measure of emergent writing development.

In total, 199 writing samples were collected in the course of the intervention, with 91 being produced by boys and 108 by girls. The writing samples were systematically organized by the month in which the data collection took place, the gender of the participant, as well as the individual participant's identification code. This ensured that the longitudinal progression in the developmental process could be systematically tracked. For each writing sample, the individual scoring by the researchers took place based on the performance levels as indicated in the rubric's sub-dimensions. This was followed by the calculation of the mean scores in each category, that is, in Category A (Scribbling and Drawing) as well as in Category B (Letter-Like Forms and Shapes) by each individual participant. This ensured that the areas of relative strength or difficulty in each or any of the domains could be ascertained, as well as the longitudinal progression in the developmental process.

The analysis that took place in the course of the research was mainly based on descriptive statistical analysis. The scores in each of the sub-dimensions as indicated in the rubric were averaged, followed by the calculation of the monthly mean scores in each category, that is, in Category A (Scribbling and Drawing) as well as in Category B (Letter-Like Forms and Shapes) by each individual participant. The means were then calculated separately for the girls and the boys in the research. This ensured that the descriptive statistical analysis could be carried out, as well as the longitudinal progression in the developmental process. The data that emerged in the course of the research was analyzed longitudinally over six data collection points. Line graphs were then drawn in the course of the analysis to indicate the longitudinal progression in the developmental process.

Given the exploratory nature of the study and the relatively small sample size (N = 42), descriptive approaches were prioritized over inferential statistics. This analytic strategy enabled a clear and detailed picture of emergent writing development while avoiding overstated claims of generalizability.

Description of the Intervention

The intervention was implemented in the context of a six-month classroom-based educational program, embedded in the daily routines of a public kindergarten school located in an urban area in Greece. The primary aim was to support the development of emergent writing skills by providing children with opportunities for genuine, significant, and contextually grounded writing experiences. The intervention was informed by the principles of emergent literacy and the theory of sociocultural learning, emphasizing the significance of writing as an essential part of children's daily lives, while highlighting its potential for communication, expression, and meaning-making.

The program was organized around six monthly literacy projects, each centered on a single target word (e.g., *apple, banana, lemon*). At the beginning of each month, the target word was introduced within a meaningful classroom context, such as a shared storybook reading, a cooking activity, or thematic play. These introductory experiences were designed to anchor the word in children's lived experiences and to support conceptual understanding. Following this initial exposure, children participated in a range of multimodal literacy activities, including drawing, dramatic play, and group discussion, which facilitated a gradual shift from pictorial representation toward emerging symbolic and written forms.

An integral part of the intervention was the facilitation of writing opportunities. Children were invited to represent the target word of the month using their own emergent writing strategies, including scribbling, drawing, letter-like writing, and spelling, according to their own stage of development. The teacher took on a scaffolding role, supporting children's writing attempts through modeling writing tools, asking open-ended questions like "What does it say?", and encouraging children to talk about what their writing meant. This acknowledged the heterogeneity of stages of development in a classroom, allowing for differentiation within each child's ZPD.

Across the six months, target words (e.g., *apple, banana, lemon, mandarin, salad, fruit*) were selected based on their relevance to children's everyday experiences and their frequent occurrence in classroom routines, discussions, and play. Children were encouraged to represent these words using a range of emergent strategies, allowing for flexibility and developmental progression from graphic to increasingly symbolic forms of writing.

The intervention was also concerned with authentic writing purposes, e.g., writing labels, shopping lists, classroom signs, messages to friends. These literacy activities were intended to motivate children, engage their interest, and develop their sense of authorship, encouraging their sense of self as writers. Through repeated engagement with writing, it was intended that children would come to perceive writing as a purposeful, functional tool of communication. Through this intervention, children's individual differences in development, writing style, and linguistic background were accommodated. Specifically, bilingual children were given opportunities to engage with writing in ways that supported their two languages in an organic manner, depending on the particular instruction or activity.

Overall, it can be said that the intervention was developmentally appropriate and pedagogically intentional in that it was not only intended to enhance children's

foundational or emergent writing skills, but it was also intended to develop positive attitudes towards writing. By embedding writing in socially significant practices, it was intended that a supportive foundation could be built for children's literacy development.

