

Training Curriculum Development Based on the Guiding Concept to Promote the Ability to Organize Learning Experiences on Executive Functions in Early Childhood for Childcare Teachers

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Abstract

This research aimed to develop an instructional coaching model to enhance early childhood educators' abilities in designing learning experiences for brain management. This research employed a mixed-methods approach, combining quantitative and qualitative methods and consisted of two phases: 1) developing an instructional coaching framework, and 2) validating the framework with seven expert raters, the expert panel consisted of individuals with expertise in curriculum and instruction, research and curriculum development, measurement and evaluation, and early childhood education. The selection criteria for the experts were: a master's degree or higher, experience in curriculum development or coaching and willingness to participate in the research. A total of seven experts were selected through purposive sampling. Data was collected using a 5-point Likert scale. The findings revealed that: 1) The developed instructional coaching framework comprised six components: (1) background and significance, (2) principles, (3) objectives, (4) instructional structure, (5) media and learning resources, and (6) evaluation. 2) The expert raters highly agreed on the framework's suitability (Mean = 4.64, S.D. = 0.54). However, they suggested further refinements, particularly in selecting activities that align with the context of brain management in early childhood and that can effectively connect to age-appropriate developmental learning.

Keywords: training curriculum development, to organize learning experiences on executive functions in early childhood

1. Introduction

Early childhood is the most crucial period for developing essential human skills. In terms of brain development, during this stage, a child's brain is highly adaptable and can effectively respond to new experiences. The concept of Brain-Based Learning is widely recognized as an approach that can effectively promote learning in young children, especially during early childhood. This approach aims to support children in developing good physical and mental health, cognitive skills, learning skills, life skills, and social skills to ensure quality growth (National Economic and Social Development Council, 2018).

The most important human development and learning take place from birth to 7 years (Hi. Q. Group, Development Center, 2009). If this development is not promoted during this critical period, it is often considered too late. By this age, the human brain has already developed approximately 80 percent of its adult capacity. The ages of 3 to 6 years are particularly significant, as this is the time when the most learning occurs. In addition, Brain connections will expand rapidly, which requires appropriate learning experiences according to developmental stages. Executive Function is a primary process that encompasses brain functioning in overseeing and controlling thoughts, including the interconnected operation of neural systems working together to achieve goals (Cooper-Kahn & Foster, 2013). Research indicates that children's executive function skills begin to develop and grow rapidly during the ages between 3 to 6 years, which is the most critical period (Center on the Developing Child, 2011). Early childhood executive function skills improve with increasing age. The critical brain region responsible for controlling executive function skills is the frontal brain, specifically the prefrontal cortex (Hughes, Ensor, Wilson, & Graham, 2010). The brain skills located in the Prefrontal Cortex function like a command center, coordinating the work of multiple brain regions (Nuanchan Juthapakadul, 2018). Neuroscientists have discovered that the frontal brain

primarily controls human thoughts, emotions, and behaviors, enabling us to develop various skills such as distinguishing right from wrong, remembering stories effectively, thinking logically, understanding what should or should not be done, and anticipating potential consequences. These are all pathways to developing executive function skills and brain management in early childhood.

Frontal brain skills are the cognitive and mental abilities to control thoughts, emotions, and actions to achieve goals (Prasert Phalitaphonkarn, 2018). Beyond IQ and EQ, children's brains in kindergarten can be developed most effectively when stimulated through diverse and meaningful experiences. Organizing learning experiences that promote brain development is essential for teachers to consider in their teaching process. Developing executive function (EF) skills at the right time and in the right way is crucial. These skills should be practiced and developed efficiently to ensure future success, ultimately resulting in high-quality citizens (Kantharos Paphon, 2020).

