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Collaborative Network for Developing the Potential of Children with Disabilities in Special Education Centers in the Northeastern Region

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ABSTRACT

This study aims to 1) Examine the consistency and alignment of the indicator model for collaborative networks in enhancing the potential of children with disabilities in special education centers with empirical data. 2) Investigate the characteristics of collaborative networks in developing the potential of children with disabilities, the conditions influencing their formation, the strategies employed, and the resulting outcomes within special education centers.

The research sample consisted of 360 administrators and teachers from special education centers in the Northeastern region of Thailand, selected through a multi-stage random sampling method. Data collection was conducted using a five-point Likert scale questionnaire. The data were analyzed using basic statistical methods, confirmatory factor analysis (CFA), and theoretical analysis based on a grounded theory approach.

Findings The collaborative network for developing the potential of children with disabilities in special education centers in the Northeastern region comprises four key components. 1.Interdisciplinary professional learning 2.Resource sharing 3.Mutual trust among network members, and 4.shared goals and values in developing the potential of children with disabilities. The model fit analysis confirmed the alignment between the indicator model and empirical data, with the following statistical values: $\chi^2 = 347.541$, df = 306, $\chi^2/df = 1.1358$, P-Value = 0.0501, RMSEA = 0.019, SRMR = 0.029, CFI = 0.993, and TLI = 0.991.

Furthermore, the study explored the characteristics of the collaborative network, the conditions influencing its formation, the strategies employed, and its consequential outcomes. The results indicate that the collaborative network conforms to the four identified components. Additionally, four key strategies were identified, shaped by two contextual conditions and two intervening conditions. The outcomes of these networks were observed across three domains 1.The development of special education centers, 2.The professional growth of administrators, teachers, and personnel, and 3.The strengthening of collaborative networks.

Keywords: *Collaborative network, Collaborative network for the development of children with disabilities, Development of children with disabilities*

1. INTRODUCTION

The development of the potential of individuals with disabilities is essential for ensuring equal opportunities and rights for all. In response to this necessity, the Ministry of Education has established clear policies to promote education for children with disabilities. These policies aim to provide individuals with disabilities the same educational opportunities and rights as the general population by reducing educational disparities and enhancing educational standards. The ultimate goal is to achieve equity and justice in society, particularly for marginalized and disabled populations. A key focus is on improving the quality of special education systems, aligning with the Ministry of Education's 2023 budgetary policy, specifically Priority No. 3, which emphasizes the creation of educational opportunities, equity, and inclusivity across all age groups. This

includes the development of diverse educational data and options for special target groups, vulnerable populations, and NEETs (Not in Education, Employment, or Training), ensuring equal access to education, learning, and vocational training (Ministry of Education, 2023).

An analysis of the operations of Special Education Centers under the Bureau of Special Education Administration reveals that prioritizing the early intervention services for children with disabilities is crucial. Research indicates that a significant need exists for collaboration in developing the potential of children with disabilities (Prasopbua, 2019). Moreover, a study on the operational conditions of special education centers in the Northeastern region of Thailand found that most centers face challenges such as a shortage of specialized personnel and a lack of collaboration with partner organizations and agencies involved in the development of children with disabilities. These challenges significantly impact both the development of children with disabilities and the operational effectiveness of special education centers. Given the essential role of these centers in supporting children with disabilities, establishing collaborative networks is crucial for ensuring successful teamwork and effective developmental initiatives.

Collaborative networks for the development of children with disabilities play a pivotal role in fostering their growth and development. These networks serve as integrative mechanisms, linking early intervention services with cooperative efforts to enhance the potential of children with disabilities. Through these networks, individuals, agencies, and organizations from both the public and private sectors contribute to a collective developmental effort. The networks function under shared objectives and agreements aimed at systematically improving the well-being of children with disabilities.

Thus, the establishment of collaborative networks for the development of children with disabilities is imperative, particularly within special education centers. These networks enhance the efficiency and effectiveness of developmental efforts, improving the quality of life for children with disabilities, reducing social disparities, advancing educational quality, and enabling individuals with disabilities to live happily and inclusively in society.

2. RESEARCH OBJECTIVES

2.1 To examine the consistency and alignment of the indicator model for collaborative networks in enhancing the potential of children with disabilities in special education centers with empirical data.

2.2 To investigate the characteristics of collaborative networks in developing the potential of children with disabilities, the conditions influencing their formation, the strategies employed, and the resulting outcomes within special education centers.

3. RESEARCH METHODOLOGY

This study employs a **mixed-methods research approach**, integrating both quantitative and qualitative research methods. The research process is divided into two phases : **Phase 1:** Quantitative Research **Phase 2 :** Qualitative Research

Phase 1: Quantitative Research

The first phase of the study employs **quantitative research** to examine the consistency and alignment of the indicator model for collaborative networks in developing the potential of children with disabilities in special education centers with empirical data.