Results

This section presents children's developmental trajectories in emergent writing across the six-month intervention, organized by category and research focus. Descriptive trends are complemented by inferential analyses examining within-group improvement and gender differences.

Baseline Comparability (October)

At baseline, children demonstrated emerging but uneven early writing skills (Table 1). In Category A (Scribbling and Drawing), mean scores were comparable across genders (boys: M = 1.90; girls: M = 2.06). In Category B (Letter-Like Forms and Shapes), girls scored significantly higher than boys (girls: M = 2.59; boys: M = 1.90), indicating an initial gender disparity in symbolic representation skills.

Developmental Trajectories Across the Intervention

Category A: Scribbling and Drawing

A clear and consistent positive trajectory was observed in Category A across the intervention period (Table 2; Graph 1). Mean scores increased steadily from October (M = 1.99) to February (M = 2.85), followed by stabilization in March (M = 2.84). Overall, performance improved by approximately 43%, reflecting substantial gains in children's control of marking tools, representational accuracy, and clarity of visual communication.

While basic representational skills reached high levels by mid-intervention, growth in expressive language use and creativity progressed more slowly, with scores plateauing toward the end of the study.

Category B: Letter-Like Forms and Shapes

In contrast, Category B exhibited a less stable developmental pattern (Table 3). Mean scores fluctuated across assessment points, with an initial decline during the first trimester (October–December), a moderate increase peaking in February (M = 2.43), and a subsequent decrease in March (M = 2.25).

Although children demonstrated consistently strong performance in shape formation, progress in higher-order symbolic skills, such as script recognition, phonological representation, and linguistic integration, remained uneven. Overall, Category B showed a small net decrease from baseline (–1.3%), indicating slower consolidation of symbolic writing skills compared to representational drawing skills.

Table 1 Baseline descriptive statistics by gender (October)

Category	Boys M (SD)	Girls M (SD)	Total M (SD)
A—Scribbling & Drawing	1.90 (0.35)	2.06 (0.40)	1.99 (0.38)
B—Letter-Like Forms & Shapes	1.90 (0.50)	2.59 (0.45)	2.28 (0.49)

Table 2 Mean scores for emergent writing categories across the intervention

Month	Assessment	Category A M
October	1st	1.99
November	2nd	2.27
December	3rd	2.68
January	4th	2.79
February	5th	2.85
March	6th	2.84

Within-Group Improvement

Paired-sample t-tests comparing October and March scores revealed statistically significant improvement in both categories (Table 4). Gains in Category A were large, $t(41)=6.45$, $p<0.001$, $d=0.99$, whereas gains in Category B were smaller but significant, $t(41)=2.31$, $p=0.026$, $d=0.36$. These findings indicate that the intervention had a stronger impact on basic representational skills than on symbolic writing skills.

Gender Differences

Independent-sample t-tests indicated a significant gender difference at baseline in Category B, with girls outperforming boys ($p=0.030$, $d=0.70$), while no gender differences were observed in Category A. At the final assessment (March), gender differences were non-significant in both categories, suggesting convergence in boys' and girls' performance over the course of the intervention (Table 5).

Discussion

The current study has clearly illustrated that the implemented intervention has produced differentiated outcomes in two domains of assessment, namely Category A (Scribbling and Drawing) and Category B (Letter-Like Forms and Shapes). In relation to Category A, statistically significant improvements were observed in both male and female participants, thus indicating that the implemented intervention is effective in promoting and developing their basic motor and drawing skills that could lead to later writing development. The developmental trend observed in this category is consistent with substantial research that has emphasized and stressed the importance of early drawing and scribbling as an essential precursor or antecedent of later writing development, as it promotes and facilitates the development of fine motor skills and symbolic thinking, which is essential in later literacy development (Zhang & Wei, 2016). Similarly, Lee et al. (2020) emphasize that early experiences with writing

Table 3 Mean scores for emergent writing categories across the intervention

Month	Assessment	Category B M
October	1st	2.28
November	2nd	2.24
December	3rd	2.12
January	4th	2.24
February	5th	2.43
March	6th	2.25