As previously discussed, teachers play a vital role in education, cultivating critical thinking skills that are essential for a successful life. However, reports from local administrative organizations reveal a severe shortage of educational personnel in Thailand, including teachers, school administrators, and educational management staff. Therefore, various strategies should be implemented to recruit qualified teachers. Educators with expertise in brain development are crucial for successful teaching and learning. Ineffective teaching can hinder a child's cognitive development, particularly in areas such as critical thinking, self-control, deliberation, and emotional regulation, which are essential for achieving success. This aligns with the Office of the Basic Education Commission (2017), which emphasizes the need for teachers to continuously adapt and develop themselves to build a strong foundation for young children to become well-rounded individuals. Training for early childhood educators and related personnel is crucial for organizations, as the success of child development depends on those who work closely with children. Organizations with staff who possess the necessary knowledge, skills, and attributes for their roles are more likely to operate smoothly (Chuchay Smittrai, 2005). In the learning process, teachers play a pivotal role in developing students' knowledge and skills according to the curriculum objectives. Enhancing teachers' knowledge and abilities to provide quality education is a primary and urgent need that must be addressed systematically. Taba (1962) stated that curriculum development involves making effective changes and improvements to existing curricula, including setting objectives, organizing content, selecting teaching methods, and conducting assessments to achieve the desired outcomes. Curriculum change is a systematic transformation or a shift from objectives to methods, which impacts the thoughts and feelings of all stakeholders involved.

The development of coaching-based training programs for early childhood educators is crucial for elevating the quality of education and child care in the present era (Huang, 2021; Morshed, 2022). This approach emphasizes learner participation and the creation of meaningful experiences, enabling teachers to develop effective skills and teaching methods (O'Connor & McNulty, 2023; Singh, 2022). Educational research in the Thai context emphasizes the need to develop these skills to support quality learning (Sangthong & Chuenyong, 2021; Rattanavich, 2023). The findings of a study conducted by Chanjira Navaratna, Chulalak Sutra, Suda Jaeuma, Suchada Jitkala, and Suphannikarn Sri Suwan (2023) revealed that early childhood educators who participated in a training program on designing activities to develop executive functions (EF) in young children demonstrated significantly higher levels of knowledge and skills after the training compared to before. The evaluation of the training program indicated that it was effective in achieving the intended outcomes, consistent with the findings of Suttaluang and Sittisomboon (2022). The research results further suggested that: 1) training programs should be designed with a process that promotes teachers' development in terms of knowledge, skills, and dispositions aligned with teacher competencies, emphasizing active learning processes with coaching and mentoring support; and 2) the quality of training programs, comprising six components (objectives, competencies, structure and content, development approach, resources, and evaluation), should be of high quality.

Teeraporn Preedeewong (2023) found that early childhood educators in Khon Kaen Municipality who participated in a training program to enhance their ability to design learning experiences that promote executive function (EF) in young children demonstrated a good level of competence in designing learning activities aligned with EF development.

In conclusion, the training program designed to enhance early childhood educators' ability to design learning experiences aligned with the brain development of young learners, as developed by the researcher, has positively impacted educators' knowledge and ability to design learning activities aligned with executive function development. This finding is consistent with the research on training program development by Somchai Sangsee (2005), which found that training can enhance participants' knowledge, skills, expertise, confidence, and attitudes towards learning. Furthermore, training can contribute to professional development, demonstrating that training is a process that can be used to improve teachers' knowledge and ability to teach.

There are two main types of training techniques: 1) Instructor-centered training techniques, such as lectures, panel discussions, and demonstrations, which provide participants with knowledge and understanding of the course content; and 2) Learner-centered training techniques, such as brainstorming, small group discussions, and case studies, which encourage participant involvement and enhance their abilities and attitudes toward learning.

Given the preceding discussion, this study prioritizes the development of a coaching-based training curriculum to foster early childhood educators' capacity in designing learning experiences that promote executive functions in young children. The curriculum is designed to equip teachers with the requisite knowledge and skills to implement age-appropriate learning experiences that are aligned with the Early Childhood Education Curriculum of 2017, thereby providing a practical guideline for effective early childhood program design.

2. Methodology

This research employed a mixed-methods approach, combining quantitative and qualitative methods to develop a coaching-based training curriculum aimed at enhancing early childhood educators' capacity to design learning experiences that promote executive function in young children. The process involved two main phases: curriculum development and curriculum validation.

2.1 Curriculum Development

The researcher conducted a needs assessment, examining the current state, desired outcomes, and specific needs.

