



Promoting Young Children's Cognitive Development: Educational Practices through Diverse Activities

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ABSTRACT: Cognitive development refers to the process through which human beings gradually acquire the abilities to think, reason, and use cognitive tools such as language, memory, and planning. This development begins in early childhood and involves a series of developmental changes associated with individuals' capacities to understand, adapt to, and interact with their environment. This article aims to promote young children's cognitive development through educational practices involving diverse activities. I hope to promote young children's healthy development and enable them to lead happy and fulfilling lives in the future.

INTRODUCTION

Cognitive development refers to the process through which human beings gradually acquire the abilities to think, reason, and use cognitive tools such as language, memory, and planning. This development begins in early childhood and involves a series of developmental changes associated with individuals' capacities to understand, adapt to, and interact with their environment. Various scholars have proposed theories of cognitive development to explain how human cognitive and intellectual abilities gradually emerge and evolve over the course of development. These include Jean Piaget's theory of cognitive development, Lev Vygotsky's sociocultural theory, Albert Bandura's social learning theory, and information-processing approaches to cognitive development. Among these perspectives, Piaget's theory of cognitive development has made an influential contribution to understanding how children construct knowledge and develop their abilities to think, reason, and learn through interactions with their physical and social environments (Bandura, 1977; Piaget, 1952; Piaget & Inhelder, 1969; Vygotsky, 1978). Building on these theoretical perspectives, this article examines how diverse educational activities can support young children's cognitive development. Specifically, it discusses the potential contributions of play, exploration and hands-on manipulation, verbal interaction, art-making, and mathematical activities to the development of thinking, reasoning, language, problem-solving, and knowledge construction. By integrating perspectives from cognitive developmental and sociocultural theories, the article highlights the importance of developmentally appropriate learning experiences, active participation, and meaningful interactions with teachers, peers, and the surrounding environment. It aims to provide a theoretical and pedagogical foundation for designing

educational practices that support young children's cognitive development and promote their broader learning and well-being.

EDUCATIONAL PRACTICES THROUGH DIVERSE ACTIVITIES

2.1 Play Activities

Since the time of the ancient Greek philosophers, play has been regarded as a characteristic mode of behaviour among young children and an expression of the natural spirit of childhood. It is therefore considered a key defining feature of childhood. Given the diverse perspectives, perceptions, experiences, and expectations associated with play, no single definition can fully encompass its multifaceted nature. Nevertheless, theorists from a range of disciplinary backgrounds broadly agree that play makes an important contribution to children's development.

Furthermore, Stuart Brown, founder of the National Institute for Play, describes play as "anything that spontaneously is done for its own sake ... appears purposeless, produces pleasure and joy, [and] leads one to the next stage of mastery" (Kernan, 2007; Karin et al, 2011; Lockhart, 2010; Shih & Wu, 2015; Tsai, 2012). Fröbel (1826/1912) regarded play as the highest expression of child development at this stage of life and as a significant manifestation of human development. He argued that play is a spontaneous expression of the inner life, arising from internal needs and impulses. At this stage, play represents the purest and most spiritual form of human activity, reflecting the hidden natural life that underlies human existence as a whole. Accordingly, play provides children with joy, freedom, contentment, inner and outer tranquillity, and a sense of peace and harmony with the world (pp. 54–55). Contemporary research, policy, and practice have continued to emphasize the importance of play in children's development and learning (Karin, Suzanne, Caley, Jacquelyn, & Ellen, 2011). Thus, the significance of play for young children's growth and learning is widely recognized within the field of early childhood education.

2.2 Young Children's Exploration and Manipulation

Exploration and hands-on manipulation are important processes that support young children's cognitive development. Through observing, touching, comparing, classifying, combining, and manipulating objects, children actively explore their surrounding environments and gradually construct an understanding of object properties, quantity, spatial relationships, causal relationships, and natural phenomena. These experiences not only enrich children's knowledge of the world but also support the development of attention, memory, reasoning, and problem-solving skills (Piaget, 1952; Ginsburg et al., 2008). From the perspective of Piaget's (1952) theory of cognitive development, children are not passive recipients of knowledge; rather, they actively construct cognitive structures through interactions with their environments. When children manipulate building blocks, complete puzzles, or engage with other educational materials, they draw on their existing knowledge to anticipate outcomes and adjust their understanding when the results differ from their expectations. This process involves assimilation and accommodation, illustrating how children continuously modify their cognitive structures through interactions with their environments (Piaget, 1952).

Exploration and hands-on activities can also support the development of early mathematical and scientific concepts. For example, comparing objects of different sizes, weights, and shapes can help children develop skills in comparison, classification, and ordering. Similarly, stacking blocks, assembling objects, and exploring materials such as water and sand provide opportunities to investigate spatial relationships, quantity, and cause-and-effect relationships. Research has highlighted the important relationship between play and mathematics learning, suggesting that appropriately designed play experiences can support the development of young children's early mathematical understanding (Ginsburg et al., 2008).

