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The impact of an experiential learning management model on creativity and social interpersonal performances for early childhood: An experimental study

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Abstract

This study aimed to develop the Experiential Learning Management Model (ELMM) based on the Reggio Emilia approach and evaluate its impact on creativity and social interpersonal performance in preschool children. A total of 69 children from a kindergarten in northeastern Thailand were divided into an experimental group (n=34) and a control group (n=35). The experimental group participated in a two-month intervention consisting of 32 structured experiential learning activities, while the control group received traditional face-to-face instruction. Creativity and social interpersonal performance were assessed before and after the intervention using two standardized scales. Data were analyzed using paired t-tests and one-way multivariate analysis of variance (One-way MANOVA). Results indicated that the experimental group demonstrated significant improvements in creativity (pre-test M=18.88; post-test M=26.02, $p<0.05$) and social interpersonal performance (pre-test M=11.20; post-test M=13.35, $p<0.05$). And the experimental group outperformed the control group in both creativity and social interpersonal performance ($p<0.05$), highlighting the effectiveness of the ELMM intervention. The findings suggest that the ELMM, grounded in the Reggio Emilia approach, is effective in enhancing creativity and social interpersonal performance in preschool children. The structured experiential learning activities provide a supportive and engaging environment for skill development.

Keywords: Creativity, Experiential learning management model, Preschool education, Reggio Emilia approach, Social-interpersonal performance.

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Contribution of this paper to the literature
This study introduces the Experiential Learning Management Model (ELMM), based on the Reggio Emilia approach, which uniquely integrates structured experiential learning activities into early childhood education. Unlike previous studies, it empirically validates the effectiveness of ELMM in enhancing both creativity and social interpersonal skills through a controlled experimental design and multivariate analysis.

1. Introduction

The Early Childhood Education (ECE) period is a time of overall development, where children gradually develop their creativity and social interpersonal skills through various learning experiences (Tayler, 2015). Developing creativity requires taking another point of view in solving issues and using one's imagination to foster innovation, an important step in the emotional and cognitive development of children (Yildiz & Yildiz, 2021). Concurrently, the development of social interpersonal skills such as cooperation, communication, and relationship-building with others are equally prominent goals in early childhood education; these skills significantly shape children's future social adjustment and success (Denham & Brown, 2010).

However, considering the complexity of early childhood education and the differing individualized needs, there are difficulties in achieving such goals in teaching practices. Research has revealed that educational activities designed through experiential learning greatly support the enhancement of creativity and social skills in children (Harrison, 2024; Ranken, Manyukhina, Wyse, & Bradbury, 2023). This approach fosters knowledge development and personal growth in a natural environment by providing children with authentic, interactive, and diverse educational experiences that promote discovery and skill-building (Kellert, 2002). Nonetheless, there is still a lack of systematic and quantitative research on the effectiveness of the specific implementation of the Experiential Learning Management Model (ELMM) in early childhood education.

1.1. Challenges Faced by Early Childhood Education

Early childhood education is an important starting point for a child's journey towards lifelong learning, and its quality has a direct impact on a child's overall development. However, it has become common for preschool education in developing countries to face under-resourcing (Rowell, 2020). In the remote mountainous areas of Thailand, for example, there is a shortage of teachers, a lack of teaching materials and aids, and inadequate facilities at educational sites (Shaeffer, 2018). These problems further exacerbate educational inequalities. At the same time, the quality of preschool education varies widely. Some kindergartens are able to provide quality teaching, but there are also some institutions where the level of education is hardly satisfactory due to resource or teacher limitations (Durongkaveroj, 2022). This imbalance makes it more difficult for parents to choose a kindergarten and places higher demands on the overall level of pre-school education. Family education is likewise a non-negligible factor in the development of young children. The support and guidance of the family are instrumental in shaping the child's character and developing his or her abilities (Alfen, Nugraha, Saylendra, & Susanto, 2024). However, many families currently have deficiencies in their educational concepts and approaches, such as overemphasizing subject knowledge and neglecting children's personality development or emotional needs (Gupta, 2017). This phenomenon creates additional challenges for the implementation of preschool education and places greater demands on home and campus collaboration.