Following the needs assessment, in-depth data was collected through focus group discussions with experts. Together, they analyzed the data and determined the direction for curriculum development, defining the components of the teacher training program. The components of the curriculum included:

Background and Significance: The curriculum was designed to align with identified needs, policies, principles, and theories of curriculum development. Upon completion of the training, early childhood educators would be able to design and implement curricula that promote executive function in young children, addressing specific needs and challenges.

1.2.2 Principles of the Curriculum: The curriculum emphasized the development of educators' knowledge, dispositions, and skills in applying theories. It adhered to coaching principles, empowering participants to develop the knowledge, skills, and personal attributes necessary to successfully implement learning activities.

Objectives: The objectives of the curriculum were aligned with the identified needs, focusing on developing educators' knowledge, skills, and dispositions to effectively design and implement learning experiences that promote executive function in young children.

Curriculum Structure and Content: The curriculum structure and materials were developed based on input from teachers and experts.

Media and Learning Resources: The training materials included a curriculum guide, worksheets, activities, and other necessary materials.

Evaluation: The researcher designed an evaluation plan aligned with the curriculum objectives, including assessments of knowledge, skills, and dispositions.

2.2 Curriculum Validation

Curriculum validation was conducted to assess the quality of the coaching-based training curriculum designed to enhance early childhood educators' ability to design learning experiences that promote executive function in young children. A panel of experts evaluated the curriculum's suitability and consistency.

1) Expert Panel consisted of individuals with expertise in curriculum and instruction, research and curriculum development, measurement and evaluation, and early childhood education. The selection criteria for the experts were: a master's degree or higher, experience in curriculum development or coaching and willingness to participate in the research. A total of seven experts were selected through purposive sampling. Qualifications of seven experts include: ① Expert in Enhancing Early Childhood Educators' Abilities to Design Learning Experiences for Brain Management: This individual specializes in designing learning experiences focused on brain management, drawing from practical experience or academic research. ② Expert in Measuring and Evaluating Early Childhood Education: This qualified individual has extensive experience or academic work in assessing and evaluating early childhood. ③ Expert in Early Childhood Education Curriculum and Learning Experiences: This expert has experience or academic knowledge focusing on early childhood education curricula and the design of learning experiences for young children. ④ Expert in Early Childhood Educator Development: This individual has relevant experience or academic qualifications related to the professional development of early childhood educator

2) Evaluation Instrument A 5-point Likert scale was used to evaluate the curriculum framework and manual, with options ranging from “highly suitable” to “least suitable” (Bunchom Srisa-ad, 2005, p. 121).

3) Evaluation Criteria The evaluation criteria were developed based on a review of relevant literature on coaching-based training programs to enhance early childhood educators’ ability to design learning experiences that promote executive function in young children. Evaluation items were developed based on these criteria, including background, principles, objectives, training activities, instructional materials, assessment, trainer’s role, and training schedule.

4) Expert Review The draft evaluation instrument was presented to the advisor for review and feedback on components, questions, and other relevant details.

5) Expert Feedback The evaluation instrument was then presented to the expert panel for feedback on the suitability of evaluation items, question wording, and overall clarity. The experts suggested that the evaluation criteria be categorized into specific components and that the language be more academic to ensure clarity and consistency. The researcher made revisions based on the expert feedback.

6) Final Review The revised evaluation instrument was presented to the advisor for a final review and approval. Once approved, the instrument was deemed suitable for data collection.

7) Pilot Testing The revised curriculum framework was further refined based on feedback from a pilot test with 30 early childhood educators who were not part of the main study sample.

3. Results

The results of the curriculum validation are presented in Tables 1–2.

