An Experiential Learning Management Model (ELMM) for Early Childhood Based on Social Cognitive Theory and Constructivist Theory

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Abstract

This study constructs an Experiential Learning Management Model (ELMM) for early childhood education, rooted in social cognitive theory (SCT) and constructivist theory. ELMM integrates six key modules: Experiential Learning, Metacognitive Monitoring, Dynamic Assessment, Contextualized Learning, Social Interaction, and Double-Loop Learning Paths. The model emphasizes the synergy of practice, reflection, and strategic self-regulation to enhance early cognitive, social, and emotional development. The study addresses common implementation challenges, including limited metacognitive skills, difficulties in dynamic assessment, and task complexity, offering solutions such as simplified tools, guided training, and progressive task design. This model aims to overcome the limitations of traditional experiential learning by incorporating structured feedback and contextual relevance. ELMM provides a cost-effective, adaptable framework to support holistic child development, fostering lifelong skills and adaptability in diverse educational settings.

Keywords: experiential learning management model (ELMM), social cognitive theory (SCT), constructivist theory, early childhood education, dynamic assessment

1. Introduction

Early childhood education represents a pivotal phase in the development of individuals' social and personality traits, exerting profound influence on their future growth trajectories. Social and personality characteristics, as integral components of individual competence, are progressively developed through processes of socialization (Wagner et al., 2021). The preschool years mark the inception of socialization, during which children, under the influence of environmental factors and educational practices, begin to form initial emotions and attitudes toward people, events, and objects through interactions with their surroundings. These interactions lay the foundation for behaviors, character traits, and personality. Before the age of six, the fundamental patterns of behavior and personality take shape (Caspi & Roberts, 2001). During this period, children develop qualities such as politeness, cooperation, and a sense of responsibility, which significantly enhance their ability to adapt to social life and future growth. The developmental outcomes of this stage have long-term effects, shaping children's social and personality development (Saracho, 2023). Conversely, the absence of appropriate social education during early childhood may lead to difficulties in subsequent stages of socialization, including behavioral problems, emotional disturbances, and even personality disorders (McTaggart et al., 2022). The acquisition of fundamental behaviors in preschool, such as sharing and adherence to rules, is crucial for children's overall growth, further underscoring the enduring value of early childhood education.

High-quality early childhood education plays a vital role in promoting children's social development and shaping their personality traits. Appropriately designed social education can significantly enhance children's social skills, self-regulation, confidence, and cooperative abilities (Øzerk et al., 2021). Conversely, adverse educational environments may contribute to the development of negative social traits, such as withdrawal, aggression, and emotional disorders (Isaac, 2024). The preschool years also represent the most rapid period of cognitive development, serving as a foundational phase for lifelong cognitive abilities. For example, infants as young as three months can engage in various forms of learning activities (Paczynska-Jedrycka, 2020). The ages of 4 to 7 are considered critical

for visual recognition and shape perception, while vocabulary acquisition peaks between the ages of 5 and 6 (Brooks, 2022). This period is also a key stage for the formation of non-cognitive qualities, such as curiosity and creativity. However, this potential can only be realized through the provision of suitable educational environments. Monotonous and impoverished environmental stimuli hinder cognitive development, while enriched sensory experiences and guided educational interventions significantly enhance it. The Head Start program in the United States provides compelling evidence that high-quality early childhood education can markedly improve the cognitive, linguistic, and logical abilities of disadvantaged children, with long-term positive impacts extending into adulthood (Hindman et al., 2010; Klein et al., 2000). Moreover, the quality of early childhood education directly affects the formation of children's learning attitudes, habits, and motivation, thereby exerting a profound influence on their lifelong learning and cognitive development (Astuti & Sandra, 2021).

Constructivist theory posits that children actively construct knowledge through interaction with their environment, emphasizing the role of experiences, exploration, and problem-solving in cognitive development. Rooted in the work of Piaget and Vygotsky, constructivism highlights the importance of creating meaningful learning experiences that are contextually relevant and developmentally appropriate. Piaget's theory underscores the importance of children's active engagement in assimilating and accommodating new information to expand their cognitive structures, while Vygotsky's perspective emphasizes the critical role of social interactions and cultural tools in learning. The concept of the Zone of Proximal Development (ZPD) introduced by Vygotsky is particularly relevant, suggesting that children can achieve higher levels of cognitive and social competence with the guidance of more knowledgeable others. Constructivist approaches in early childhood education encourage inquiry, collaboration, and reflection, allowing children to build their understanding through authentic and hands-on activities. By fostering an environment rich in opportunities for exploration and guided discovery, constructivist pedagogy supports the holistic development of children's cognitive, social, and emotional capacities, forming the foundation for lifelong learning.