1.2. The Role of Creativity in Early Childhood

Creativity is the ability to generate new ideas, discover and create new things (Martin & Wilson, 2017). Research has shown that early childhood is a critical stage for the emergence and development of creativity, and that the initial creative potential demonstrated at this stage has a profound impact on future development (Leggett, 2017). Missing out on this critical period of development can lead to a lag in children's creative abilities, which in turn affects their cognitive, emotional, and social development (Berry et al., 2016). Creativity is considered one of the most valuable elements of early childhood competence, especially in the era of the knowledge economy in the twenty-first century, where innovation has become the core driving force of economic development (Fu & Shi, 2022). Therefore, educators should emphasize and actively cultivate children's creativity from early childhood.

In early childhood education, play is recognized as an important form of activity that promotes the development of creativity. This view is rooted in the nature and characteristics of games, which are effective in stimulating creative thinking in young children (Behnamnia, Kamsin, Ismail, & Hayati, 2020) It has been shown that different children may play with the same object differently or take the same manipulation of different objects, and that this exploratory behavior is an important manifestation of the development of creative thinking in young children (Pellegrini, 2013). As an intrinsic motivation to inquire into things, curiosity can inspire young children to think deeply and provoke a strong desire to know, which in turn pushes children to discover and explore the mysteries of life (Bjerknes, Wilhelmsen, & Foyn-Bruun, 2024).

However, there are still many challenges in the development of creativity in young children. Teachers may neglect children who are relatively average or even slow in their abilities by favoring young children who are developing rapidly (Ellis et al., 2023). These disadvantaged children may gradually lose their self-confidence due to a lack of praise and sense of achievement, which in turn affects the release of their creative potential (Negru & Sava, 2023). Some young children show strong emotional independence and exploration, but may not receive enough attention because these qualities are often misinterpreted as mischievousness or willfulness (Hirsh-Pasek et al., 2022).

Despite the fact that play and exploratory activities are important means of promoting the development of creativity in young children, there is still a dearth of research on how to implement effective strategies in actual teaching and learning. Most research on creativity has focused on qualitative analysis and lacks quantitative assessment of specific instructional strategies through experimental or quasi-experimental studies (Fromm et al., 2021; Mogavi et al., 2024).

1.3. The Role of Social Interpersonal Performances in Early Childhood

Interaction is a basic human need and a requirement that society places on individuals (Baecker, 2011). Social interpersonal performance is a concept that typically refers to the behaviors, competencies, and attitudes that an

individual exhibits during interactions with others, covering a wide range of aspects such as interpersonal communication, cooperation, conflict management, and empathy (Klein, DeRouin, & Salas, 2006). Early childhood is a critical stage for the development of social interpersonal performance, but due to the lack of sufficient experience in social interaction, young children often encounter challenges when interacting with others. For example, children who are new to kindergarten tend to be fearful, uneasy, and anxious about unfamiliar environments and strangers, and they show signs of being withdrawn, timid, or out of place (Rubin, 2021).

Some effective strategies have been suggested by the study in order to help young children overcome these emotions. For example, older children can be invited to perform programs for newcomers, such as storytelling, singing, and dancing, or participate in interesting games with them. In such a relaxed and pleasant atmosphere, children are more likely to open themselves up, gradually integrate into the new environment, and develop the ability to interact with others (Roussou, 2004).

Social activities are often shared by different groups of humans, and role-playing is a universal strategy for developing social interpersonal performances in young children. Role-playing games are a creative activity in which young children imitate adult labor and interactions based on their life experiences and willingness to do so (Waskul & Lust, 2004). This activity helps young children understand and assume social roles, and also fosters a sense of self-education by adhering to social role norms. During role play, young children can actively participate in social interactions, showing initiative, role awareness, and identification with role norms (Root-Bernstein & Root-Bernstein, 2006). However, due to their young age and limited experience of interaction, young children often have problems in their interactions. For example, young children may have conflicts over competing for toys or cry during play (French et al., 2011). Teachers need appropriate interventions to avoid these problems.

