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Model of Collaborative Network for Promoting the Enhancement of Educational Provision Efficiency of Child Development Center under Local Administrative Organization

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Abstract

This research aimed to: (1) develop a collaborative network model to enhance the efficiency of educational provision in child development centers (CDCs) under Local Administrative Organizations, and (2) assess the quality of the developed model. Employing a research and development (R&D) design, the study collected quantitative data from 1,620 respondents through validated questionnaires. Data analysis involved descriptive statistics and latent growth curve modeling. Qualitative data were also obtained from 158 relevant Thai and international documents, and interviews with 56 experts and stakeholders. The proposed model consists of key elements, including development rationale, objectives, operational plans, implementation guidelines, and evaluation strategies. It comprises four core operational components: (1) Related and Specific (RS), (2) Unique and Optional (UO), (3) Informative and Challenging (IC), and (4) Flexible and Adaptable (FA). The model follows the PDCA (Plan-Do-Check-Act) cycle and incorporates self-assessment, internal monitoring, and external supervision to ensure quality implementation. Model evaluation involved stakeholders such as CDC heads, early childhood teachers, academic institutions, and network partners. Results confirmed the model's relevance, practicality, and appropriateness in terms of content, activities, and time management. The trial application demonstrated a consistent upward trend in performance indicators, with latent growth rates increasing from April to September 2023. Initial mean scores ranged from 1.756 to 1.985, while slope means ranged from 0.529 to 0.813. Model fit indices indicated strong alignment with empirical data. The findings suggest that the collaborative network model effectively supports capacity building and educational enhancement in CDCs through multisectoral collaboration.

Introduction

To recognize the success of the education reform, an assessment of its impact must be conducted. Section 62 of the National Education Act of 1999, along with its Amendments (Third Edition) of 2010, mandates the monitoring and evaluation of the efficiency, the effectiveness, and budget spending in educational management. This must align with education principles, guidelines, and quality standards. Additionally, Sections 67 and 69 emphasize the importance of research in monitoring and assessing the quality of education management. Ultimately, the efficiency of educational institutions is a key indicator of the success of education reform. (Ministry of Education, 2022)

The development of education management with the highest efficiency significantly impacts the quality of learners, aligning with the objectives of educational institutions. Consequently, the Office of the Basic Education Commission (OBEC) recommended adopting the key strategy of collaborative networks. This strategy positions communities and educational institutions at the core, fostering continuous development of learning management competencies. Additionally, it serves as a viable option for executives to enhance educational management efficiency in Thailand. Building collaborative networks based on mutual understanding of the objectives, shared responsibilities, and the exchange of knowledge and experiences is crucial. The collaborative approach can extend beyond educational partnerships to other areas, fostering strong and effective collaborations. (Ministry of Education, 2023)

The researchers conducted this research and development (R&D) study focusing exclusively on childhood education institutions as it is the foundational level before primary, secondary, and higher education. They targeted child development centers under Local Administrative Organization, which had not yet achieved management efficiency according to the standard and evaluation report of child development center (Local Administrative Organization, 2022). The survey revealed that there were 1,298 out of 11,327 child development centers, (11.46%) did not meet the minimum standards. Furthermore, in August 2021, 43 stakeholders, including early childhood teachers, heads of child development centers, the staff of Local Administrative Organization involved in early childhood education. The findings indicated that most child development centers still lacked efficiency in educational management, facing challenges in maximizing outcomes while minimizing inputs and resources.

Due to the lack of educational management efficiency in child development centers, it is recommended to establish a collaborative network involving relevant staff and organizations. This includes higher education institutions that produce childhood educators, network partners associated with child development centers. Collaborating in this network will enhance educational management efficiency by considering key components such as network members, leaders, collaborative members, shared learning, investment, communication, mutual benefit, and cooperative interest. Furthermore, members must rely on each other, ensure equality, volunteer, exchange ideas, manage administratively, and strive to achieve common goals (Daudi et al., 2016; Turvey, 2019; Froehlich et al., 2020). Consequently, child development centers need to create a collaborative network involving relevant individuals and organizations. This includes higher education institutions that train childhood educators, community members, education committees, local wisdom experts, early childhood education institutes, and any organizations that monitor child development centers. This collaborative approach could be a viable option for enhancing educational management efficiency. In this research study, the researchers applied Participatory Action Research (PAR) based on the concept of Kemmis (1988); Sagor (2004); and Morton (2005). Researchers, researcher assistants, and network partners who were stakeholders collaborated on brainstorming, planning, operating, and evaluating within a flexible framework that offered various options. Their work was adaptable to different situations and focused on enhancing the educational management efficiency of child development centers through collaboration. They emphasized reflective thinking on their completed work to concretely improve the educational management efficiency of child development centers. Therefore, the researchers studied the development of a collaborative network model to improve and enhance the educational management efficiency in child development centers under the Local Administrative Organization, using Participatory Action Research (PAR). This model proved useful at all levels, including child development centers, Subdistrict/Municipality Administrative Organizations, and the Local Administrative Organization responsible for monitoring these centers. It facilitated problem-solving and the development of educational management efficiency. Furthermore, this collaborative network model could be applied to other kindergarten schools with similar

settings. It is also valuable for setting policies to promote and enhance educational management efficiency and standards for early childhood education within the Local Administrative Organization.

