



Early Childhood Education: Theoretical Foundations and Directions for Application in the Vietnamese Context

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ARTICLE INFO	ABSTRACT
Published Online: 15 January 2026	Early education is widely regarded as a foundational stage that plays a decisive role in human development. Interdisciplinary research in developmental science, neuroscience, psychology, and the economics of education consistently demonstrates that experiences from the prenatal period through the early years of life exert long-term influences on children's cognitive, emotional, behavioral development, and learning opportunities. From a contemporary perspective, early education is understood as a continuous developmental process encompassing the prenatal period, infancy and toddlerhood (0–3 years), and early childhood education. This paper aims to synthesize and systematize the theoretical foundations of early education, analyze the current state of its implementation in Vietnam, and propose directions and recommendations for contextually appropriate application. These recommendations seek to enhance the quality of early childhood education and contribute to long-term human resource development.
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1. INTRODUCTION

In recent decades, early education has increasingly been recognized as a critical period with profound implications for comprehensive human development. Interdisciplinary research in developmental psychology, neuroscience, education, and economics converges on the conclusion that the early years of life—including the prenatal period—constitute a sensitive developmental window during which biological, psychological, and social environments exert lasting effects on children's cognitive, emotional, behavioral, and health outcomes (Shonkoff & Phillips, 2000; Knudsen et al., 2006; Nelson & Sheridan, 2011). The quality of early experiences not only affects immediate learning outcomes but also shapes developmental trajectories, personality formation, and life-course opportunities (Heckman, 2011; McCoy et al., 2017).

Evidence from neuroscience indicates that the human brain develops at an extraordinary rate during early childhood, reaching approximately 80% of adult brain volume by age three, with hundreds of new neural connections formed every second (Phillips et al., 2017). High levels of neuroplasticity during this period enable enriched, responsive environments to promote optimal development, whereas adverse or deprived experiences may result in enduring negative consequences (National Scientific Council on the Developing Child, 2007; Donoghue, 2017).

From a contemporary standpoint, early education is no longer confined to the postnatal period but is increasingly conceptualized as encompassing the prenatal stage. Research suggests that prenatal influences can be biologically embedded, shaping postnatal brain development, behavior, and health through complex biological and neurodevelopmental mechanisms (Soldara, 2000; Margolis & Gabard-Durnam, 2025). Accordingly, prenatal early education focuses on establishing supportive biological, psychological, and social environments and on preparing individuals for parenthood even before birth (Entsieh & Hallström, 2016).

In Vietnam, early childhood education has made significant progress in terms of access, curriculum development, and child-centered orientation. However, prenatal early education has not yet been systematically integrated into the broader early education framework. Moreover, the quality of early education implementation remains uneven, and the role of families as educational partners has not been fully realized (Alford et al., 2015; OECD, 2021). These challenges underscore the need for a closer alignment between scientific theory and early education practice in Vietnam.

Against this backdrop, this paper seeks to:

- Synthesize and systematize the interdisciplinary theoretical foundations of early education;

- Analyze the current state of early education implementation in Vietnam in relation to these theoretical perspectives;
- Propose directions and recommendations for the development of early education that are appropriate to the Vietnamese context.

2. THEORETICAL FOUNDATIONS OF EARLY EDUCATION

2.1. Early Development and the Sensitivity of the Early Life Period

Research in developmental psychology, neuroscience, and the economics of education consistently identifies the period from the prenatal stage to approximately 6–8 years of age as a sensitive and formative phase of human development. During this time, the brain undergoes rapid structural and functional growth, characterized by the formation and consolidation of neural networks associated with cognition, emotion, behavior, and self-regulation. Early experiences during this period exert foundational effects that shape life-course outcomes, including academic achievement, mental health, social competence, and economic participation.

The sensitivity of early development is explained by the concept of neuroplasticity, which refers to the brain's heightened capacity to adapt in response to environmental input. In this context, environmental quality and experiential richness function as developmental “programming” factors: positive, responsive interactions promote optimal development, whereas adverse, deprived, or chronically stressful experiences may produce long-lasting detrimental effects. Consequently, early childhood represents not only a period of vulnerability but also a phase of unparalleled potential for effective intervention.

The Developmental Origins of Health and Disease (DOHaD) framework provides a robust scientific basis for understanding the long-term impact of early environments, particularly during the prenatal period. According to this framework, biological and psychological conditions during pregnancy—such as maternal nutrition, stress levels, environmental exposure, and access to healthcare—can influence fetal development through biological programming mechanisms. These effects may persist beyond gestation, shaping physiological and neural systems and influencing health and behavior across the lifespan.