With basic interaction skills taught to young children, they receive specific behavioral guidance when interacting with others, and the process of interaction becomes smoother as a result (Lefevre, 2010). Young children gradually experience the pleasure and joy of interacting with others, and then develop the qualities of being willing to interact and being skilled at interacting. Despite the results of related research and practice, further experimental validation and theoretical exploration are needed on how to design more systematic strategies to enhance young children's social interpersonal performance (Carpendale & Lewis, 2004).

1.4. Reggio Emilia Approach

There are numerous studies that have explored how the Reggio Emilia approach supports young children's learning and growth (Fernández Santín & Feliu Torruella, 2017; Hewett, 2001). The literature states that the core philosophy of the Reggio Emilia approach is that children have a unique sense of curiosity and potential, and that education should be centered on them, promoting learning through exploration and collaboration. This approach recognizes the importance of the environment, adult roles, and the children themselves in the learning process (Gardner & Jones, 2016).

The original purpose was to support children's development through progressive teaching methods. Although many schools and kindergartens are inspired by it, each community should adapt teaching strategies to its own culture and needs (Faroughi & Fekete-Dabney, 2023). With no two ways of practicing exactly the same. Every child, teacher and community is unique, and that uniqueness needs to be fully respected.

Educational activities should be designed with children's interests and needs in mind and adapted on the basis of their direct participation. The core principles of the Reggio Emilia approach revolve around children's active learning, the role of the environment, and adult support, and this child-driven strategy is applicable not only in kindergarten but also in homeschool settings (McNally & Slutsky, 2017). Children construct knowledge through interest-driven exploration and interaction. Learning activities emphasize social collaboration, and each child's ideas and questions are valued.

Learning environments are critical to children's development. Environments should be filled with natural light, order, and aesthetics, while being designed as open, supportive spaces for collaboration and exploration. The choice of materials and tools should also reflect authenticity and the possibility of stimulating potential (Fernández-Santín & Feliu-Torruella, 2020).

The teacher's role is to observe and listen to the children and design further exploratory activities based on their interests. Lesson content is driven by children's interests rather than pre-planned (Soler & Miller, 2003). The literature suggests that recording and presenting children's ideas is a key part of learning. Showing children's learning trajectories through photographs, drawings, sculptures, etc., can help adults understand children's thinking and can stimulate children's own reflection and expression (Kim, 2006).

The Reggio Emilia approach is mainly known for its concept called "The One Hundred Languages of the Child," which assumes that children demonstrate understanding and creativity in various forms, including visual arts, music, sculpting, and pretend play. All these forms of expression are a natural part of children's learning processes, thus implying that teaching practices should value and develop these skills (Fernández Santín & Feliu Torruella, 2017). While this approach is recognized internationally, its specific applications need to be adapted to fit local cultural contexts and needs in order to achieve the most effective results.

1.5. Shortcomings of Current Research

Several research problems concerning both individual and combined creativity and social interpersonal performances have arisen with respect to theoretical research versus interpersonal practice (Perry-Smith & Shalley, 2003). Significant studies have particularly highlighted the importance of the pair, but unfortunately, they lack significant practical guidelines that can help students in applying such concepts. The most notable void of extant advice is that neither the theory or the literature about the enrichment of creative thinking nor interpersonal relationships says anything concrete about how those two could be accomplished through instruction (Hughes, Lee, Tian, Newman, & Legood, 2018). Clear recommendations could be made in the area of how the successful development of a creative faculty in young children through instructional activities, which will lead to improved social skills, could occur (He, Wing, & Hoe, 2023). However, there is a significant paucity in experimental data documenting the efficacy of ELMM in the making of creativity and social performance of children. One of the reasons behind this lack of evidence-based assessment is the microscopic extent of the methods frequently used, which usually shun large-scale control-based randomization.

2. Methodology

2.1. Research Design

Based on the Reggio Emilia approach, the research study utilized the Research and Development (R&D) method. Three phases of systematic research and practice were employed to gradually design, optimize, and validate the effectiveness and applicability of this learning management model.

Phase I: Status study and preliminary design of the modeling framework.

In the first phase, the current state of experiential learning management in preschool education was investigated to analyze its shortcomings and needs in promoting creativity and social relationships among preschoolers, and to provide basic data for model design. A preliminary framework for the ELMM was designed, and a corresponding data collection tool was developed by systematically organizing relevant literature and theoretical results in conjunction with the Reggio Emilia approach. Then, five experts in the field were invited to conduct a quality and applicability assessment to continuously revise and improve the modeling framework based on the feedback, as well as to develop research tools to fully prepare for the subsequent pilot phase.