Individuals acquire knowledge and skills through observation, imitation, experience, and social interaction (De Felice et al., 2023). During the early childhood education stage, children are at the initial phase of socialization. Their learning characteristics align closely with the principles of social cognitive theory (SCT), as they primarily gain social skills and life experiences by observing and imitating the behaviors of adults and peers (Van Deth et al., 2011). Observational learning is particularly prominent in preschool education, where children quickly establish fundamental behavioral patterns by observing others' actions and their outcomes (Coyne et al., 2020). Furthermore, self-efficacy, defined as an individual's belief in their own abilities, begins to take root during this stage. Positive feedback and appropriate encouragement help children gradually develop the confidence of "I can do it," thereby enhancing their initiative in social, cognitive, and practical activities (Rizzi et al., 2020). The triadic reciprocal interaction in SCT emphasizes that a child's development results from the continuous interplay among environment, individual, and behavior.

Traditional experiential learning relies heavily on high-quality educational environments and teacher guidance, making it challenging to implement such activities in regions with average education levels (Kolb & Kolb, 2017). Remote areas often face shortages of adequate activity spaces, appropriate learning materials, and professional teacher training. Traditional experiential learning may inadvertently increase children's dependency on teachers or peers, hindering the development of their autonomous learning abilities, especially in the absence of diverse educational activity designs (Girvan et al., 2016). High time and management costs also present challenges, as teachers must invest considerable effort in activity design, organization, and feedback (Levine & Marcus, 2010). Consequently, this study aims to construct a novel Experiential Learning Management Model (ELMM) tailored for preschool education, which seeks to promote children's development from a structured and cost-effective perspective.

2. Literature Review

2.1 Experiential Learning

Experiential learning is a teaching method that emphasizes acquiring new knowledge and skills through personal participation and hands-on experiences. In Experiential Learning: Experience as the Source of Learning and Development, Kolb (2014) proposed that the process of experiential learning is built on two foundational dimensions: perception and comprehension, and integration and extension.

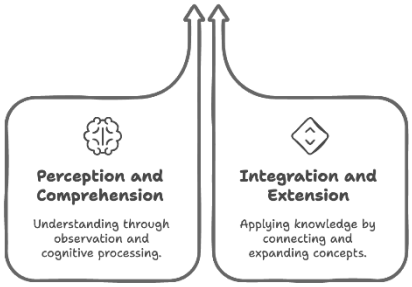

Figure 1. Kolb's Foundations of Experiential Learning

Perception and comprehension represent the first structural dimension of experiential learning. Perception refers to the process through which individuals gain knowledge by relying on direct and concrete experiences, such as obtaining information through real-world objects or scenarios (Taneja et al., 2022). This process does not require complex thinking, such as perceiving colder weather or sensing an awkward atmosphere. Comprehension, on the other hand, involves deep reflection and the formation of cognition through conceptualization and logical analysis, requiring higher-order thinking. For example, understanding profound lessons or gaining philosophical insights from a specific event exemplifies comprehension.

Integration and extension constitute the second dimension of experiential learning. Integration refers to forming cognition through introspection and narrowing the focus to an object's internal characteristics and attributes (Jefferson, 2012). For instance, observing a flower by examining its color, shape, and structure represents integrated cognition. Conversely, extension involves expanding the cognitive scope by situating the object within a broader context through interaction with the external world. For example, studying a flower by considering its role in the ecosystem and its relationship with other flowers or its environment illustrates extended cognition. In the context of learning, integration emphasizes understanding, while extension focuses on application.

Experiential learning is highly valuable in early childhood education, enabling children to actively participate in the learning process and closely aligning learning content with their interests and needs. This method encourages children to explore areas of personal interest and solve problems in authentic settings, fostering a deeper understanding of knowledge (Duffy, 2006). By emphasizing hands-on activities and real-world experiences rather than rote memorization, experiential learning allows children to learn through purposeful practice and take risks to expand their problem-solving abilities (Piščalkienė & Lottrup, 2019). Outdoor experiential learning, in particular, is considered especially important for young children as it offers opportunities to explore, discover, and interact with the environment, providing rich learning experiences through direct engagement (Jose et al., 2017). Integrating experiential learning into early childhood education curricula can significantly enhance children's cognitive development and problem-solving skills. In school environments, creating vibrant, community-based learning experiences enables children to participate in meaningful activities, supporting their growth and development (Wesley & Buysse, 2003).

