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Designing experiential learning environments for preschool children toward competency-based development

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Abstract--This paper explores the design of experiential learning environments for preschool children in relation to competency based education. Drawing from Montessori principles and modern constructivist perspectives, the study discusses how experiential learning supports the development of children's cognitive, emotional, and social competencies through play, exploration, and reflection. It identifies essential design principles such as child centeredness, spatial flexibility, emotional safety, cultural connection, and sensory or digital enrichment. The paper also addresses implications for early childhood education in Vietnam, emphasizing the importance of curriculum reform, teacher professional growth, and community engagement. A conceptual model is proposed to link experiential learning processes with competency outcomes, offering practical guidance for improving the quality and relevance of preschool education.

Keywords--Experiential learning, Preschool education, Competency based education, Montessori approach, Learning environment design, Vietnam.

1. Introduction

Early childhood education forms the foundation for lifelong learning and development, shaping children's intellectual, emotional, and social growth. In



contemporary educational discourse, there has been a marked shift from content-centered instruction to competency-based learning, emphasizing the cultivation of holistic skills such as creativity, communication, collaboration, and self-regulation. Within this transformation, experiential learning environments, which are designed to promote engagement, exploration, and discovery, have emerged as essential components in supporting competency-based development for preschool children. Such environments allow young learners to acquire knowledge and skills through active participation, experimentation, and reflection, thereby fostering the cognitive and socio-emotional competencies that traditional methods often overlook.

The theoretical roots of experiential learning in early childhood education are closely associated with the ideas of Maria Montessori, who believed that education should nurture children's natural tendencies toward curiosity, exploration, and self-construction. In *The Advanced Montessori Method* (1917) and *The Absorbent Mind* (1949), Montessori described the child as an active learner whose mind absorbs experiences from the surrounding environment. She proposed the concept of a prepared environment, a structured yet flexible space that encourages autonomy, sensory exploration, and purposeful activity, where teachers act as guides rather than transmitters of knowledge (Montessori, 1917, 1949). In such environments, learning emerges through direct interaction with materials and social contexts, aligning naturally with experiential and competency-based pedagogies.

Empirical research has reinforced the effectiveness of experiential and Montessori-inspired environments in fostering children's personal, cognitive, and social development. Flynn (1991) found that children enrolled in Montessori programs exhibited higher levels of independence, concentration, and problem-solving ability compared to peers in traditional classrooms. Similarly, Svanhalova (2017) observed that Montessori-based preschools supported the development of social competencies such as empathy, cooperation, and respect for others through structured experiential activities. Özerem and Kavas (2013) emphasized that the Montessori approach nurtures not only academic readiness but also emotional and behavioral regulation, demonstrating its comprehensive contribution to early learning and development. Collectively, these studies affirm that experiential environments promote active learning, intrinsic motivation, and self-regulated growth, which are central elements of competency-based education. Recent research has further expanded the understanding of experiential learning by connecting it to modern educational paradigms such as competency-based education and STEM learning. Çakır and Yalçın (2022) demonstrated that Montessori-based STEM activities positively influenced pre-service teachers' lifelong learning orientations, suggesting that experiential approaches enhance both student and teacher competencies. Likewise, Maciã-Gual and Domingo-Peñafiel (2021) highlighted the importance of teacher preparation in designing and managing prepared environments that foster autonomy, creativity, and inquiry in early childhood education. These studies reveal the interdependence between pedagogy, environment, and teacher competence in achieving the aims of competency-based education.

Building on these theoretical and practical perspectives, the present paper seeks to synthesize the foundational principles of experiential learning and propose a conceptual framework for designing experiential learning environments that support competency-based development in preschool education. The following sections examine the theoretical background of experiential learning, explore its relationship with competency-based education, and present guiding principles for designing environments that promote autonomy, creativity, and lifelong learning from the earliest stages of human development.

2. Theoretical Foundations

2.1. Experiential Learning in Early Childhood Education

Experiential learning emphasizes the idea that knowledge is constructed through direct engagement and reflection on experience. For young children, learning occurs most effectively when they can interact with their environment, manipulate materials, and observe the consequences of their actions. This view aligns with the philosophy of Maria Montessori, who maintained that education should respect the child's innate curiosity and capacity for self-directed learning (Montessori, 1917, 1949). Montessori described the preschool environment as a prepared space that invites exploration and independence, where each learning experience becomes an opportunity for children to internalize knowledge through their senses and motor activity.