Research Objectives

1) To develop a model of collaborative networks to improve and enhance the efficiency of educational provision in child development centers under the Local Administrative Organization

2) To examine the quality of the collaborative network model for improving and enhancing the efficiency of the educational provision

Conceptual Framework

The conceptual framework of this research is illustrated in Figure 1. The collaborative network model for improving the efficiency of educational provision efficiency of child development centers under the Local Administrative Organization consists of three components: input, process, output/outcome. This model was developed based on related concepts and theories about networking, including the social exchange theory, symbolic interaction theory, phenomenology theory, network building guidance, and principles of early childhood education. The integration of these principles into the main operation covers four parts: 1) power cooperation, 2) power enforcement by consulting through the clinic, 3) PDCA cycle with monitoring, and 4) qualitative and quantitative evaluation.

Research Methods

This research followed a research and development (R&D) approach with five stages as follows:

First Stage: Documentary Research (R1) This stage involved searching, recording, and studying 158 documents and research papers from Thailand and international about collaborative network models for enhancing the educational provision efficiency. These documents served as guidelines for developing the collaborative network model to improve educational provision efficiency in child development centers under the Local Administrative Organization. Additionally, this stage identified the components and key performance indicators (KPI) for assessing the model's effectiveness and developed the model assessment tools.

Second Stage: Framework Development (D1) This stage involved analyzing and synthesizing the content from the documents studied in the first stage (R1) to develop the framework for the collaborative network model aimed at enhancing educational provision efficiency.

Third stage: Qualitative Research from Stakeholder Brainstorming and Expert Interviews (R2) This stage involved brainstorming meetings with three groups of 50 stakeholders: 1) administrators and early childhood teachers from child development centers, 2) university administrators and lecturers from higher education institutions that produce childhood educators, and 3) network partners who include community members, institutional committee members, parents, local wisdom experts, and organizations that monitor child development centers. In addition, there was an in-depth interview with six experts selected based on criteria such as expertise in early childhood education, experience in management positions within early childhood education institutes, and expertise in educational provision efficiency. Therefore, the total number of participants was 56. Content analysis was performed to develop guidelines for the model.

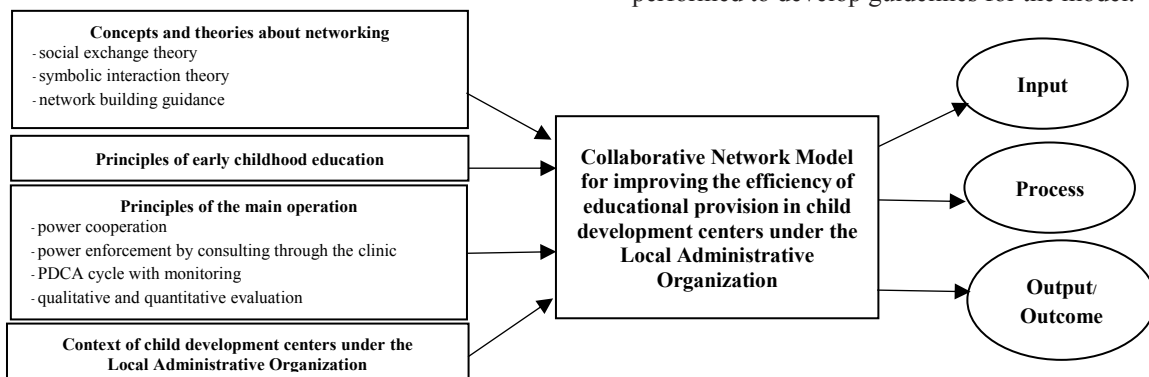


Figure 1 Conceptual Framework

Fourth Stage: Draft of Model Development (D2)

This stage involved synthesizing data from documentary research in the first stage and the results from the analysis of the brainstorming meetings with stakeholders and the in-depth interview of the experts from the third stage (R2). The goal was to create a draft of the model and assessment tools.