However, Kirschner et al. (2010) criticized experiential learning for often lacking adequate instructional guidance. They cited meta-analyses of problem-based learning (PBL), which indicated that while PBL can enhance students' problem-solving abilities, it often performs poorly in foundational science assessments, efficiency, and cost-effectiveness. It requires longer learning durations and yields limited outcomes. They concluded that, based on evidence from controlled studies, direct and explicit instructional guidance is more effective for novice and intermediate learners. Even for students with extensive prior knowledge, guided learning environments often produce outcomes comparable to or better than unguided approaches. Nevertheless, effective implementation of experiential learning requires significant adjustments to teaching methods, detailed planning, and adequate preparation for both teachers and students. Proponents argue that with appropriate teacher guidance and intervention, experiential learning can address its potential shortcomings. In particular, assessments should measure the skills that experiential learning aims to develop, rather than focusing solely on traditional evaluation methods that emphasize memorization and understanding.

2.2 Social Cognitive Theory

SCT explores how individuals acquire information from their social environment and form cognition by understanding their own and others' behaviors (Schunk & DiBenedetto, 2020). The theory emphasizes three core concepts: triadic reciprocal determinism, observational learning, and self-efficacy. Triadic reciprocal determinism, introduced by Bandura, posits that environmental factors, individual attributes, and behaviors interact dynamically, influencing one another (Schiavo et al., 2019). Personal beliefs and motivations guide behaviors, while the outcomes of behaviors feedback into cognitive and emotional processes. Additionally, behavior serves as a mediator between individuals and their environment, enabling adjustments to meet personal needs.

Observational learning is a critical component of SCT, where individuals acquire new skills or modify existing behaviors by observing others' actions and their outcomes. This process involves four essential stages: attention, retention, production, and motivation, all of which are indispensable for successful learning (Swearer et al., 2014). Self-efficacy, another core concept, refers to individuals' beliefs in their ability to interact effectively with their environment. High self-efficacy fosters resilience and confidence when facing challenges, whereas low self-efficacy often leads to avoidance and withdrawal (Chen, 2015). Self-efficacy develops through factors such as mastery experiences, vicarious experiences, verbal persuasion, and physiological states, highlighting the importance of fostering students' ability to confront challenges and enhance self-efficacy through direct experiences in education.

Children begin to understand their relationships with others, as well as societal rules and values, during early childhood education (Wyer Jr & Srull, 2014). Social cognition refers to children's understanding of the social world, encompassing aspects such as self-awareness, understanding others, recognizing social rules, and forming values. Self-awareness involves children identifying their own identity, characteristics, and abilities, gradually developing this understanding through observation and comparison. Understanding others includes perceiving the emotions and intentions of family members, friends, and teachers, and learning how to establish relationships. Recognition of social rules pertains to understanding norms such as sharing and helping, which enable children to adapt to social life. Value formation involves children developing basic concepts such as fairness and kindness, allowing them to make judgments and choices based on these values.

A key aspect of SCT, observational learning, is particularly relevant in the context of children's media consumption. Interestingly, television can act as an important educator for social behaviors and problem-solving strategies (Desmond, 1978). However, children's comprehension of television content depends on developmental factors such as role-playing abilities and program preferences. This indicates that children's ability to learn from media varies with individual differences and age, reinforcing the role of observational learning as an integral part of social cognitive development. Social cognition also involves understanding group dynamics and biases. For example, research shows that children under 10 years of age typically do not exhibit pronounced national biases or in-group favoritism, challenging traditional theories that suggest biases are inherent in early cognitive development (Rutland, 1999). This underscores the role of social categorization and group norms in shaping children's social cognition, aligning with SCT’s emphasis on the influence of social environments in cognitive development.