Table 4 Paired-sample t-test results comparing October and March scores

Category	t(df)	p	Cohen's d
A—Scribbling & Drawing	6.45 (41)	<.001	0.99
B—Letter-Like Forms & Shapes	2.31 (41)	0.026	0.36

instruments contribute not only to motor coordination but also to children's capacity for visual expression and engagement in creative processes. Extending these findings, Ricciardi et al. (2023) report that fine motor competencies in the preschool years are strong predictors of later academic achievement, highlighting their long-term developmental significance. The consistent gains observed in Category A, particularly in sub-dimensions such as *Control of Marking Tools* and *Representation of Ideas*, reinforce these established associations and suggest that structured, developmentally appropriate interventions targeting early representational skills can effectively support the emergence of writing. Collectively, these findings indicate that strengthening foundational motor and symbolic competencies provides a robust basis for subsequent literacy development.

On the other hand, the findings from Category B indicate the need for more sustained and targeted instruction, specifically for the sub-dimensions related to symbolic understanding, script recognition, and phonological representation. The fluctuating performance in this area, where children's abilities would sometimes advance and at other times regress, points to the non-linear and more cognitively demanding nature of the development of early symbolic writing abilities in young children, compared to the development of fundamental pre-writing skills. This pattern of irregular progression is consistent with Treiman's (2017) conceptualization of early writing as a broad representational practice, in which children initially rely on visual and graphic strategies before fully conceptualizing writing as a linguistic system. Puranik and Lonigan (2011) further argue that developing an understanding of writing requires recognizing it as a system of arbitrary, socially constructed symbols, a process that unfolds gradually and unevenly. Similarly, Ferrero et al. (2015) describe the significant difficulties young children encounter in mastering the conventions of written print, including those related to sound-symbol and script knowledge. In the present study, it was found that the intervention was effective in supporting children's mechanical symbolic production abilities, as indicated by strong performance in the production of letter-like shapes (subcategory B1). However, the more abstract aspects of emergent writing, including script recognition (B2), phonological representation (B4), and the integration of language (B3), continued to prove difficult for the children.

A salient qualitative observation emerged during the initial phase of the intervention (October–November), when many children, when asked to write the words

Table 5 Independent-sample t-tests for gender differences at baseline and final assessment

Category	Time	Boys M (SD)	Girls M (SD)	t(df)	p	d
A	October	1.90 (0.35)	2.06 (0.40)	− 1.20 (40)	0.23	0.37
A	March	2.80 (0.42)	2.87 (0.38)	− 0.45 (40)	0.66	0.14
B	October	1.90 (0.50)	2.59 (0.45)	− 2.25 (40)	0.030	0.70
B	March	2.20 (0.52)	2.30 (0.48)	− 0.38 (40)	0.70	0.12

apple and *banana*, produced drawings of the corresponding objects rather than written forms. This response reflects a core characteristic of emergent literacy, in which early writing is conceptualized not solely as a linguistic system but as a broader representational practice that integrates visual and symbolic modes of meaning-making (Treiman, 2017; Bear et al., 2015). Engagement in drawing and early writing activities has been shown to support the development of symbolic thinking, a foundational cognitive capacity underlying children's ability to understand and use written language as a system of representation (Thompson, 2020; Wicaksono et al., 2022). As the intervention progressed, children's reliance on pictorial representation gradually diminished, giving way to increased use of written symbols. This shift marks a critical developmental transition toward conceptualizing writing as a system of arbitrary, socially constructed symbols rather than as direct visual representation (Puranik & Lonigan, 2011). Evidence of this progression is documented in the Appendix, which includes authentic samples of children's writing collected over time. These samples illustrate the gradual movement from pictorial strategies to more conventional written forms, consistent with the developmental trajectories described within emergent literacy theory (Puranik & Lonigan, 2014; Rowe et al., 2022; Bingham et al., 2017). Collectively, this transition underscores the importance of recognizing and supporting children's early representational strategies as a necessary foundation for the development of conventional literacy.