Phase II: Model framework pilot implementation and optimization.

The second phase is the pilot implementation and optimization of the model framework. A preliminary ELMM was applied to a randomly selected class of three children in preschool grade 3 in a Thai kindergarten as a pilot subject. Observations, questionnaires and interviews were used to collect data to assess its initial effectiveness in enhancing children's creativity and social relationships. After that, the researcher analyzes the reliability and validity of the research instrument while recording the feedback and problems during the implementation. Based on the results of the pilot, the model framework will be further optimized to better fit the actual teaching scenarios and the needs of children's development, so as to be ready for large-scale application.

Phase III: Research on the effectiveness of the application of the ELMM.

The third phase is to validate the actual educational effectiveness of the optimized ELMM. A purposive sample of preschool grade 3 students from a kindergarten in Thailand was selected as the study population, and class A was identified as the experimental group (34 students), which was taught using the ELMM, while class B was the control group (35 students), which was taught according to traditional teaching methods. The study will compare the differences in the level of development of the experimental and control groups in the areas of creativity and social interpersonal relations, verifying the educational effectiveness of the model. The study also analyzed changes in creativity and social relationships in the experimental group before and after implementation.

2.2. Participants

The population of this study was 4- to 5-year-old kindergarten students officially enrolled in the 2022 school year in a Thai school. Purposive sampling selected two classes from the target population as the sample for the study and divided them into the experimental group (34) and the control group (35). The screening process excluded children who were unable to participate in all study activities and children with special educational needs or other conditions that might affect the results of the study. Children in the experimental group received intervention instruction based on the ELMM to enhance creativity and social-interpersonal performance, while children in the control group continued to receive traditional teaching methods as the control group for this study.

2.3. Intervention

The research team held a meeting with the guardians of all participants prior to the start of the intervention, detailing the study objectives, expected outcomes, and the intervention process, and obtained informed consent from the guardians. The intervention was conducted over an eight-week period, and a total of 32 activity programs based on the ELMM were designed, with weekly activities centered on one thematic unit, including eight thematic units. The activities were organized around a thematic unit each week (see Table 1). The intervention is 1 hour per day (10:50 to 11:50 a.m.) and runs consecutively from Monday through Friday each week.

Table 1. An eight-week experiential learning program.

Week	Topic	Activities
1	About "Me"	Paint a self-portrait Share "My hobbies"
2	I can do it	Organize your school bag Build a house
3	Happy family	Map family relationships Role-playing
4	Beneficial foods	Food sorting competition Nutritional plate design
5	Rainy season	Painting activities Observation of natural phenomena
6	Rice	Rice cultivation
7	Safety first	Escape simulation Crossing game
8	My favorite little tree	Handmade

The experimental group's program was designed around the principles of the ELMM, with activities closely aligned with the children's everyday experiences. At the end of each activity, teachers organize reflective discussions and guide children to share their experiences and feelings, from which they can receive feedback and further consolidate the knowledge and skills they have learned. The control group was taught using traditional teaching methods in which the instructor focused on repetitive practice activities through direct lectures on content and instruction. Teaching is based on teacher modeling and peer station activities, with minimal opportunities for children to be actively involved and interact with one another.

All participants were tested for their creative and socio-interpersonal performance before and after the intervention. The results of the assessment will identify or target the differential in effectiveness between ELMM and traditional teaching methods.

2.4. Hypotheses

Hypothesis 1: The creativity and social interpersonal performances of preschoolers who receive the ELMM are significantly higher after the intervention than before.

Hypothesis 2: The creativity and social interpersonal performances of the experimental group of children who received the ELMM were significantly higher than those of the control group of children who received the traditional teaching method.