From the perspective of Vygotsky's (1978) sociocultural theory, cognitive development is also shaped by social interaction and adult guidance. Through purposeful questioning, demonstration, and scaffolding, teachers can encourage children to observe phenomena, compare outcomes, formulate hypotheses, and explain their discoveries. Collaborative exploration and discussion with peers can further expose children to diverse perspectives and deepen their understanding. With support from adults or more capable peers, children may accomplish tasks that they cannot yet complete independently, thereby extending their cognitive

capabilities (Vygotsky, 1978). Accordingly, early childhood education should focus not only on the completion of activities or their observable outcomes but also on children's thinking, experimentation, discovery, and reflection throughout the exploratory process. Teachers can provide diverse, open-ended materials and learning environments that are appropriate to children's developmental needs, encouraging them to explore independently, manipulate materials repeatedly, and ask questions. Through appropriate guidance, children can gradually transform concrete experiences into more sophisticated understandings. This approach is consistent with developmentally appropriate practice, which emphasizes active engagement, play, and meaningful learning experiences in early childhood education. In conclusion, exploration and hands-on manipulation are not merely instructional activities; they are fundamental processes through which young children actively construct knowledge, develop thinking skills, and make sense of the world around them. Meaningful exploratory experiences, combined with appropriate educational support, can foster children's cognitive development and establish a foundation for future learning (NAEYC, 2020; Piaget, 1952; Vygotsky, 1978).

2.3 Verbal Interaction

Verbal interaction is an important means of promoting young children's language and cognitive development. Through oral communication, questioning, dialogue, narration, and self-expression, children learn to organize their experiences, articulate their ideas, understand others' perspectives, and gradually develop their thinking, reasoning, and problem-solving abilities. From the perspective of Vygotsky's (1978) sociocultural theory, language serves not only as a tool for communication but also as an important mediator of thinking and cognitive development. Through interactions with adults and peers, children construct knowledge within social contexts and gradually internalize language as a resource for thinking. Furthermore, through purposeful questioning and dialogue, teachers can encourage children to observe phenomena, compare differences, explain causes, and predict outcomes, thereby deepening their understanding and strengthening their reasoning abilities. For example, during a block-building activity, a teacher might ask, "Why did the tower of blocks fall down?" or "What could you do to make it more stable?" These open-ended questions encourage children to describe their observations, formulate hypotheses, explain causes, and explore different problem-solving strategies. Through such verbal interactions, children can enhance not only their vocabulary and oral communication skills but also their logical thinking, causal reasoning, and problem-solving abilities. Therefore, early childhood education should emphasize meaningful verbal interactions that encourage children to ask questions, express their ideas, share experiences, and engage in dialogue. Teachers can create learning environments that support children's thinking and expression through open-ended questions, active listening, responsive feedback, and extended conversations. Verbal interaction not only contributes to children's language development but also serves as an important educational practice for fostering knowledge construction, thinking skills, and overall cognitive development (Vygotsky, 1978).

2.4 Art-Making Activities

Art-making activities play an important role in promoting young children's cognitive development. Through drawing, collage, sculpting, and other forms of artistic expression, children have opportunities to explore materials, experiment with different techniques, express their ideas, and construct meaning from their experiences. These activities can support the development of observation, attention, spatial reasoning, problem-solving, creativity, and symbolic thinking. From the perspective of Piaget's (1952) theory of cognitive development, children actively construct knowledge through interactions with their physical and social environments. During art-making activities, children manipulate materials, explore relationships between shapes, colors, textures, and forms, and modify their approaches based on the outcomes of their actions. These experiences provide opportunities to develop classification, comparison, spatial awareness, and flexible thinking. Art-making activities also encourage children to engage in planning, decision-making, and problem-solving. For example, when creating a collage or constructing a three-dimensional sculpture, children must select appropriate materials, organize components, consider spatial relationships, and

revise their work when difficulties arise. Such experiences can encourage children to develop strategies, evaluate outcomes, and approach challenges from different perspectives. From a sociocultural perspective, artistic activities can also promote cognitive development through social interaction and adult guidance (Vygotsky, 1978). Teachers can support children's learning by asking open-ended questions, encouraging them to explain their artistic choices, and inviting them to reflect on their creative processes. Sharing artwork and discussing different interpretations can further expand children's vocabulary, perspectives, and understanding of others' ideas. Therefore, early childhood educators should provide diverse, open-ended art materials and meaningful opportunities for artistic exploration. Rather than focusing exclusively on the quality of the final product, teachers should value children's experimentation, decision-making, imagination, and reflection throughout the creative process. Art-making activities are not merely opportunities for artistic expression; they can also serve as meaningful learning experiences that support young children's cognitive development and holistic growth.