Theory of Mind (ToM), another crucial dimension of social cognition, refers to the ability to understand others' mental states. Research indicates that children's understanding of false beliefs is closely linked to their social competence, highlighting ToM as a significant predictor of social behavior (Capage & Watson, 2001). Understanding social cues and others' mental states enhances children's ability to navigate social interactions. Parental guidance further promotes cognitive development, as evidenced by the impact of parental involvement on children’s arithmetic strategies, illustrating the dynamic nature of parent-child interactions (Bjorklund et al., 2004). Additionally, interventions such as social skills training (SST) must integrate cognitive, emotional, and behavioral components to achieve effectiveness (Spence, 2003). Collaborative problem-solving, another application of SCT, emphasizes the foundational role of social interaction in learning and cognitive growth. Social play, for example, provides children with rich opportunities for cooperative interactions, which are essential for developing problem-solving skills (Ramani & Brownell, 2014). This aligns with SCT's assertion that social interaction is the basis for learning and cognitive development.

3. Construction of Experiential Learning Management Model (ELMM)

3.1 SCT Support for the ELMM

Learning is a social process in which individuals develop cognitive abilities through interactions with their social environment using cultural tools such as language and symbolic systems. Learners engage in a dynamic learning

process embedded in social interactions. Learning is mediated by cultural tools, including language, technology, and activity systems (Rybacki, 2009). Additionally, learners progress through cycles of concrete experiences, reflection, abstract conceptualization, and active experimentation (Coulson & Harvey, 2013). The experiential learning process relies on social interaction to provide feedback, which aligns closely with the concept of the Zone of Proximal Development (ZPD) in Sociocultural Theory (Siyepu, 2013). In ZPD, learners can accomplish tasks beyond their independent capabilities through guidance and collaboration with others.

Metacognitive monitoring refers to learners' ability to oversee and regulate their cognitive processes, encompassing planning, monitoring, and evaluating learning activities. One of the core principles of SCT is the emphasis on the importance of social interaction in cognitive development. In ELMM, fostering metacognitive monitoring requires collaborative learning and social interaction to strengthen these skills. Studies have shown that social interaction provides learners with external feedback, which serves as a critical reference for developing metacognitive monitoring (Chiu & Kuo, 2010).

SCT emphasizes dynamic assessment (DA), where teachers provide continuous interaction and feedback during the evaluation process, helping learners internalize knowledge (Poehner & Lantolf, 2005). Dynamic monitoring and adjustment of the learning process are essential in ELMM. Dynamic assessment enables teachers to identify learners' metacognitive states and offer immediate support for their weak areas. One notable advantage of dynamic assessment is its ability to seamlessly integrate learning and evaluation (Leung, 2007).

SCT also highlights the contextual nature of learning, asserting that knowledge construction must occur within authentic contexts. The integration of experiential learning and metacognitive monitoring depends on the authenticity and relevance of learning contexts (Medina et al., 2017). In ELMM, designing simulated tasks or real-life scenarios can assist learners in transferring acquired knowledge to practical situations.

3.2 Core Components of the ELMM

A systematic and dynamic learning model, which is ELMM, has been constructed based on SCT and contains the following six modules: Experiential Learning, Metacognitive Monitoring, Dynamic Assessment, Contextualized Learning, Social Interaction, and Double-Loop Learning Path (See Figure 2). Below is an explanation of each module.

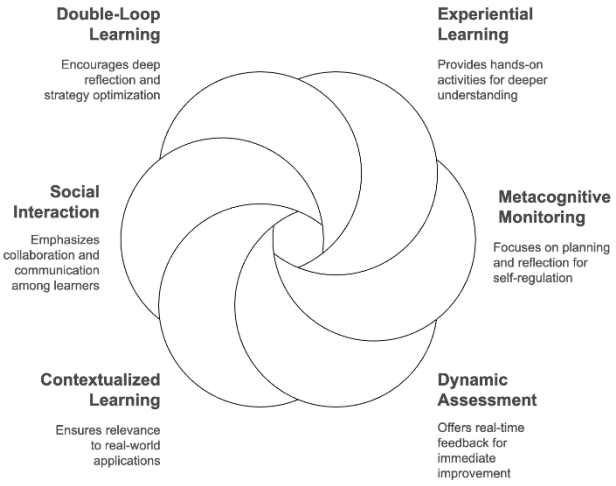

Figure 2. The Six Key Modules of the ELMM

3.2.1 Experiential Learning Module

The Experiential Learning Module serves as the cornerstone of ELMM, creating a cyclic learning path based on practice and reflection. This module is inspired by Kolb's four-stage model: Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation. It emphasizes engaging in authentic tasks and contextual activities, enabling learners to accumulate experiences and internalize knowledge through practice. Learners working on complex tasks observe, reflect, and develop solutions, which they later test in subsequent tasks. The defining features of this module are its dynamic and practical nature, providing a realistic environment for

learners to construct cognitive and practical skills. This module establishes the foundational framework for ELMM.