Population and Sample

The research population consists of administrators and teachers from **20 special education centers** in the **Northeastern region of Thailand**, with one center per province. The population is classified as follows: 1.Administrators (Directors and Deputy Directors): 50 participants 2.Teachers: 1,101 participants 3.Total Population: 1,151 participants

The sample size was determined based on the factor analysis criterion, which recommends setting the sample size as a function of the number of parameters or variables in the factor analysis (Hair et al., 2010). For this study, a sample size of **10 participants per parameter** was used. Given that there are **28 parameters**, the required sample size was initially **280 participants**. However, to ensure a more representative sample and enhance the generalizability of the findings, an additional **80 participants** were included, bringing the total sample size to **360 participants**.

A **multi-stage sampling** method was employed, combining **stratified random sampling** (based on administrative positions) and **simple random sampling** to ensure representativeness. The final sample consisted of : **50 administrators**, **310 teachers Total Sample : 360 participants**

Research Instrument

The study utilized a **questionnaire** based on a **five-point rating scale**. The reliability of the overall questionnaire was assessed using **Cronbach's Alpha**, yielding a coefficient of **0.978**, indicating high reliability.

Data Collection

Data were collected from **administrators and teachers of special education centers** via **postal mail** with an attached **QR**

code, enabling participants to access the online questionnaire through **Google Forms**. The **QR code link** was also distributed via **email**. Once responses were collected, the data underwent a completeness check before statistical analysis.

Data Analysis

The quantitative data analysis in this phase was conducted as follows : 1.Confirmatory Factor Analysis (CFA): This technique was used to test the alignment and consistency of the indicator model structure, as well as to determine the weighting of sub-variables contributing to the indicator model. 2.Model Fit Assessment: The research model was evaluated for its alignment with empirical data, and adjustments were made based on the criteria proposed by Nongluk Wiratchai (2002). The statistical measure used to test the hypothesis was the Chi-Square Statistic (χ^2).

Phase 2: Qualitative Research

The second phase of this study employs qualitative research to examine the characteristics of collaborative networks in developing the potential of children with disabilities, the conditions leading to the formation of such networks, the strategies implemented, and the resulting impacts within special education centers. This phase is conducted through a multiple case study approach, applying the knowledge framework of Strauss & Corbin (1990). The research process is outlined as follows:

The research sites consist of selected exemplary special education centers recognized for their outstanding collaborative networks in developing the potential of children with disabilities. These centers are empirically validated and acknowledged for their best practices in network collaboration. The selection criteria for the special education centers include 1.Recognition for best practices in collaborative network development 2.Empirical evidence supporting their effectiveness 3.Active engagement of collaborative networks in enhancing the potential of children with disabilities 4.Possession of in-depth information aligned with the theoretical framework of this study 5.Sufficient data availability to explain the studied phenomenon.The selection process for the research sites was conducted carefully through theoretical sampling, ensuring that the selected centers effectively contribute to the theoretical explanation of the studied phenomenon.

Research Instruments

The study utilizes multiple data collection instruments, including : 1.Document analysis framework 2.In-depth interview guides 3.Participant observation forms 4.Focus group discussion guidelines 5.Non-participant observation forms 6.Field note records

Data Collection Process

The data collection was conducted in two stages : 1.First Stage : The researcher analyzed the context and background information of the selected special education centers through online resources, media, and document analysis. Field visits were then conducted to conduct interviews and focus group discussions with key stakeholders. 2.Second Stage : The researcher visited the selected centers when significant events or activities occurred until data saturation was reached. These included meetings, project implementations, exhibitions, Open House events, and evaluations. In-depth interviews were conducted with relevant personnel, along with direct observations and data collection. The key informants included administrators, teachers, and members of the collaborative network for developing the potential of children with disabilities.

Data Analysis

The researcher conducted continuous data analysis throughout the data collection process and after its completion. A multiple case study analysis was performed, integrating data from document analysis, in-depth interviews, participant and non-participant observations, focus group discussions, and field notes.

After each interview, audio recordings were transcribed, and detailed notes were documented. The collected data were analyzed to construct concepts and examine relationships between concepts using analytic induction. The interview data were interpreted to formulate preliminary hypotheses (working hypotheses) that explain the characteristics of collaborative networks for developing the potential of children with disabilities in special education centers in the Northeastern region of Thailand.

4. RESEARCH FINDINGS AND DISCUSSION

4.1 Examination of the Model Fit for the Collaborative Network Indicators in Developing the Potential of Children with Disabilities in Special Education Centers with Empirical Data

1) Analysis of Pearson Correlation Coefficients, KMO, and Bartlett's Test

The analysis of the relationships among the indicators revealed that all 28 indicators of the collaborative network for developing the potential of children with disabilities in special education centers in the Northeastern region of Thailand exhibited positive correlations with statistical significance at 0.01.