Fifth Stage: Workshop Meeting for Model Implementation and Quality Evaluation (R3) This stage aimed to prepare the staff of child development centers, including administrators and early childhood teachers, as well as network partners, to be ready to implement the model. The collaborative planning of the model trial involved child development staff, network partners, local research assistants, and the researchers. A workshop meeting was arranged to develop the skills of administrators, early childhood teachers, and network partners. The model was then tested in four provinces (Nakorn Pathom, Chonburi, Nonthaburi, and Samut Sakhon), involving 4-6 child development centers per province, totaling 20 centers.

The participants of the model workshop meeting included one administrator from each child development center, one to two early childhood teachers, and one to three network partners, making a total of three to six people in each center. Additionally, there were four researchers and researchers assistants in all four provinces. The total sampling group was 67 people and the model was tested in three periods which were (1) before trial, (2) three-month trial, and (3) six-month trial.

The details of the evaluation of the model quality were as follows:

1. Data synthesis from in-depth interview with 56 stakeholders and experts.
2. Data synthesis from daily journal entries written by administrators of child development centers and early childhood teachers during the model trial. The data collected from 960 journals over six months, involving 20 centers.
3. Data synthesis from the follow-up records of 40 administrators of child development centers and early childhood teachers after attending the model training project and implementing the model.
4. Data synthesis from field trip lessons learned by the researchers' assistants during their monitoring of the operation. This involved observing and conducting in-depth interviews with administrators of child development centers, early childhood teachers, and the network partners.

5. Trend analysis of the collaborative network model trial using the collaborative network evaluation questionnaires completed by stakeholders in three intervals: (1) before trial, (2) after 3-month trial (June 2023), and after a 6-month trial (September 2023). In total, 540 people participated, resulting in 1,620 completed questionnaires. The details were as follows:

5.1) There were 20 child development centers, divided into two groups: (1) 1-2 administrators from each child development center, totaling 35 administrators completing 105 evaluation questionnaires over three intervals; and (2) 2-6 early childhood teachers from each center totaling 115 teachers, completing 345 evaluation questionnaires over three intervals. In total, 450 evaluation questionnaires were completed.

5.2) Network partners included community members, institutional committees, local wisdom experts, and 20 organizations that monitored child development centers. Each organization had 18-20 participants, totaling 390 people across three intervals, resulting in 1,170 completed evaluation questionnaires.

Validity and Reliability of Research Tools

The interviews and the questionnaires were verified by the Index of Item-Objective Congruence (IOC), which showed an overall IOC ranging from 0.67 to 1.00. The reliability of the questionnaires was tested by administering them to three trial groups, each consisting of 30 people, for a total of 90 participants. The results indicated high reliability, with Cronbach's alpha coefficient ranging from 0.7932 to 0.9187.

Data Collection and Data Analysis

The data collection, research tools, and data analysis for this study followed these research steps:

1. **Model Development:** The process started with collecting data from 158 Thai and international research papers related to the collaborative network model for promoting the educational provision efficiency. This was followed by brainstorming sessions and in-depth interviews with 56 stakeholders and experts. The researcher then analysed data through content analysis, synthesizing the information from the two data sets to develop the model.

2. **Evaluation of the Model Quality:** The model quality was evaluated by collecting qualitative data from in-depth interviews with stakeholders which included child development centers, educational institutions that produce early childhood teachers, network partners, and

experts. Additionally, a model trial was conducted involving administrators of child development centers and early childhood teachers over a 6-month period, with 960 follow-up questionnaires completed by these administrators and teachers. This model was also tested with 67 participants, and field trip lessons were learned by the researchers' assistants and the local researchers who monitor the model's operation.

The data was analyzed using content analysis to determine the model quality. Data was collected from stakeholders at three intervals: (1) before trial, (2) 3-month trial (June 2023), and 6-month trial (September 2023). The trend evaluation of collaborative network was based on 1,620 questionnaires during model trial, analyzed by latent growth curve model.

Results

The researcher presented the findings in two main topics as follows:

1. The findings from the model development of the collaborative network aimed at promoting the educational provision efficiency of child development centers under the Local Administrative Organization

The researcher synthesized two parts: studying Thai and international research papers related to the collaborative network model for promoting educational provision efficiency, and conducting brainstorming meetings of stakeholders and in-depth interviews with the experts to develop the model. The word 'model' was defined as a set of academic activities systematically designed with a focus on two main principles: the development of administrators of child development center, early childhood teachers, and network partners to create network aimed at improving educational provision efficiency and early childhood students. The model used specific instrument development activities to achieve the goal of promoting educational provision efficiency in child development centers.

The model's components include the following:

1) Directions: The formation of the model development of collaborative network to promote the educational provision efficiency of child development centers under the Local Administrative Organization

2) Background: The foundation of the model development of collaborative network to promote the educational provision efficiency of child development centers under the Local Administrative Organization.