3.2.2 Metacognitive Monitoring Module

The Metacognitive Monitoring Module represents a significant innovation in ELMM, offering tools and strategies for learners to actively regulate their learning processes. This module includes three essential components: planning, monitoring, and evaluating. Before starting a task, learners set clear goals and create plans to guide their direction. During the task, they continuously assess progress, identify issues, and adjust their strategies as needed. After completing the task, learners reflect on and evaluate their experiences to derive insights and lessons. The goal of this module is to enhance learners' self-regulation skills, encourage independent learning habits, and increase overall learning efficiency.

3.2.3 Dynamic Assessment Module

The Dynamic Assessment Module is integrated throughout the learning process, providing immediate feedback and personalized support to learners. It emphasizes the seamless integration of assessment and teaching, allowing instructors to observe learners' performances in real time and offer tailored guidance. Task difficulty is adjusted according to the learners' needs. For learners facing challenges, instructors provide incremental prompts and guidance to help them overcome obstacles. A key advantage of this module is its ability to deliver continuous feedback during the learning process, avoiding the traditional separation of learning and assessment. This approach significantly improves learning outcomes.

3.2.4 Contextualized Learning Module

The Contextualized Learning Module focuses on designing learning tasks closely related to real-life or workplace contexts, enhancing both the practicality and applicability of learning. Its core principle lies in immersing learners in contextualized tasks and simulated activities, enabling them to gain experience by solving real-world problems. For instance, in language learning, learners can engage in role-playing activities that mimic authentic social scenarios, improving their language skills. Contextualized learning not only boosts learners' motivation but also facilitates the transfer of acquired knowledge to real-life applications, achieving the goal of "learning by doing."

3.2.5 Social Interaction Module

The Social Interaction Module emphasizes the collaborative and multidimensional aspects of learning. It encourages learners to construct knowledge through group cooperation, collaborative reflection, and peer feedback. Social interaction provides a platform for learners to share experiences and perspectives. Group discussions and cooperative tasks enable learners to approach problems from various angles, enhancing their problem-solving abilities. Moreover, interaction with others helps learners gain a clearer understanding of their learning strategies and areas needing improvement, fostering both cognitive and social growth.

3.2.6 Double-Loop Learning Path Module

The Double-Loop Learning Path Module builds on traditional single-loop learning by introducing a multi-level pathway that emphasizes deep learning and strategy optimization. The inner loop (basic loop) follows Kolb's four-stage experiential learning process, enabling learners to gain foundational experiences. The outer loop (advanced loop driven by metacognition) incorporates planning, monitoring, and evaluation, encouraging learners to reflect deeply on their strategies and processes. After completing a task, learners identify more efficient strategies through reflection and apply them to subsequent tasks. This module injects momentum for deep learning into ELMM, reinforcing the transferability and sustainability of learning outcomes.

3.3 Problems and Optimization Suggestions

ELMM has significant advantages in teaching and learning, but its complexity may raise a series of problems in practical application. The possible problems and targeted optimization suggestions are detailed below in seven areas.

3.3.1 Learners' Insufficient Metacognitive Skills

Due to their young age, some learners may not have fully developed metacognitive regulation skills. This can manifest as difficulties in setting clear learning goals, monitoring task progress in real time, or effectively reflecting on their performance, thereby affecting the overall efficacy of the model. To address this issue, teachers can provide metacognitive strategy training before the course begins, equipping learners with the skills to plan, monitor, and evaluate their learning processes. Simplified learning tools, such as learning logs or self-assessment questionnaires, can be introduced to help learners gradually develop the habit of self-reflection. During the initial stages, teachers can also use guided questioning or encourage peer collaboration to support learners.