Contemporary interpretations of experiential learning in early childhood education build upon the constructivist tradition of Dewey, Piaget, and Vygotsky, emphasizing that children learn best by doing, reflecting, and interacting within social contexts. Within this framework, play, exploration, and observation become integral to cognitive and socio-emotional development. Studies have demonstrated that Montessori-based experiential environments help children develop independence, curiosity, and creativity through self-paced, purposeful activities (Özerem & Kavas, 2013; Flynn, 1991). Such environments foster autonomy and intrinsic motivation, reinforcing the idea that learning emerges naturally from meaningful experience rather than external instruction.

The teacher's role in experiential education is that of a facilitator who observes, supports, and subtly guides learning rather than dictating it. This approach cultivates critical thinking and problem-solving skills, providing a foundation for lifelong learning. As Macià-Gual and Domingo-Peñafiel (2021) noted, the prepared environment and teacher competence form a dynamic partnership in ensuring that experiential learning contributes effectively to children's holistic development.

2.2. Competency-Based Education in Preschool Contexts

Competency-based education (CBE) represents a paradigm shift in early childhood education from focusing on content acquisition to emphasizing the development of abilities, attitudes, and transferable skills. In preschool settings, competencies encompass cognitive, emotional, social, and physical dimensions that enable children to act effectively in varied contexts. Rather than measuring learning through time spent or rote memorization, CBE values demonstrable outcomes and personal growth.

In early childhood education, this approach translates into nurturing competencies such as communication, collaboration, self-regulation, creativity, and problem-solving. These are achieved through flexible learning pathways that respond to each child's pace and interests. Montessori's educational philosophy naturally aligns with this perspective because it prioritizes individualized learning and the progressive mastery of skills through hands-on activities (Montessori, 1949). Research on Montessori classrooms has shown that children's competencies grow through repeated interaction with carefully designed materials and tasks that promote self-correction and reflection (Flynn, 1991).

Implementing competency-based approaches in preschool also requires environments that promote autonomy and active engagement. Teachers act as designers of learning experiences that integrate play, inquiry, and collaboration, allowing children to demonstrate competencies across multiple domains. According to Macià-Gual and Domingo-Peñafiel (2021), teacher preparation for competency-based learning involves understanding how to create environments that balance structure with freedom, encouraging children to build skills that transcend academic boundaries.

2.3. Relationship between Experiential Learning and Competency Development

Experiential learning and competency-based education share a common philosophical foundation: both emphasize the active participation of learners and the meaningful application of knowledge. In early childhood education, experiential experiences serve as the medium through which competencies are developed and demonstrated. When children engage in purposeful activities such as building, observing, experimenting, or creating, they practice the core competencies of critical thinking, collaboration, communication, and problem-solving.

Montessori education exemplifies this integration. By organizing the learning environment into sensorial, practical life, and cognitive areas, it ensures that each child's experience contributes directly to the development of key competencies (Montessori, 1917; Özerem & Kavas, 2013). These experiences allow children to make connections between abstract concepts and real-world applications, fostering deep understanding. The iterative process of doing, reflecting, and adapting mirrors the cyclical nature of both experiential learning and competency acquisition.

Moreover, experiential learning environments encourage children to take ownership of their learning process, thereby cultivating metacognitive awareness and self-regulation. As Çakır and Yalçın (2022) observed in their study of Montessori-based STEM activities, experiential learning fosters continuous curiosity and the capacity for lifelong learning, which are central goals of competency-based education. Thus, experiential learning provides not only the pedagogical means but also the developmental conditions for competency-based growth in preschool education.