3) Model development: The model development was guided by concepts and theories about networking,

such as social exchange theory, symbolic interaction theory, phenomenology theory, and network building guidance (Daudi et al., 2016; Turvey, 2019; Froehlich et al., 2020), as well as the online social network of Lu & Wen (2020). The integration with the principles covered four main parts: (a) power cooperation, (b) power enforcement through consulting at the clinic, (c) monitoring using the PDCA Cycle, and (d) qualitative and quantitative evaluation. Consequently, developing model comprised four components: 1) related and specific (RS) – the activity host had to understand the objective of each model activity to connect the development of the collaborative network to promote the child development center's efficiency with the current and the future situations. Moreover, they could utilize previous related experiences to design model activities for child development centers, thereby enhancing educational provision efficiency, 2) unique and optional (UO) – the model setting had to satisfy the needs of each child development center. Activities and projects should be varied so the center can choose the most appropriate ones, 3) informative and challenging (IC) – the model setting should enable the staff of child development centers and network partners to gain knowledge and feel challenged to follow the model, and 4) flexible and adaptable (FA) – the flexible model could be adjustable to fit the context of the educational institution and early childhood students appropriately. The model setting should operate both internal and external environments. Furthermore, the staff of child development centers and network partners should have an opportunity to demonstrate their diverse capacities in the realm of educational provision efficiency, allowing for acquisition of various perspectives to enhance the educational provision efficiency.

The models were developed by incorporating input from the administrators of child development centers, early childhood teachers, network partners, and early childhood students. The aspects of the administrators, early childhood teachers, and network partners involved the development of a collaborative network, encompassing inputs, operating process, and outputs/outcomes to promote the educational provision efficiency based on the PDCA cycle. This included the development of educational provision efficiency, administrative management, learning arrangements for early childhood students, and a network development plan to enhance the efficiency of child development centers in both short-term and long-term plans, as well

as the practical arrangement of development plan for the centers. Additionally, the model emphasized promoting child development in all aspects—physical, cognitive, emotional, and social development—for early childhood students.

4) The objectives of the model are detailed as follows:

4.1) To develop the competency of the administrators of child development centers, early childhood teachers, and network partners in improving the collaborative network to promote the development of educational provision efficiency of child development centers.

4.2) To develop early childhood students to grow according to appropriate age indicators synthesized by the researchers, such as physical development and movement, cognitive development, and emotional and social development

4.3) To serve as guidelines for child development centers to improve the specific models, making them relevant to their respective contexts.

5) The model construction comprised two parts:

5.1) The development of the administrators of child development centers, early childhood teachers, and network partners. This included the learning context of developing collaborative network in terms of inputs, process, and outcomes. It also involved the development of a collaborative network to promote the educational provision efficiency based on PDCA cycle of administrative management and learning management for early childhood students, including developing plans for promoting efficiency in both short-term and long-term plan.

5.2) Early childhood development, which comprised learning contexts in physical development and movement, cognitive development, and emotional and social development

6) The operational plan of the model, which was based on the model construction that aimed to develop the administrators of child development centers, early childhood teachers, and network partners to be fully competent in their work, was defined in four timeframes as follows:

Stage 1: Workshop training for the collaborative network model to promote the educational provision efficiency of child development centers included the following details:

1) The development of the collaborative network to promote the educational provision efficiency of child development centers included inputs of collaborative network such as collaborative network characteristics, mutual goal settings, scope of collaboration, and collaboration resources. Additionally, the operation process of the collaborative network involved network establishment, collaborative network planning, network communication and learning exchange, network monitoring system, and evaluation and reflection to develop collaborative network (3 hours).

2) The workshop training aimed to promote knowledge and practice for developing collaborative network based on the PDCA cycle through SWOT analysis, guidelines for increasing educational provision efficiency, strategic planning and operation as planned, evaluation, monitoring. This was intended to develop the network based on development cycle and establish a development plan for the collaborative network to promote the educational provision efficiency of child development centers in both short term and long term. The training also included a workshop on the development plan of child development centers, create a specific model of an educational institution that relates to the context of child development centers (3 hours).

3) The workshop training aimed to promote knowledge and practice in administrative management and learning management of early childhood students. The key topics included setting policies for early childhood educational management, basic knowledge of early childhood education and childhood development, creating environments that promote learning for early childhood students, managing environmental health in child development centers, collaborating with the community of the educational institutions, and managing learning to promote the childhood development (3 hours).

4) The workshop training aimed to promote knowledge and practice quantitative and qualitative evaluation (3 hours).

Stage 2: The implementation of the plan developed during Stage 1, to be conducted over a period of 6 months.