Table 1. Results of the curriculum validation

Lists	\bar{X}	S.D.	Meaning
1. The principles of the curriculum			
1.1 The principles of the curriculum show the importance of the basic concepts of the training curriculum development based on the guiding concept to promote the ability to organize learning experiences on executive functions in early childhood for childcare teachers, which are used to develop the training curriculum.	4.77	0.43	Most Appropriate
1.2 The curriculum principles outline the focus of the curriculum.	4.80	0.41	Most Appropriate
1.3 The curriculum principles outline the basic concepts.	4.73	0.45	Most Appropriate
2. The objectives of the curriculum			
2.1 The objectives of the curriculum are feasible and can actually develop child care teachers.	4.83	0.38	Most Appropriate
2.2 The objective of the curriculum is consistent with the basic concept of the training curriculum based on the guiding concept to promote the ability to organize learning experiences on executive functions in early childhood for childcare teachers and the development of the training curriculum.	4.73	0.45	Most Appropriate
2.3 The objectives of the curriculum are clear and determine what is being achieved in childcare teachers.	4.70	0.47	Most Appropriate
3. The ability of childcare teachers to organize learning experiences on executive function in early childhood			
3.1 The ability of childcare teachers to organize learning experiences on executive function in early childhood is possible and can really be developed.	4.63	0.67	Most Appropriate
3.2 The ability of childcare teachers to organize learning experiences on executive function in early childhood is consistent with the principles and objectives of the curriculum.	4.70	0.53	Most Appropriate
3.3 The ability of childcare teachers to organize learning experiences on executive function in early childhood are clear and demonstrate the teachers’ abilities in knowledge, skills, and characteristics that will help develop executive function in early childhood in 5 areas as follows: 1) working memory; 2) planning and organizing work systems; 3) taking initiative and taking action; 4) focusing; and 5) self-assessing.	4.57	0.77	Most Appropriate
4. The roles of the trainer			
4.1 Study the training course and manual for trainers in detail.	4.77	0.43	Most Appropriate
4.2 Coordinate with all parties involved.	4.83	0.38	Most Appropriate
4.3 Plan with the agency to determine the time, number of child care teachers, prepare the place and facilitate the training.	4.80	0.41	Most Appropriate
4.4 Participate in the meeting to clarify the roles and responsibilities of the trainers, jointly determine the roles and responsibilities to develop the abilities of the child care teachers who will be trainees, and set the training schedule.	4.53	0.73	Most Appropriate

Lists	\bar{X}	S.D.	Meaning
4.5 Prepare measurement and evaluation tools, media, equipment, and learning resources for each activity in a ready and sufficient manner.	4.63	0.49	Most Appropriate
4.6 Follow the steps in each activity, but modify and be flexible as appropriate.	4.57	0.57	Most Appropriate
4.7 Listen to problems, help, guide and provide advice to trainees throughout the training period.	4.53	0.68	Most Appropriate
4.8 Arrange the training room atmosphere to be friendly, fun, enjoyable, free from coercion, challenging to learn, and providing a sense of safety through the following methods: 1) Planning phase 2) Knowledge of the executive function phase 3) Designing experience phase (Design: D) 4) Reflecting phase 5) Evaluation technique phase (Evaluation: E)	4.60	0.50	Most Appropriate
5. The curriculum's activities			
5.1 The curriculum's activities are in line with the principles of the curriculum	4.63	0.49	Most Appropriate
5.2 Every step of the training activities is sequential, related, connected and continuous.	4.47	0.90	Very Appropriate
5.3 The activities at each stage are consistent, related, supportive and appropriate for child care teachers.	4.50	0.78	Very Appropriate
5.4 Methods for organizing training activities of the training curriculum development based on the guiding concept to promote the ability to organize learning experiences on executive functions in early childhood for childcare teachers	4.60	0.50	Most Appropriate
5.5 Duration of each activity	4.63	0.49	Most Appropriate
6. Training schedule			
6.1 Clearly specify the date, time, activity and location	4.60	0.50	Most Appropriate
6.2 Arrange activities in a practicable order.	4.57	0.50	Most Appropriate
6.3 Use appropriate and easy-to-understand language.	4.63	0.49	Most Appropriate
7. Media and equipment for training			
7.1 Complete, comprehensive, and convenient to use to develop childcare teachers to achieve the curriculum objectives.	4.53	0.51	Most Appropriate
7.2 Suitable for the conditions of the curriculum	4.57	0.50	Most Appropriate
7.3 Encourage teachers to be interested, enthusiastic and involved in the training activities.	4.50	0.51	Agree
8. Guidelines for measuring and evaluating training results			
8.1 Consistent with the principles and objectives of the curriculum	4.70	0.53	Most Appropriate
8.2 Use methods and tools for measurement and evaluation that are consistent with the content and objectives of the curriculum.	4.67	0.55	Most Appropriate
8.3 Reflects the abilities of teachers to manage early childhood executive function learning experiences of childcare teachers	4.63	0.56	Most Appropriate
8.4 Appropriate and actionable passing criteria.	4.60	0.56	Most Appropriate
8.5 Use appropriate and easy-to-understand language.	4.67	0.55	Most Appropriate
9. The training activities			
9.1 Activity 1: Brain and learning	4.63	0.49	Most Appropriate
9.2 Activity 2: Experience-enhancing activities	4.57	0.50	Most Appropriate
9.3 Activity 3: Movement and rhythm activities	4.53	0.51	Most Appropriate
9.4 Activity 4: Creative art activities	4.63	0.49	Most Appropriate
9.5 Activity 5: Free Activities and Outdoor Activities	4.80	0.41	Most Appropriate
9.6 Activity 6: Educational game activities	4.73	0.45	Most Appropriate
9.7 Activity 7: Supervise and monitor the implementation of the plan for organizing learning experiences on executive function in early childhood into educational practice.	4.60	0.77	Most Appropriate
9.8 Arrange activities in the proper order	4.53	0.73	Most Appropriate
9.9 Each activity is interrelated.	4.77	0.43	Most Appropriate
9.10 Use correct, appropriate, and easy-to-understand language expressions.	4.57	0.73	Most Appropriate
Total	4.64	0.54	Most Appropriate