2.6 Mathematical Activities

Mathematical activities are an important educational means of promoting young children's cognitive development. Through counting, classifying, sequencing, matching, shape recognition, measurement, and spatial exploration, children gradually develop an understanding of fundamental mathematical concepts, including quantity, shape, size, order, spatial relationships, and patterns, through hands-on manipulation and everyday experiences. These activities not only help children establish foundational mathematical knowledge but also support the development of logical thinking, attention, memory, reasoning, and problem-solving skills (Ginsburg et al., 2008; Piaget, 1952). From the perspective of Piaget's (1952) theory of cognitive development, children actively construct knowledge through interactions with their environments. During mathematical activities, children manipulate objects, compare their characteristics, and classify or sequence them according to color, shape, size, or quantity. For example, when arranging blocks according to their shapes or sizes, children do more than identify object characteristics; they also develop the foundations of classification, sequencing, and relational thinking. Through repeated manipulation, observation, and comparison, children can gradually refine their understanding and develop more organized cognitive structures. Mathematical activities also provide opportunities for children to develop reasoning and problem-solving skills. For example, distributing toys or snacks allows children to practice one-to-one correspondence, counting, and fair allocation. Constructing shapes or building with blocks enables them to explore geometric properties, direction, position, and spatial relationships. Identifying patterns or completing sequencing tasks requires children to observe characteristics, recognize rules, and predict what comes next. By connecting abstract mathematical concepts with familiar everyday situations, these activities help children understand the meaning and practical applications of mathematics. Ginsburg et al. (2008) also highlighted the important role of play and appropriate instructional activities in early childhood mathematics education. Furthermore, teacher guidance and verbal interaction are essential components of mathematical activities. From the perspective of Vygotsky's (1978) sociocultural theory, children's cognitive development is shaped by social interaction and adult support. Teachers can encourage children to explain their thinking, compare different strategies, and interpret the results of their actions through open-ended questions, such as "Why did you put these blocks together?", "Can you find another way to arrange them?", and "How do you know there are five objects here?" Such interactions help children transform concrete experiences into verbal explanations and conceptual understanding, thereby further developing their mathematical reasoning skills. Therefore, early childhood mathematics education should not focus exclusively on memorizing numbers, practicing calculations, or obtaining correct answers. Instead, it should emphasize children's thinking processes as they explore, manipulate, compare, reason, and communicate. Teachers should provide diverse mathematical materials appropriate to children's developmental needs and integrate mathematical concepts into play, everyday situations, and problem-solving activities, enabling children to construct meaningful learning experiences through active participation. In conclusion, mathematical activities are not merely a means of learning numbers and quantities; they are also important educational

practices for fostering logical thinking, classification, spatial understanding, reasoning, and problem-solving skills. Through hands-on manipulation, meaningful everyday contexts, and appropriate teacher guidance, young children can gradually construct foundational mathematical concepts and establish a solid basis for subsequent mathematics learning and broader cognitive development (Neaum, 2016; Shih & Juan, 2026; Vygotsky, 1964, 1978).

CONCLUSION

Young children's cognitive development is a complex and dynamic process involving the gradual development of thinking, reasoning, language, memory, problem-solving, and knowledge construction. Drawing on Piaget's theory of cognitive development and Vygotsky's sociocultural theory, this article highlights the importance of active engagement, hands-on exploration, social interaction, and appropriate educational support in fostering children's cognitive growth. The discussion of diverse educational practices demonstrates that play, exploration and manipulation, verbal interaction, art-making, and mathematical activities provide meaningful opportunities for children to investigate their surroundings, express ideas, develop logical relationships, and construct knowledge through experience. Although these activities differ in their content and learning objectives, they share an emphasis on children's active participation and the integration of cognitive processes within meaningful learning experiences. Play encourages curiosity and flexible thinking; exploration and hands-on manipulation support observation, experimentation, and causal reasoning; verbal interaction facilitates language development, reflection, and the articulation of ideas; art-making provides opportunities for symbolic representation, creativity, planning, and problem-solving; and mathematical activities promote classification, pattern recognition, logical reasoning, and spatial understanding. When thoughtfully integrated, these activities can provide a rich and varied learning environment that responds to children's developmental needs, interests, and prior experiences. Teachers play an essential role in creating such environments. Rather than focusing exclusively on the completion of tasks or the achievement of predetermined outcomes, educators should attend to children's thinking processes, encourage inquiry through open-ended questions, provide developmentally appropriate materials, and offer guidance that extends children's understanding without unnecessarily limiting their independence. Through responsive interaction, scaffolding, and opportunities for reflection, teachers can help children connect concrete experiences with emerging concepts and gradually develop more sophisticated ways of thinking. In conclusion, promoting young children's cognitive development requires more than the implementation of individual educational activities. It calls for an integrated pedagogical approach that combines active exploration, meaningful communication, creative expression, mathematical thinking, and responsive teacher guidance. By providing diverse, engaging, and developmentally appropriate learning experiences, early childhood educators can establish a strong foundation for children's continued learning, cognitive growth, and broader development. Future research may further examine how different combinations of educational activities, teaching strategies, and learning environments relate to children's cognitive development across diverse early childhood contexts (Piaget, 1952; Shih, 2025a, 2025b, 2026a, 2026b, 2026c, 2026d).

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