Stage 3: Monitoring the operation as planned to create the Key Performance Indicators (KPI) for the defined outputs.

Stage 4: Evaluation of the outcomes and implementation of the necessary adjustments for further development.

7) Guidelines of model activities setting

Guidelines of model activities setting consisted of two parts: guidelines for developing the administrators of child development centers, early childhood teachers, and network partners, and guidelines for developing early childhood students. These guidelines involve defining objectives, creating activities, assigning responsibilities, and setting clear assessment guidelines. The guidelines should be varied, integrating principles, concepts, and theories to promote collaborative network and enhance the educational provision efficiency of child development centers.

8) Model documentation covered various aspects: the PDCA Cycle, SWOT Analysis, National Education Act 2010 relevant to educational provision efficiency, Early Childhood Curriculum 2017, development guidelines of the collaborative network, educational provision efficiency KPIs, guidelines for enhancing educational management efficiency, environment settings to promote learning for early childhood students, environmental health management in child development centers, and evaluation.

9) Model evaluation included several

components: the evaluation of the collaborative network, the evaluation of management efficiency in child development centers, follow-up questionnaires of administrators and teachers, overall behavior observation of the administrators and teachers, journal writing of the administrators and teachers, and the evaluation of early childhood development evaluation.

The diagram in Figure 2 illustrates the model of collaborative networks designed to enhance the efficiency of educational provision in child development centers under the Local Administrative Organization.

2. Results of the Quality Examination of the Collaborative Network Model for Promoting The Enhancement of Educational Provision Efficiency

2.1) In-depth interviews: The stakeholders, including child development centers, educational institutions that produce early childhood teachers, network partners, and experts provided positive feedback on the developed model. They noted its appropriateness in terms of context, activities, and timing. Specific points mentioned were: 1) the model context aligns with the

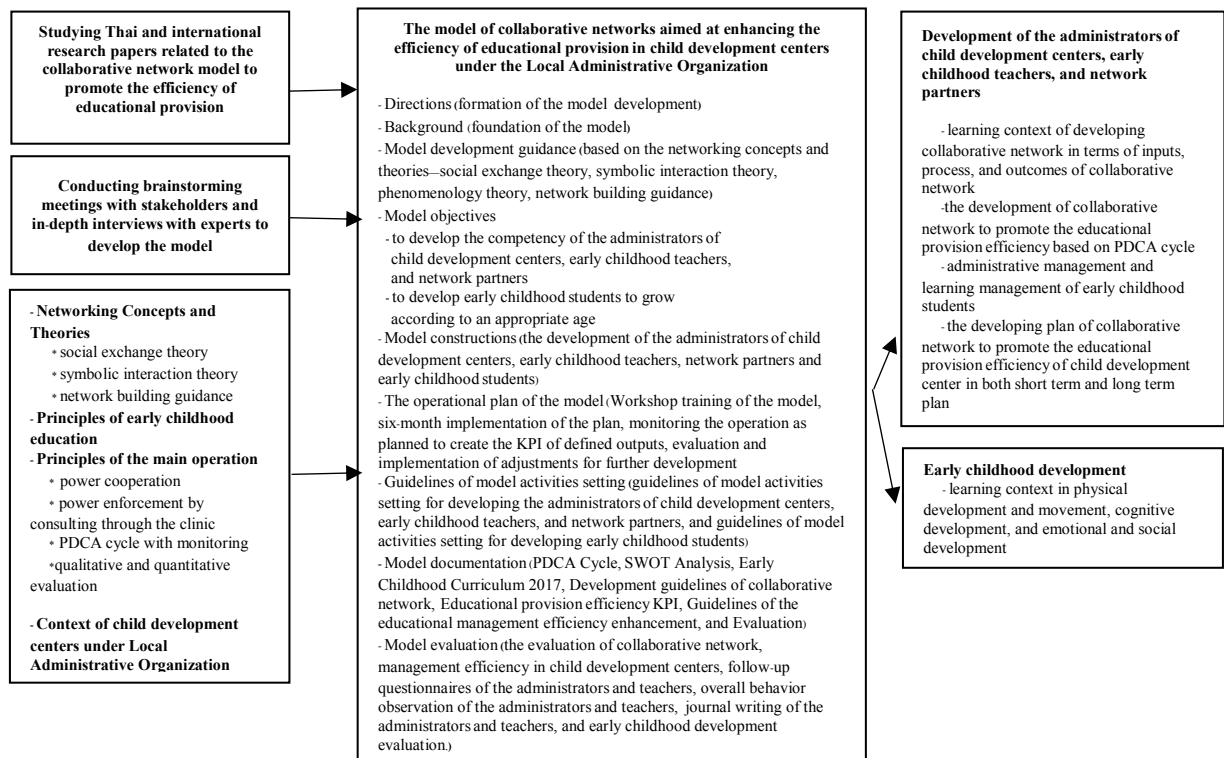


Figure 2. The diagram of model of collaborative networks for promoting the enhancement of educational provision efficiency of child development centers under Local Administrative Organization