When integrated with theories of sensitive and critical periods, the DOHaD framework highlights that brain development does not proceed uniformly over time but instead occurs through specific “windows of opportunity” during which neural systems are especially receptive to environmental influences. During the prenatal stage, processes such as brain structure formation, excitation–inhibition balance, and myelination are particularly active, rendering the fetus highly sensitive to environmental conditions. This explains why early influences—whether

beneficial or harmful—can have enduring consequences well into adulthood.

These scientific insights have broadened traditional conceptions of early education. Rather than focusing exclusively on postnatal learning, early education is increasingly understood as a continuous developmental process that begins prenatally and extends through early childhood. From this perspective, prenatal early education does not replace medical care but complements it by emphasizing the creation of supportive biological, psychological, and social environments that foster healthy development from the earliest stages of life.

In sum, the concept of early development and the sensitivity of early life provides a solid theoretical foundation for expanding the scope of early education. It underscores that investment in early education—including the prenatal stage—constitutes a preventive, efficient, and sustainable strategy for human development, with important implications for policy and practice.

2.2. Prenatal Early Education from Developmental and Sociocultural Perspectives

Building on the recognition of early developmental sensitivity, prenatal early education is increasingly viewed as the starting point of a continuous early education process rather than a collection of fragmented, experience-based practices. This approach is grounded in scientific evidence demonstrating that child development begins before birth and is shaped by complex interactions among biological, psychological, and social factors during pregnancy.

From a developmental science perspective, prenatal early education does not aim to “teach” or transmit knowledge to the fetus. Instead, it focuses on establishing optimal developmental conditions by supporting the maternal and family environment. Research indicates that maternal emotional well-being, stress levels, nutrition, and the quality of social relationships during pregnancy can exert indirect yet profound effects on fetal neurodevelopment and physiology. Consequently, prenatal early education emphasizes enhancing parental awareness and competence in creating stable, supportive biological and psychosocial environments that lay the groundwork for balanced postnatal development.

This perspective clearly distinguishes prenatal early education from purely medical prenatal care. While prenatal healthcare prioritizes risk prevention and biological safety, prenatal early education adds a developmental dimension, focusing on the formation of emotional, social, and cognitive foundations through the adult environment and interactions surrounding the fetus. This complementary relationship does not diminish the central role of healthcare but broadens the understanding of early development in an interdisciplinary and holistic manner.

Beyond its scientific basis, prenatal early education must also be situated within specific sociocultural contexts. Practices related to prenatal care and childrearing are deeply embedded in cultural values, beliefs, and social norms. In

many societies, families—and mothers in particular—play a central role in transmitting emotional, moral, and relational values from the earliest stages of life. From this perspective, prenatal early education should not be viewed as the imposition of external educational models, but rather as a supportive process that helps families critically reflect on, adapt, and refine cultural practices in light of scientific evidence on child development.

A sociocultural approach also highlights the importance of social support networks in early development. Prenatal early education is not solely an individual responsibility of the mother but a collective process involving families, communities, and social institutions such as healthcare, education, and social services. Insufficient social support during pregnancy may increase psychological stress and developmental risk, whereas effective support systems can serve a protective function, mitigating the negative impact of risk factors.

From an educational perspective, integrating prenatal early education into a unified early education framework enables a coherent developmental approach in which postnatal interventions build upon foundations established prenatally. This is particularly relevant for supporting disadvantaged families, where biological and social risk factors often accumulate and interact from the prenatal stage onward.

Thus, approaching prenatal early education from developmental and sociocultural perspectives demonstrates that it is not a peripheral component of early education, but a foundational element that shapes the effectiveness of the entire early childhood development and education process. This perspective provides an essential theoretical basis for developing comprehensive, culturally responsive, and evidence-based early education models.

2.3. Foundational Theories Guiding Early Education

Viewing early education as a continuous developmental process from the prenatal period through early childhood, contemporary developmental theories offer critical conceptual frameworks for understanding environmental influences and guiding early education practice. Although rooted in diverse research traditions, these theories converge on a central premise: child development emerges from dynamic interactions between biological factors and social environments, with the quality of interactions between children and caregivers playing a pivotal role.

Ecological systems theory emphasizes that child development unfolds within nested environmental systems, ranging from the family and educational settings to the broader community and sociopolitical context. From this perspective, early education cannot be reduced to classroom activities alone; rather, it is shaped by family relationships, socioeconomic conditions, educational policies, and cultural values. Accordingly, the effectiveness of early education

depends not only on curriculum content but also on coherence and support across children’s multiple developmental environments, especially during the early years.

Complementing the ecological perspective, attachment theory provides a crucial framework for understanding the role of emotional relationships between children and caregivers in early education. This theory posits that secure attachment relationships—formed through sensitive, consistent, and appropriate caregiver responsiveness—constitute the foundation for emotional and social development, self-regulation, and learning motivation. In early education contexts, attachment theory underscores that interaction quality is not merely pedagogical but also essential for ensuring psychological safety, enabling children to explore and learn effectively.