2.5. Instruments

2.5.1. Creativity Assessment Scale (CAS)

The Creativity Assessment Scale (CAS) employs a composite assessment of student creative ability, which is made up of two primary domains: (1) divergent thinking and innovative problem solving, and (2) creative expression and application. Dimension (1) entails four main variables: conceptual fluency, originality, flexibility, and exhaustiveness; Dimension (2) includes imaginative story creation, a work of art, creative expression, and integration of ideas. Each of the items is rated on a five-point scale (0-4), with 4 points awarded for the most highly scored items per the scale, resulting in a total of up to 32 points. The instrument's reliability for CAS was checked by the Item Objective Consistency (IOC) method based on criteria for Chatprem et al. (2020). Each of the 8 programs was reviewed separately by 5 domain experts, and the reliability ranged inconsistently from 0.9 to 1.00 (>0.8 for each item); thus, CAS may be labeled as a reliable and objective tool. Before and after interventions, this factorial research revealed instances when the scale may be applied and tested.

2.5.2. Social Interpersonal Performances Scale (SIPS)

The Social Interpersonal Performances Scale (SIPS) ensures a full range of issues regarding the social relationship abilities of learners through two principal dimensions: (1) interpersonal communication and (2) social adaptability. Dimension (1) covers two specific issues, including efficient verbal communication and emotional empathy, whereas dimension (2) involves working within a group and behaving in different social situations. Each item is rated on a scale of 0-4, with a maximum total score of 16. SIPS was also validated for reliability through the IOC. Each of the four programs was independently evaluated by five domain experts, with IOC scores ranging from 0.85 to 1.00 (>0.8 for each item).

2.6. Data Collection and Analysis

Pre-test and post-test data were collected to assess students' creativity and social interpersonal performance. The SPSS data analysis software performed a paired samples t-test and analysis of variance (one-way MANOVA) to determine significant differences within and between groups.

2.7. Ethical Approval

This study was conducted in strict compliance with ethical norms, and the study protocol was approved by the Ethics Committees of Nakhon Phanom University before implementation.

3. Results

3.1. Hypothesis 1

Table 2 shows the comparison of students' creativity and social interpersonal performances before and after the implementation of the ELMM in the experimental group. For creativity, the pre-test M was 18.88 (SD=1.83), while the post-test M significantly increased to 26.02 (SD=1.97). A paired-sample t-test revealed a statistically significant improvement [$t(33)=23.22$, $p<0.05$]. For social interpersonal performances, the pre-test M was 11.20 (SD=0.76), which increased to 13.35 (SD=1.22) in the post-test. The paired-sample t-test similarly indicated a statistically significant difference [$t(33)=8.13$, $p<0.05$]. The findings in the study show that the ordinarily high ELMM practice did have a positive influence on the students' inventiveness and their performance in social circles. It is shown through the substantial growth across the two kinds of activities following the intervention. Therefore, hypothesis 1 can be accepted.

Table 2. t-test results for pre-test and post-test in experimental group.

Variable	Pre-test		Post-test		df	t
	M	SD	M	SD		
Creativity	18.88	1.83	26.02	1.97	33	23.22*
Social interpersonal performances	11.20	0.76	13.35	1.22	33	8.13*

Note: *p<0.05.

3.2. Hypothesis 2

According to Table 3, the t-test was carried out to compare the creativity and social interpersonal performances between the experimental and control groups. As for creativity, the M=18.88 (SD=1.83) was retrieved for the experimental group, and the control group showed a similar tendency for creative functioning with M=18.45 (SD=1.17). Moreover, the t-test revealed no significant difference between the two groups [$t(67)=1.14$, $p>0.05$]. Regarding social interpersonal performances, the experimental group achieved the M=11.20 (SD=0.76), whereas the control group recorded a slightly higher M=11.48 (SD=1.09). Similar to creativity, the t-test indicated no statistically significant difference between the groups [$t(67)=1.22$, $p>0.05$]. These results suggest that the baseline levels of creativity and social interpersonal performances were comparable between the experimental and control groups, ensuring equivalence before the intervention.

Table 3. t-test comparison between experimental and control groups.

Variable	Experimental group		Control group		df	t	p
	M	SD	M	SD			
Creativity	18.88	1.83	18.45	1.17	67	1.14	0.255
Social interpersonal performances	11.20	0.76	11.48	1.09	67	1.22	0.225

Table 4 shows that the variance of the data was consistent (p>0.05) across groups, as indicated by the results of the Box's M test. Afterwards, using the Kolmogorov-Smirnov test, the results showed that the creativity and social interpersonal performance scores of both the experimental and control groups met the conditions of normal distribution (Table 5).