context of child development centers, 2) the model provides training on relevant knowledge for staff at child development centers, including 'training by doing', 3) the model includes workshop training on SWOT Analysis, and the development of short-term and long-term plans based on PDCA Cycle, 4) the collaborative network model promotes educational provision efficiency through the PDCA cycle in monitoring, planning, operating as planned, evaluating, and implementing with the self-monitoring, and researcher assistant monitoring, 5) the model's evaluation is based on the PDCA Cycle. Furthermore, the model context requires the stakeholder's collaboration, which was found to be effective and appropriate. The informants agreed that the outcomes were aligned with the synthesized KPI's of the collaborative network to promote the educational provision efficiency of child development centers. They also stated that the model was appropriate, feasible, and useful due to its collaborative network, planning, monitoring, scope of collaboration, resources, and evaluation, which reflect the sustainability of the development of collaborative network for enhancing the educational provision efficiency of child development centers.

2.2) The synthesized data from the daily journal entries of administrators and early childhood teachers after the model trial could be divided into two points which were:

2.2.1) The operational process to develop collaborative networks to promote the enhancement of educational provision efficiency. The results indicated that the operational process to develop collaborative network can be divided into six points: 1) establishing the goals of the collaborative network between child development centers and network partners, 2) clarifying the scope of collaboration, 3) developing a strategic plan for the network, 4) creating effective communication and learning exchange guidelines, 5) implementing a system for empowerment and monitoring based on the defined KPI's, and 6) conducting evaluations and reflections to develop the network sustainably.

2.2.2) The behaviors based on KPI's of collaborative network to promote the enhancement of educational provision efficiency in developed child development centers. The results indicated that the behaviors based on the defined KPI's were observed in six key areas. Firstly, there was significant collaboration to promote the resources of child development centers, including both equipment and the wisdom of network

partners. Secondly, efforts were made to secure budgets for child development centers, aimed at supporting early childhood students, and teachers. Thirdly, there was collaboration in administrative management and learning management, characterized by innovative learning management styles and knowledge exchange with network partners. Additionally, research collaboration was noted, focusing on developing early childhood students and child development centers with network partners, followed by the implementation of the research findings. Furthermore, the quality of administrative management in child development centers was emphasized. Finally, there was a strong focus on fostering early childhood development, particularly in the areas of physical development and movement. These collaborative behaviors, guided by the defined KPIs, reflected the overall aim of enhancing the efficiency of educational provision in child development centers.

2.3) The synthesized data from follow-up questionnaires of the administrators and early childhood teachers after attending the model training and trying out the model. Administrators and early childhood teachers provided feedback on the model training and trial, highlighting three key aspects:

2.3.1) Improving and developing process during the model usage and trial. The informants of the administrators and early childhood teachers stated that: 1) they encountered difficulties in following the plan as they needed time to grasp the concept and realize the importance of collaborative network, and 2) during the first stage, there were the issues with KPI's in communication and learning exchange. To address this, meetings were arranged with network partners to collaborate on ideas and recommendations. This collaborative approach led to a better understanding of the tasks and more effective teamwork.

2.3.2) Operating as planned based on the development plan of child development center. After attending the model training and trial, the development plan for child development centers brought several benefits, primarily in building a collaborative network to enhance the efficiency and administrative management of the centers. The administrators and teachers shared the following insights: 1) the researchers provided support and recommendations, which helped in developing an appropriate collaborative network, 2) community leaders, local leaders, educational institutions committees, local wisdom experts, organizations monitoring child

development centers, and parents became part of the collaborative network, leading to high satisfaction among stakeholders, 3) the PDCA Cycle was implemented for planning during training, 4) administrators and the early childhood teachers gained knowledge from the training and successfully integrated it into the educational management at their child development centers, 5) the practice of journal writing provided administrators and the teachers with opportunities to communicate and exchange opinions, and 6) the knowledge on evaluation, both quantitative and qualitative, provided by the researchers was applied to improve collaborative management and enhance administrative efficiency at the child development centers.