From a cognitive standpoint, constructivist theory conceptualizes children as active agents in their own learning, constructing knowledge through interaction with the environment and through experience. Early education informed by constructivism emphasizes the creation of rich learning situations that allow children to explore, experiment, and solve problems in developmentally appropriate ways. This approach shifts the focus from content transmission to the design of environments and experiences that naturally foster cognitive development.

Extending constructivism, sociocultural theory highlights the role of social interaction and language in child development. According to this framework, optimal development occurs through meaningful interactions with more knowledgeable others, who guide, support, and scaffold children’s learning. In early education, sociocultural theory emphasizes the importance of interactive activities that promote communication, collaboration, and shared meaning-making, positioning teachers and parents as learning partners.

Additionally, the theory of developmental cascades offers an important lens for understanding the long-term impact of early education interventions. This theory suggests that positive changes in early development can generate cascading effects across multiple developmental domains over time. High-quality early education interventions thus yield not only short-term benefits but also enduring improvements in academic outcomes, behavior, and social adaptation.

Despite differences in focus and analytical level, these theories converge on a core principle: the quality of interaction between children and their social environment is central to early education effectiveness. The concept of “serve and return” interaction serves as a unifying framework, emphasizing timely, appropriate, and meaningful adult responses to children’s cues. This concept underpins a shift in early education from a content-centered approach to a process-oriented focus, prioritizing relationships and interaction quality during the early years.

In sum, foundational developmental theories not only explain mechanisms of child development but also guide

comprehensive, child-centered early education practices that recognize the critical roles of families, schools, and communities. These theoretical insights provide a robust basis for designing effective early education models that are culturally responsive and contextually appropriate.

2.4. Early Education as an Investment in Human Capital

Beyond insights from developmental science and psychology, early education is strongly supported by economic perspectives, particularly human capital theory. From this viewpoint, education is not merely a social welfare activity but a strategic investment aimed at enhancing productivity, adaptability, and quality of life. Early education is considered the most cost-effective investment across the educational lifespan, as its impacts occur during a sensitive period when foundational capacities are being formed.

Contemporary economic models highlight the cumulative and interdependent nature of human development. Early-acquired skills—including cognitive abilities, socio-emotional competencies, and self-regulation—serve not only as intrinsic assets but also as prerequisites for acquiring more complex skills later in life. Investment in early education thus produces a “multiplier effect,” whereby early benefits compound over time, while later interventions often entail higher costs with diminishing returns.

A key argument within the human capital framework is the preventive function of early education. Rather than remediating difficulties after they have become entrenched, early education aims to prevent or mitigate developmental disadvantages from the outset. Empirical studies demonstrate that investment in early education can reduce future demand for special education, healthcare, and social welfare services, while improving educational attainment, labor market participation, and social behavior in adulthood. Accordingly, early education yields benefits not only for individuals but also for communities and societies at large.

Early education is also recognized as a powerful tool for reducing inequality and promoting social equity. Economic research indicates that children from disadvantaged backgrounds often experience cumulative risk from early life, including limited access to nutrition, stimulation, and educational resources. High-quality early education programs can function as compensatory mechanisms, narrowing developmental gaps among children. These effects are particularly pronounced when interventions are initiated early, sustained over time, and integrated with health and family support services.

From a policy perspective, conceptualizing early education as an investment in human capital necessitates a shift in resource allocation and evaluation frameworks. Rather than viewing early education as a short-term expenditure, policymakers must account for its long-term and intergenerational returns. This perspective is especially relevant as nations seek sustainable development strategies in

which human capital quality increasingly determines competitiveness and social prosperity.

When integrated with developmental science and educational theory, the human capital approach reinforces the notion that early education is not merely a pedagogical concern but a comprehensive human development strategy requiring coordinated action across education, health, social welfare, and family policy domains. Investment in early education—including the prenatal period—should therefore be recognized as a cornerstone of long-term development policy.

3. OVERVIEW OF EARLY EDUCATION IN VIETNAM

3.1. Awareness and Practice of Prenatal Early Education

In Vietnam, prenatal early education has gained increasing attention in public discourse and media. In practice, however, it is often understood narrowly, focusing on isolated activities such as playing music for the fetus, talking to the unborn child, or nutritional supplementation, frequently lacking a coherent scientific and pedagogical framework.

Most prenatal early education-related activities are situated within reproductive healthcare rather than being integrated with developmental science and educational theory. This fragmentation results in inconsistencies in objectives, content, and methods, leading many parents to rely on intuition or commercialized practices, with potential risks associated with inappropriate application.

3.2. Early Education within the Early Childhood Education System

In recent years, Vietnam’s early childhood education system has made notable progress in access, curriculum reform, and infrastructure development. The current national curriculum emphasizes holistic development and a child-centered approach, aligning with many contemporary educational perspectives.