3. Principles for Designing Experiential Learning Environments

Principle 1: Child-centered and inclusive environment

A child-centered environment recognizes each child as an active participant in their own learning journey. It values autonomy, agency, and the right of every child to explore according to personal interest and developmental readiness. Maria Montessori (1949) emphasized that education must be tailored to the “absorbent mind” of the child, allowing freedom within a structured context that encourages independent discovery. Inclusivity extends this philosophy by ensuring that all children, regardless of ability or background, can access meaningful experiences that support their growth. Teachers act as facilitators who observe individual needs and adapt materials or tasks to accommodate diverse learners (Macià-Gual & Domingo-Peñafiel, 2021).

Principle 2: Integration of play, exploration, and reflection

Play serves as the primary medium of learning in early childhood. Experiential environments should integrate play with exploration and reflection to transform spontaneous activities into opportunities for knowledge construction. Through play, children experiment, negotiate, and solve problems, which enhances both cognitive and social competencies (Özerem & Kavas, 2013). Reflection, guided gently by the teacher, helps children make sense of their experiences and develop metacognitive awareness. As Montessori (1917) noted, meaningful activity followed by contemplation strengthens both understanding and self-discipline. Integrating these elements promotes deep, sustained engagement in learning.

Principle 3: Flexibility and openness of space

Physical space profoundly influences children’s learning behavior. Flexible and open environments encourage freedom of movement, collaboration, and creativity. Montessori classrooms traditionally avoid rigid seating arrangements and instead provide modular spaces that invite choice and adaptability (Montessori, 1917). Open areas for group projects coexist with quiet corners for individual concentration, reflecting the balance between independence and community participation. Such spatial flexibility supports multiple forms of experiential activity, from sensory exploration to cooperative construction, ensuring that the learning space adapts to the evolving needs of children and teachers.

Principle 4: Safety, emotional comfort, and autonomy

Emotional well-being is a prerequisite for meaningful learning. An experiential environment must provide both physical safety and psychological comfort to encourage curiosity and risk-taking in learning. When children feel secure, they are more likely to explore, express emotions, and persist in problem-solving. Montessori (1949) viewed freedom and discipline as complementary: children learn self-regulation and responsibility when given autonomy within clearly defined boundaries. Teachers cultivate a culture of respect, empathy, and mutual trust, allowing children to act independently while feeling supported. This atmosphere of safety and autonomy fosters confidence, resilience, and social competence.

Principle 5: Contextualization and connection to real life and local culture

Experiential learning becomes most effective when it is grounded in children's lived experiences and cultural contexts. Connecting classroom activities to real-life situations enables children to see the relevance of their learning and develop a sense of belonging. Contextualization can involve outdoor exploration, interaction with community members, or engagement with local traditions and natural environments. As Flynn (1991) observed, experiences that reflect authentic social roles enhance children's personal and cognitive development. Embedding cultural and environmental elements into learning not only supports competency formation but also nurtures identity, empathy, and respect for diversity.

Principle 6: Digital and sensory-enriched environment

In the modern era, experiential learning environments can be enhanced by integrating appropriate digital tools that extend children's sensory engagement and curiosity. Technology should not replace direct experience but complement it by providing new forms of exploration, such as interactive storytelling, virtual field trips, or digital documentation of children's projects. Çakır and Yalçın (2022) found that integrating Montessori-inspired STEM activities using digital media enhances motivation and creativity while fostering critical thinking. Similarly, sensory-rich materials, textures, sounds, scents, and colors stimulate multiple modalities of perception, supporting the development of fine motor skills and cognitive flexibility. A digital and sensory-enriched environment thus broadens the range of experiences available for competency-based growth.

4. Implications and Recommendations

4.1. Implications for Early Childhood Education in Vietnam

First, the shift toward experiential learning represents a necessary response to the goals of the Vietnamese national education reform, which emphasizes holistic and lifelong learning. Preschool education in Vietnam has traditionally focused on teacher-led activities and structured routines, leaving less room for exploration and creativity. The experiential approach aligns with the Ministry of Education and Training's (MOET) direction to develop children's autonomy, communication, cooperation, and problem-solving abilities through active participation rather than passive instruction.

Second, implementing competency-based experiential environments requires a reconceptualization of the teacher's role. In contrast to the traditional model, teachers are not the primary source of knowledge but rather facilitators, observers, and designers of meaningful experiences. This shift demands new forms of professional competence, including reflective practice, classroom observation, and adaptive pedagogical planning. Teacher education institutions in Vietnam therefore need to strengthen courses and training modules that integrate experiential and competency-based pedagogies.