2.3.3) The distinctions between the operational approach of the collaborative network model and the traditional functioning of child development centers. The administrators and early childhood teachers highlighted several key points regarding the model training. The training increased awareness and alertness towards enhancing the efficiency of educational provision more than before. Their own SWOT Analysis of the child development centers and the development plans were relevant to the current situation of the centers. Evaluations from all stakeholders provided the fair overall assessment. Friendly assistance and monitoring from the researchers established the good work guidelines. Defining the collaborative network as KPI's ensured a clear assessment. Writing daily journals helped administrators and teachers recognize their work planning. Collaborative network meetings served as a valuable platform for receiving the feedback from the network partners. Finally, the evaluation from the model training prompted a comprehensive assessment using both quantitative and qualitative methods.

2.4 The consolidated findings from the field trip record. The research assistants monitored the collaborative network of child development centers during the model trial and presented the findings as follows:

2.4.1) Attention and work responsibility. The model training heightened the awareness and responsibility of the administrators, teachers, and network partners in building a collaborative network. In addition, they acknowledged the importance of being accountable for their assignment and paid greater attention to the collaborative network to enhance the efficiency of educational provision.

2.4.2) Increased working and academic collaboration. When the child development centers followed the model operation, it fostered powerful collaboration in various forms: 1) *The staff collaboration of child development centers* improved significantly; administrators and the early childhood teachers worked together more than before, including consulting, planning, and solving problems. 2) *Collaborations among child development centers increased as well*; after the model training with other child development centers in the same province, they cooperatively worked and discussed ideas or guidelines about to achieve the objectives. 3) *Collaboration between child development centers and network partners also saw a boost*. Collaborative planning, communication, and learning exchange, which were part of the KPIs, showed the strength of the collaborative network, leading administrators, the early childhood teachers and the network partners to develop plans together. 4) *Collaboration between the child development centers and the researchers was also enhanced*. The administrators, the teachers sought opinions from local research assistants operational issues. 5) *Collaboration among the staff of child development centers, their original affiliation, and the Local Administrative Organization further strengthened the whole effort*.

2.4.3) The operations of learning management development to enhance childhood development by the staff in child development centers. The administrators and teacher gained valuable insights from the model training. They learned clearly about various aspects such as the concept, principles, operation of early childhood education.

2.4.4) The operation of the collaborative network development to promote educational provision efficiency. The development of the collaborative network aimed to enhance the efficiency of educational provision by the staff in child development centers. It was found that the administrators and the early childhood teachers promoted the collaborative network through several key actions: 1) *planning on collaborative network* – they conducted meetings to arrange the working committees, and compile network member information. 2) *network communication and learning exchange were emphasized*. Information was shared among network partners to ensure mutual understanding and that the defined objectives are achieved. 3) *network empowerment and monitoring* – this involved overseeing the network and providing recommendations to solve problems and meet objectives.

4) *Evaluation and reflection were conducted to improve the network sustainably.* With evolution tools set up collaboratively and recommendations implemented to enhance and promote the educational provision efficiency of child development center.

2.4.5) Self-evaluation and adaptation for the continuous improvement of collaborative network. As the model required administrators and teachers to write journals and conduct follow-up evaluations, it was found that they could evaluate themselves and make improvement. This ongoing self-assessment and adaptation process contributed to the continuous enhancement of the collaborative network.

2.4.6) The development of early childhood students has increased. This was due to three main reasons. First, the model operation led child development centers arrange both inside and outside environment to promote child learning, including child health. Secondly, self-evaluation by administrators and teachers through journal writing, and third, the regular evaluations focused on promoting child development further enhance their growth.

2.4.7) The evaluation from stakeholders of child development centers. The research found that the evaluation made the administrators and the teachers realize the importance of developing a collaborative network.

2.4.8) The friendly empowerment and monitoring of child development centers. The informants expressed positive impressions of the researchers' monitoring system.

2.5 The analysis of model quality after the trial. The analysis of model quality after the trial was conducted using the latent growth curve model, evaluating inputs, process, and outputs/outcomes of three models. The data showed linear growth, analyzed over three time periods: before trial (April 2023), after a three-month trial (June 2023), and after a six-month trial (September 2023). The results revealed that the mean change rate of three KPI's during April and June 2023 was between 0.294 and 0.459, and between June and September 2023, it ranged from 0.497 and 0.598. The initial mean measurement (ML) was between 1.756 and 1.985 and the mean change rate (MS) was between 0.529 and 0.813. In addition, all model analyses aligned with empirical data. Comparing the development rate from April to June 2023 (B2) with the development rate from June to September 2023, the latter showed higher growth across all variables than the former.

Research Discussion

The researchers summarized and discussed the findings into two main topics as follows:

1. The model of collaborative network to promote the enhancement of educational provision efficiency of Local Administrative Organization The developed models differ from other collaborative network models in two key aspects:

1) The developed model focused on developing the administrators of child development centers, early childhood teachers, and network partners. To establish a collaborative network, it was essential to improve the work performance of these key group. This was because, firstly, from the KPI synthesis of collaborative network aimed at enhancing educational provision efficiency, the model improved all inputs, process, and outputs/outcomes, including those of administrators, the teachers, and the network partners, and secondly, they gained confidence in the success of the model.