Nevertheless, the quality of early education remains uneven, particularly across urban, rural, mountainous, and disadvantaged regions. In some early childhood education settings, teaching practices remain formalistic and rigid, with insufficient emphasis on the quality of teacher–child interaction—a core element in early development theories.

Moreover, pressures related to school readiness in certain contexts have led to early academicization, reducing opportunities for play, exploration, and experiential learning, which are fundamental to children’s cognitive, social, and emotional development.

3.3. Family Roles and Educational Collaboration

Families constitute children’s first and most influential developmental environment, particularly during pregnancy and the first three years of life. However, in Vietnam’s early education practice, family educational roles

are not yet systematically integrated into early childhood education programs.

Collaboration between families and schools often remains limited to daily care communication, rather than developing partnerships grounded in scientific understanding of child development. This limitation constrains the effectiveness of early education interventions, especially for children from disadvantaged backgrounds.

4. APPLICATIONS OF EARLY EDUCATION IN VIETNAMESE PRACTICE

4.1. Family-Based and Prenatal Early Education

In prenatal and early infancy education, applications focus on reducing biological risk factors, providing developmentally appropriate sensory stimulation, practicing serve-and-return interactions between parents and children, and creating family environments that support autonomy, movement, and exploration.

Family-based approaches such as Montessori emphasize environmental preparation over direct intervention and respect children’s natural developmental rhythms.

4.2. Applications in Early Childhood Education Settings

Within early childhood education institutions, models such as Montessori, Reggio Emilia, integrated arts education, and STEAM education have demonstrated positive effects on children’s cognitive, socio-emotional development, and learning motivation. These models share a child-centered philosophy and emphasize learning through play and experience.

4.3. Teacher Quality and Educational Collaboration

The quality of early education is strongly influenced by teachers’ professional competence, attitudes, and interaction skills. Research indicates that both initial teacher preparation and continuous professional development positively affect interaction quality and child development outcomes.

Equally important is collaboration among families, schools, and communities, which is essential for sustaining long-term effectiveness. International policies emphasize integrated, multi-sectoral early education systems that ensure continuity across developmental stages.

5. DIRECTIONS AND RECOMMENDATIONS FOR THE DEVELOPMENT OF EARLY EDUCATION IN VIETNAM

5.1. Policy-Level Directions

First, the early education policy framework should be expanded to ensure continuity from the prenatal period to six years of age, recognizing prenatal education as the starting point of early education. This expansion does not aim to academicize prenatal education, but rather to provide a

coherent, evidence-based orientation for programs that support parents during pregnancy.

In addition, greater integration of early education with healthcare, nutrition, and social work services is needed, moving toward a comprehensive child development support model. Policies should prioritize children and families in disadvantaged circumstances in order to reduce inequalities in developmental opportunities from the earliest stages of life.

5.2. Directions at the Level of Early Childhood Education Institutions

At the institutional level, a fundamental shift is required—from an emphasis on organizing activities to improving the quality of interactions between teachers and children. Educational activities should be designed flexibly, allowing children ample opportunities to play, explore, communicate, and develop emotional self-regulation skills.

The application of advanced early education models such as Montessori, Reggio Emilia, integrated arts education, or STEAM should be selective and context-sensitive, focusing on adapting appropriate components rather than applying models mechanically or commercializing them.

At the same time, priority should be given to strengthening teachers’ professional capacity, not only in pedagogical skills but also in developmental science, neuroscience, educational communication, and family engagement. Teacher education and professional development should be continuous, practice-oriented, and supported through on-site mentoring and guidance.

5.3. Directions at the Family and Community Levels

Families should be recognized as central educational partners in both prenatal education and early childhood education. Accordingly, evidence-based parent education programs should be developed, with a focus on:

- Creating a positive emotional environment during pregnancy;
- Practicing responsive “serve-and-return” interactions with children from birth;
- Respecting children’s individual developmental pace;
- Supporting learning through play and experiential activities.

Communities and social organizations can play a supportive role by providing resources, learning spaces, counseling services, and science-based communication, thereby contributing to the development of a sustainable early education ecosystem.

6. CONCLUSION

Early education, including the prenatal period, is grounded in a robust scientific foundation supported by evidence from developmental science, neuroscience, psychology, and the economics of education. The period from before birth through the early years of life represents a

sensitive developmental window during which the quality of environments and interactions can exert lasting influences on children’s holistic development.

The Vietnamese context demonstrates that early education has achieved important progress; however, gaps remain between theoretical foundations and practical implementation. These gaps are particularly evident in the limited integration of prenatal early education, insufficient attention to interaction quality, and the underutilization of families as educational partners. Developing early education through a comprehensive, continuous approach—from the prenatal stage through early childhood education—constitutes a critical strategy for enhancing human capital quality and promoting long-term social equity.

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