3.3.2 Challenges in Implementing Dynamic Assessment

As previously discussed, dynamic assessment plays a crucial role in ELMM. However, in large classrooms, the limited capacity of teachers to provide individualized attention can hinder its implementation. To mitigate this challenge, online learning management systems (LMS) or artificial intelligence tools can be utilized to automate data analysis and generate personalized feedback for learners, reducing the teacher's workload. Teachers can also establish key assessment checkpoints within the course, such as providing feedback after completing milestone tasks. This approach ensures the quality of feedback while avoiding frequent interruptions during instruction. Additionally, peer assessment can be encouraged within groups, allowing peer feedback to serve as a valuable supplement to dynamic assessment.

3.3.3 Complexity of Contextualized Task Design

Designing contextualized tasks requires a careful balance between learning objectives and real-world scenarios. Overly complex tasks, however, may confuse learners and reduce their engagement. To address this, complex tasks can be broken down into smaller, manageable subtasks, allowing learners to complete them incrementally and build confidence and competence. Alternatively, providing clear task instructions, background information, or examples at the beginning can help learners quickly understand the context. Furthermore, tasks can be progressively adjusted in complexity according to learners' skill levels, enabling them to transition from simpler tasks to more challenging ones. This approach ensures both the effectiveness and feasibility of contextualized tasks.

3.3.4 Uneven Participation in Social Interaction

In group collaborations, some learners may actively participate, while others remain passive, which can compromise the overall quality of task completion. To address this issue, clear role assignments should be established within the group, such as designating specific roles like recorder, coordinator, or presenter, to ensure that each member contributes to the task. Individual contributions can also be incorporated into the assessment process, with participation levels reflected in final grades to enhance learners' sense of responsibility. Additionally, teachers can organize training sessions on collaboration skills, equipping learners with effective communication and teamwork strategies to improve the overall quality of group work.

3.3.5 Extended Duration of Double-Loop Learning Paths

The implementation of double-loop learning paths requires more time for task reflection and strategy adjustment in both inner and outer loops. This can pose a challenge when classroom time is limited. To address this, teachers can prioritize the application of double-loop learning to core tasks, focusing on tasks that are most representative and conducive to deep reflection. Additionally, the reflection component of the outer loop can be extended to after-class activities, such as online discussions, learning logs, or reflective reports. This arrangement maintains the quality of reflection while avoiding additional demands on classroom time, making it feasible to support double-loop learning paths under time constraints.

3.3.6 Learners' Low Acceptance of ELMM

Due to the innovative nature of ELMM, which significantly differs from traditional teaching methods, some learners may struggle to adapt to this approach, and parents may also find it difficult to understand. To increase acceptance, teachers can introduce the core modules of ELMM gradually at the beginning of the course. For instance, experiential learning and contextualized tasks can be implemented first, followed by the inclusion of metacognitive monitoring and dynamic assessment modules. At the same time, teachers can use case studies or data analysis to demonstrate the advantages and effectiveness of ELMM to parents, thereby enhancing their trust and confidence in the model.

3.3.7 Teachers' Limited Implementation Capacity

The successful implementation of ELMM places high demands on teachers, particularly in task design, dynamic assessment, and classroom management. Teachers lacking relevant experience may find it challenging to meet these requirements. To address this issue, schools must provide specialized training programs focused on experiential task design, metacognitive monitoring, and dynamic assessment techniques. Standardized tools, such as task templates, feedback forms, and instructional guides, can be offered to support teachers in their practice. Furthermore, schools can establish teaching support teams and create resource-sharing platforms to help teachers resolve practical challenges encountered during the implementation of ELMM, thereby ensuring the model's effective integration into teaching practices.

4. Conclusion

ELMM provides an innovative and hands-on instructional model for early childhood education. It integrates Experiential Learning, Metacognitive Monitoring, Dynamic Assessment, Contextualized Learning, Social Interaction, and Double-Loop Learning. Path, ELMM can effectively address the limitations of traditional teaching models. Although the ELMM faces some challenges in practical application, such as the lack of learner competence, the limited implementation capacity of teachers, and the complexity of task design, these problems can be solved through scientific optimization strategies.The ELMM provides theoretical support and practical paths for children's holistic development. Future research can further validate the applicability of the model in different cultural contexts and educational systems in experimental studies.

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Authors contributions

Dr. Nidaporn Astprachon and Dr. Sarit Srikao were responsible for the study design and manuscript revision. Prof. Nirat Jantharajit was responsible for data collection and also contributed to revising the manuscript. Dr. Sarit Srikao drafted the initial version of the manuscript. All authors read and approved the final version of the manuscript.

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