Table 2. Results of improving the training curriculum outline based on expert suggestions

Areas for Improvement	Suggested Improvements
<p>1. Background and Significance It is recommended to highlight the significance of executive function development in early childhood and establish a connection between executive function and problem-solving skills. This will equip teachers with the necessary competencies to design effective learning experiences that foster executive function in young children.</p> <p>2. Principles of the Curriculum - The principles are not clear regarding the specific focus of teacher development.</p>	<p>- The significance of executive function development in young children should be emphasized, particularly given the current state of early childhood education where educators may not be adequately addressing this aspect of child development. The proposed training program aims to fill this gap by providing educators with the necessary tools and knowledge to effectively promote executive function in their students.</p> <p>- A key principle of the curriculum should be the development of a coaching-based approach to enhance the capacity of early childhood educators to design learning experiences that foster executive function in young children.</p>
<p>3. Objectives - The objectives should clearly outline the specific competencies to be developed among early childhood educators.</p>	<p>Please provide additional details in a bulleted list format to enhance clarity.</p>
<p>4. Training Program Structure - The training program should have a well-defined structure, with each activity clearly delineated and sequenced to facilitate practical implementation by the trainees.</p>	<p>Enhance the training activities by ensuring they are contextually relevant to the development of executive function in young children. The training activities should be clearly defined and aligned to promote a coherent approach, with a clear linkage between the activities and the desired outcomes.</p>
<p>5. Materials and Resources- The materials and resources selected are suitable</p>	<p>- No modifications.</p>
<p>6. Evaluation - A clear evaluation framework should be established to assess the educators' competency in designing and implementing learning experiences that foster executive function development in early childhood.</p>	<p>- The curriculum evaluation should be further refined to provide a more explicit assessment of educators' capacity to design learning experiences that promote executive function in young children. This can be accomplished through a detailed analysis of the educators' lesson plans for executive function development.</p>

From Table 2, based on the expert feedback and evaluation results, the coaching-based training curriculum for enhancing early childhood educators' ability to design learning experiences that promote executive function was further refined before implementation.