Overall, the findings indicate that the intervention supported both the technical aspects of emergent writing, such as fine motor control and symbolic production, and children's conceptual understanding of writing as a communicative practice. This dual development aligns with core principles of early literacy education that emphasize comprehensive and integrated approaches to skill acquisition (National Early Literacy Panel, 2008.) and underscores the value of multidimensional instructional strategies (Wasik & Bond, 2001; Neuman & Wright, 2011). Moreover, the results contribute empirical evidence that extends existing theoretical perspectives on early writing development, particularly in bilingual contexts, and reinforce sociocultural views of literacy as a contextually situated and socially mediated process (García & Kleifgen, 2020; Kuby & Rowsell, 2022).

The progress observed in Category A (Scribbling and Drawing) supports the view that early literacy development is gradual and benefits from timely, targeted instructional support. This finding aligns with Papadopoulos and Bourogianni (2024), who reported substantial variability in preschool children's word awareness and emphasized the role of early educational intervention in fostering confidence in written language use, as well as with earlier evidence highlighting the importance of early intervention for foundational literacy skills (Puranik & Al Otaiba, 2012). The increased confidence observed in children's written expression, particularly among

bilingual learners, underscores the need for interventions responsive to diverse linguistic profiles, even in the absence of direct language-specific comparisons. At the same time, persistent challenges in more complex aspects of emergent writing (Category B), including script recognition, phonological awareness, and language integration, point to the necessity of targeted orthographic instruction to support the development of advanced writing competencies (Ehri, 2014; Wang et al., 2024).

Although the current research makes a significant contribution to the body of literature, some limitations must be considered. One limitation is the sample size, which, despite being adequate for the current research, might not be generalizable for further research in the future. Moreover, the current research did not take into consideration the two languages used by bilingual children, which might affect their writing development in both languages. Moreover, despite the theoretically grounded rubric used for assessment, it must be noted that the observational method used for scoring might be subjective in nature. Furthermore, some other factors, such as parental involvement and socioeconomic status, which might affect child development, were not controlled in the current research. Moreover, the short duration of the intervention might not be enough to observe the long-term developmental effects, especially because of the wide range of more advanced writing skills (Category B). Future research should be based on longitudinal designs in order to observe the development of emergent writing over long periods of time and in multiple contexts of instruction. Moreover, future research should also take into consideration the separate development of bilingual children's writing in both languages in order to better understand their development in both languages and any potential transfer effect. Furthermore, incorporating qualitative research methods, such as observing classrooms and conducting semi-structured interviews, would also help in obtaining better insights into the children's experiences and their point of view regarding the entire process of writing, which might help in better understanding the development of emergent writing in children.

Conclusion

This research investigated the development of emergent writing skills in preschool children during a six-month, classroom-based intervention, targeting two domains: scribbling and drawing, and letter-like forms and symbolic writing. The results offer clear evidence for domain-specific developmental patterns, shedding light on the non-linear nature of early writing development.

To answer the first research question, the children demonstrated consistent and statistically significant development in scribbling and drawing skills, while the development of letter-like forms and symbolic writing was less consistent, with periods of development followed by stability and regression, suggesting the gradual and uneven development of this domain.

To answer the second research question, initial gender differences, particularly in the development of letter-like forms and symbolic writing, were noted, but the differences diminished over time, with boys and girls demonstrating comparable performance in both domains by the end of the intervention, suggesting the potential for

balanced writing development with sustained, developmentally sensitive classroom experiences.

In relation to the third research question, the most consistent development was observed in basic sub-skills related to motor control and representational competence, while more intricate sub-skills, such as script recognition, phonological representation, and language integration, varied and proved challenging.

In relation to the fourth research question, this study observed that there was a progressive trend towards written symbols as opposed to drawing as an initial form of communication. The progression towards written symbols is an important aspect of the developmental value of drawing and scribbling as essential precursors of conventional writing, rather than being seen as an initial or auxiliary activity.

The findings of this study emphasize the importance of emergent writing as a multifaceted and developmentally fluid process that highlights socially contextualized and differentiated forms of early childhood writing support, particularly in linguistically diverse classrooms. By examining and tracking early writing development, this study adds valuable evidence that can inform theory and practice in early literacy education.

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Declarations

Conflict of interest The author declares no conflicts of interest related to this study.

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