Third, the Vietnamese preschool system must address challenges related to physical infrastructure and material resources. Many preschools, particularly in rural or mountainous areas, lack flexible spaces and diversified learning materials that can support sensory and experiential learning. The integration of locally

available and culturally relevant materials can help bridge these gaps while preserving the richness of Vietnamese heritage.

Finally, cultural values play a crucial role in shaping experiential learning in Vietnam. The collectivist orientation of Vietnamese society, which emphasizes cooperation, respect, and harmony, provides a strong foundation for social and emotional competencies. Designing learning environments that build on these values can make experiential education both culturally relevant and pedagogically effective.

4.2. Recommendations for Policy and Practice

Integrate experiential learning principles into national early childhood curricula. MOET should provide explicit guidelines for incorporating experiential and competency-based approaches into preschool curricula. These guidelines should define core competencies for preschool children and illustrate how they can be fostered through play, exploration, and reflection (Özerem & Kavas, 2013). Curriculum frameworks should move beyond content delivery to emphasize learning processes and child agency.

Redesign preschool learning spaces to support active engagement. Schools should be encouraged to transform static classrooms into dynamic environments that include flexible zones for exploration, sensory play, quiet reflection, and social interaction. Montessori's (1917, 1949) model of the prepared environment offers practical insights into how spatial design can enhance autonomy and discovery. Local adaptation should emphasize natural materials and community-based learning resources to make spaces both affordable and contextually meaningful.

Enhance teacher professional development in experiential pedagogy. Teachers should receive continuous training focused on designing, observing, and facilitating experiential learning activities. Professional learning communities can be established to allow teachers to share practices, reflect on experiences, and co-develop locally relevant models of experiential learning. Training should also integrate digital literacy, equipping teachers to use technology to document children's experiences and extend learning beyond the classroom (Çakır & Yalçın, 2022).

Promote collaboration between families, communities, and preschools. Experiential learning is most powerful when it extends into children's daily lives. Collaboration with parents and local organizations can provide opportunities for real-world learning experiences such as field visits, cultural celebrations, or environmental projects, that reinforce competencies developed in school. This partnership also helps build continuity between home and school, ensuring that children experience learning as a coherent, meaningful process.

Encourage research and innovation in Vietnamese contexts. Universities and research institutes should conduct applied studies on the impact of experiential learning environments in diverse Vietnamese settings, including urban, rural, and ethnic minority preschools. Research findings can guide evidence-based policy and the development of localized models of competency-based experiential education.

Integrate digital and sensory learning innovations. In the era of digital transformation, preschools in Vietnam can selectively use technology to enrich children's experiences. Digital storytelling, interactive exploration tools, or virtual field trips can complement traditional sensory play, making learning more engaging and accessible. However, technology should always serve as a bridge to deeper human interaction and experiential understanding rather than a substitute for it.

5. Conclusion

This paper has examined the theoretical and practical aspects of designing experiential learning environments for preschool children within the framework of competency based education. Grounded in Montessori philosophy and supported by contemporary educational theories, the study highlights that meaningful learning for young children takes place through active engagement, reflection, and social interaction. Experiential learning environments allow children to explore, experiment, and construct understanding independently, contributing to both cognitive and socio emotional development.

The discussion shows that competency based education and experiential learning share the same foundation in promoting active participation, self regulation, and the application of knowledge in authentic contexts. The proposed principles, including child centered design, the integration of play and reflection, flexibility of learning space, emotional safety, cultural relevance, and sensory or digital enrichment, provide valuable guidance for teachers and policymakers seeking to create dynamic and inclusive preschool learning environments.

For Vietnam, moving toward experiential and competency oriented education requires comprehensive transformation in curriculum development, teacher training, school facilities, and collaboration with families and communities. When these elements are aligned, experiential environments can reshape preschool education into an ecosystem that nurtures creativity, empathy, and lifelong learning. By harmonizing international approaches with Vietnamese cultural values, the country can develop a distinctive and sustainable model of experiential education that supports both national identity and global educational trends.

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