4. Discussion

The developed curriculum consists of six core components: 1) background, 2) principles, 3) objectives, 4) content, 5) instructional materials, and 6) assessment. The training is structured into five phases: planning, knowledge of brain function, design, reflection, and evaluation. This aligns with Arunlak Kammani's (2021) research on developing a training program to enhance English language teaching skills for primary school teachers, which also identified six components and a four-phase training process. Similarly, Wanvisa Muangthong's (2016) study on designing learning experiences based on life skills to promote critical thinking in young children identified five components and a four-phase process. This is consistent with Suchada Wangsiththidet, Tipaporn Sujaree and Nattachai Juntachum (2023) found that the research results revealed that the Teacher Competency training course in Experiential Management to Enhance EF Cognitive Skills for Early Childhood consisted of 6 components, including: 1) Principles, 2) Aims, 3) Content, 4) Training Activities, 5) Media and Equipment, and 6) Measurement and Evaluation. The training course is a 24-hour course that emphasizes collaborative learning processes, teamwork, and the creation of self-generated knowledge through hands-on practice. This aligns with the findings of the research of Ratchanibun Netphakdee, Natthakitsiri Wattanatakul, Wirachwong Phinan Wattana, Kamphiraphap Kongsamruay and Phrakitti Phongssiri Panyo (Simani). (2023) found that the training curriculum was a planning procedure of learning activity to enable behavioral changes according to aim and purpose. The concepts of training curriculum development for early childhood education teachers for development of language process contained 1) background, 2) principle, 3) purpose, 4) content structure, 5) training activity, 6) media and learning source, and 7) assessment and evaluation. Developing curriculum to suit social conditions and current changes was necessary for those who involved in educational management. Due to the most importance and necessity of childhood through development in all aspects that brain was rapidly developed and learned, this should be prioritized for development of early childhood education teacher's competency for self and social development to be up to global changes. Provided that children got proper nurture and learning management in accordance with the principles of learning and academic development, they would be able to be developed potentially affected to future quality of life. As the changes in the 21st century, it was illuminated that characteristics development of children were acquired for living worthily in the 21st century. This aligns with the findings of the research of

Sakchai Jaisuetrong (2018) The purposes of this research were to develop and to study the effectiveness of an experiential art model to enhance executive functions of the brain in early childhood. The brain has five executive functions of the brain including, working memory, response inhibition, flexibility, emotional control and organization, Which was established using research and development. The experiment had three phases; phase one was concerned with synthetic documents and related research about executive functions. The research found that executive functions developed in early childhood. Phase was concerned with the creation and development of a experiential art model to enhance executive functions. The format of the experiential art model is the motivation to learn, plan to learn, action based on learning and recall of learning. Phase three tested the effectiveness of the experiential art model to enhance executive functions. The effectiveness was tested and brought to trial with children aged between five to six in the first term of in the 2018 academic year for a period of eight weeks, followed by evaluation and observation of behavior prior to the event, which took place every two weeks. Then after five, they were analyzed with a repeated measures ANOVA and it was found that the experience of art forms developed executive functions to a significant degree at a level of .05 and Eric Jensen (2000) mentioned about the state of Plasticity or the modification of the human brain that the human brain is constantly changing by connecting nerve cells that can happen to people of all ages, not just children. The brain of adults or the elderly also does not stop. If early childhood teachers are encouraged to receive training, enhance their knowledge, and put it into practice, importantly, there is continuous training to enhance the knowledge of early childhood teachers.

Early childhood educators who participated in the training gained knowledge about executive function development in young children at different ages, as well as effective teaching methods such as experiential learning and play-based learning. They learned how to design activities that stimulate the prefrontal cortex, facilitate open and creative communication between teachers and children, engage in collaborative learning, and assess and continuously improve children's progress.

5. Suggestion

5.1 Suggestions for Implementation

- 1) The development of this coaching-based training program to enhance early childhood educators' ability to design learning experiences that promote executive function in young children has yielded positive results. It has effectively developed the capabilities of early childhood educators working in preschool settings.
- 2) This coaching-based training program can be adapted for use with early childhood educators in other institutions.
- 3) A thorough understanding of the curriculum components is essential before **implementation**.

5.2 Suggestions for Future Research

- 1) Further research should explore the integration of coaching-based approaches to enhance early childhood educators' ability to design learning experiences that promote executive function with other training programs. This could potentially enhance educators' abilities in other areas.
- 2) Early childhood educators and local governments should consider integrating local wisdom into the development of learning experiences that promote executive function in young children.

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No additional data are available.

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