Table 4. Box's M test for homogeneity of variances.

Variable	Box's M	F	df 1	df 2	p
Creativity and social interpersonal performances	7.43	1.71	3	831,236.836	0.063

Table 5. Test of normality in experimental and control groups.

Variable	Experimental group			Control group		
	Statistic	df	p	Statistic	df	p
Creativity	0.112	34	0.200*	0.106	35	0.200*
Social interpersonal performances	0.119	34	0.200*	0.122	35	0.200*

Note: *p<0.05.

Table 6 shows the results of multivariate tests (Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root) to examine the overall effects on the dependent variables. All four test statistics yielded significant F-values (F=15.576, p<0.05), indicating a statistically significant multivariate effect. The hypothesis and error df for these tests were 2.00 and 66.00, respectively, across all metrics. These results suggest that the independent variable had a significant combined effect on the dependent variables. Thus, hypothesis 2 can be accepted.

Table 6. Multivariate test results.

Statistic	Value	Hypothesis df	Error df	F
Pillai's trace	0.321	2.00	66.00	15.576*
Wilks' Lambda	0.679	2.00	66.00	15.576*
Hotelling's trace	0.472	2.00	66.00	15.576*
Roy's largest root	0.472	2.00	66.00	15.576*

Note: *p<0.05.

4. Discussion

This study established an appreciable outcome of the ELMM in boosting constructive tasks and social relationships within children's groups. There was a substantial growth in the experimental group after the exercise in both areas; however, there was neither a decrease nor an increase in the scores for the control group. These results are best explained through the application of the experiential learning approach in early childhood studies as evidenced by the inclusion of related literature (Ionescu, 2020).

It is likely that the radical rise in creativity and, generally, in the social skills of the participants is caused by the education system of the ELMM. This follows as the fundamental principle of the program is playing, doing, and then reflecting on the activity, which is quite appropriate for preschool age. There are different activities that encourage creativity, such as those enhancing problem-solving, aesthetic, and divergent thinking skills. In this study, drama and drawing components were integrated in attempts to increase engagement and imagination. The concepts in activities like food categorization games and drafting healthy meal plates help in applying the learned knowledge and understanding to practical issues. Character and personality are also groomed through the various joint group activities.

The outcomes are in full agreement with earlier research affirming the beneficial nature of experiential learning in regards to the early childhood stage. This means the significance of hands-on and active forms of engaging children in social-emotional learning activities, as supported (Huang & Lajoie, 2023), or the necessity of creative thinking for cognitive and social development as postulated (Saleem, Burns, & Perlman, 2024). The objectives of the study are mainly constructed from the Reggio Emilia approach, which centers on children's interests and concerns. Yet, not like the Reggio Emilia approach, Education through Lenses of Multiliteracies, however, introduces some structured framework in youth programs, but allows for flexibility and skill development that is built such that it is measurable.

This research is significant as it serves to address the prevailing training and policy issues in early childhood education. ELMM is technologically simple and can even be replicated, including turnkey systems, thus proving to be cost-effective. In addition, in educational programs for young children, learners are active; they learn with others, reflect on their learning experiences, and their learning is participatory. The model makes efforts to ensure that it addresses persons in low-resource settings through the activities that are contextually redesigned to match the daily lived experiences. Teachers can design activities using locally available materials, thereby reducing reliance on expensive educational tools, which can be beneficial in low-income areas.

Nonetheless, there are some limitations to this study. The study sample limits the generalizability of the findings to a broader population, and future research should include diverse geographic and cultural contexts. Additionally, the study is focused on short-term effects, which do not adequately reflect the long-term impact of the model. Future research could also explore how to incorporate technology.

5. Conclusion

The ELMM has been shown to significantly promote creativity and social-interpersonal performance in preschool children. The experimental group showed a significant increase in both ability scores after the intervention, while no significant change was observed in the control group. Activities such as role-playing, drawing, and teamwork in the ELMM provide children with opportunities to explore and interact with each other, meeting their developmental diversity needs.

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