2) The developed model defined clear KPIs of collaborative network which included development KPIs for administrators, early childhood teachers, and network partners, including child development KPIs focusing on physical development and movement, cognitive development, emotional and social development. This is relevant to the concepts and theories about networks such as social exchange theory, symbolic interaction theory, phenomenology theory, and network building guidance (Daudi et al., 2016; Turvey, 2019; Froehlich et al., 2020; Ministry of Education, 2017). There were four components of model operations designed to develop a collaborative network model for promoting the enhancement of educational management which were 1) related and specific, 2) unique and optional, 3) informative and challenging, and 4) flexible and adaptable.

3) The developed model was an integrated work based on the PDCA Cycle in monitoring. The collaborative network development aimed to enhance educational provision efficiency by incorporating the PDCA cycle and integrating concepts, theories, and principles of child development. This approach included the following:

3.1) The model was developed from the collaborative network development to promote the enhance the efficiency of educational provision in child development centers and network partners. This focus on collaborative network development aligns with the research of Hou et al. (2021) and Hassan & Mahmoud (2021).

3.2) The benefits of the developed model operation were twofold: firstly, increasing the mutual understanding among the administrators, the teachers, and the network partners. This aligns with the research paper of Tilhou et al. (2021) and Boudria et al. (2018). Secondly, it facilitated the exchange of learning from network building among teachers inside and outside the child development centers, networks, Subdistrict/Municipality Administrative Organizations, Local Administrative Organizations, and higher education that produced network building among early childhood teachers.

3.3) The developed model had a concrete on administrators, teachers, and network partners as it concretely defined KPI's, the operations, the content, the model operation, and the evaluation.

2. The quality of the collaborative network model to promote the enhancement of educational provision efficiency of child development centers can be described in three main topics as follows:

1. The impact on administrators and teachers includes building networks between early childhood teachers, staff of child development centers, and network partners. This encompasses improvements in administrative management within the child development center, such as environmental arrangement, environmental health management, community collaboration, classroom research, and more. Additionally, the model had a positive effect on network partners and early childhood students. classroom research, etc. Additionally, the model had a positive effect on network partners and early childhood students.

2. The quality of the collaborative network model was assessed by studying the development and changing trends of its components, which included inputs, processes, and outputs/outcomes. The first measurement was taken before the experiment, while the second and the third measurements were taken during the usage of the collaborative network model. The results showed that the changing rates of the means from the first measurement were between 1.756 and 1.985. The second measurement had positive change rates, it was between 0.265 and 0.418. The third measurement also showed positive changes in rates, ranging between 0.529 and 0.813. This indicated that the development of collaborative network components tended to increase linearly. Moreover, the evaluation based on PDCA cycle in monitoring needed to be 1) a wide and flexible model, and 2) arranged simultaneously with model management and evaluation.

3. The guidelines for monitoring the quality of the model can be considered in two topics:

3.1) Monitoring the model quality involved holistic research and longitudinal trend research to study the latent growth curve model of collaborative network. Both types of research showed the similar findings. Monitoring the model quality from all stakeholders required both quantitative and qualitative research methods. However, this study did not fully incorporate quantitative research methods, such as outcome mapping research or 360-degree assessment.

3.2) The guidelines for model quality monitoring applied various methods which yielded both positive and negative results. The negative findings showed that the administrators and early childhood teachers spent excessive time on evaluations. However, the positive findings demonstrated comprehensive and clear evaluations. Administrators and teachers learned the evaluation process and recognized its benefits. Additionally, there were administrators and teachers from 7 child development centers (35%) expressed a desire to continue using these evaluation tools in their centers.

Suggestion

Implications of the Study

1. The results from the development of the collaborative network model evaluated in both quantitative and qualitative research, demonstrated that the model is appropriate and useful with the context of child development centers under the Local Administrative Organization.

2. Evaluation instruments for the collaborative network were developed to be appropriate for child development centers under the Local Administrative Organization, and they were verified validity and reliability.

3. Child development centers can adapt this developed model to their specific contexts by considering three aspects: input, process, and output/outcome. They should also incorporate both quantitative and qualitative research tools for monitoring and evaluation.

4. Information about the development and the longitudinal changing trends of the collaborative network from stakeholders was obtained, which is useful for policy setting to promote the enhancement of educational provision in collaborative network in the future.

5. Subdistrict/Municipality Administrative Organizations operating under this model could be benefit from publishing it to responsible organizations, such as the Local Administrative Organization.

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