Before conducting factor analysis, the initial data relationships were examined using the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy, which yielded a value of 0.937. This high KMO value indicates that the variables were

highly suitable for factor analysis. Additionally, Bartlett's Test of Sphericity produced a value of 14,446.803, with statistical significance at 0.05, confirming that the variables were interrelated and appropriate for factor analysis.

2) Structural Validity of the Collaborative Network Model Using Confirmatory Factor Analysis (CFA)

To assess the structural validity of the collaborative network model for developing the potential of children with disabilities in special education centers in the Northeastern region, Confirmatory Factor Analysis (CFA) was performed. The model fit indices were as follows:

- Chi-Square (χ^2) = 347.541
- Degrees of freedom (df) = 306
- Chi-Square/df = 1.1358
- P-Value = 0.0501
- Root Mean Square Error of Approximation (RMSEA) = 0.019
- Standardized Root Mean Square Residual (SRMR) = 0.029
- Comparative Fit Index (CFI) = 0.993
- Tucker-Lewis Index (TLI) = 0.991

These indices demonstrate that the measurement model exhibits a strong fit with empirical data, as summarized in **Table 1** and **Figure 2**.

Fit Index	**Criteria**	**Analysis Results**	**Evaluation**
χ^2 - Test	Non-significant P> 0.05	χ^2 = 347.541, df =306 , χ^2 / df = 1.1358	Passed
χ^2 / df	< 2.00	1.1358	Good Fit
RMSEA	≤ 0.05	0.019	Good Fit
SRMR	≤ 0.08	0.029	Good Fit
CFI	≥0.95	0.993	Good Fit
TLI	≥0.95	0.991	Good Fit

Interpretation: The results indicate that all model fit indices meet the required criteria, confirming that the collaborative network indicator model exhibits a strong fit with empirical data.

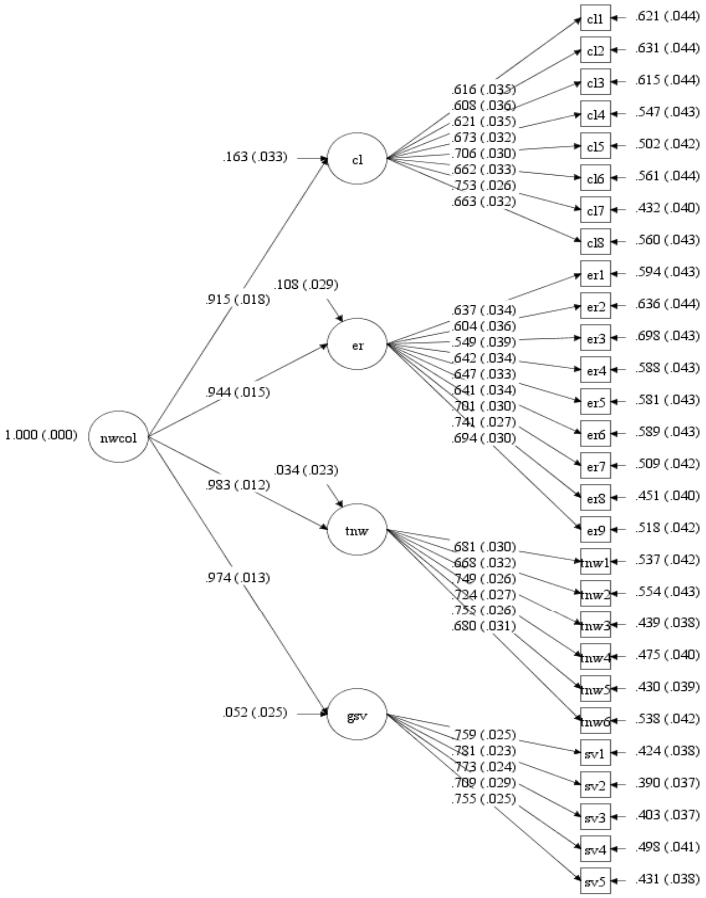

Figure 2: Measurement Model of the Collaborative Network Indicators for Developing the Potential of Children with Disabilities in Special Education Centers in the Northeastern Region

4.2 Findings on Characteristics, Formation Conditions, Strategies, and Outcomes of the Collaborative Network for Developing the Potential of Children with Disabilities in Special Education Centers

1) Characteristics of the Collaborative Network for Developing the Potential of Children with Disabilities in Special Education Centers

- **Mutual Trust Among Network Members**

  Trust within the network ensures that members can rely on one another, fostering openness and sincerity in collaboration. The network aligns with the needs of its members, enabling the exchange of best practices and efficient shared resource utilization, leading to successful and sustainable development of children with disabilities.

- **Shared Goals and Values in Developing the Potential of Children with Disabilities**

  Defining clear developmental directions aligned with the context of special education centers, clarifying shared values, and fostering mutual understanding among network members ensures cohesive efforts. This includes planning for sustainable capacity development and creating motivation to enhance the effectiveness of disability development initiatives.

- **Resource Exchange**

  Network interactions involve the exchange of human resources, financial support, knowledge, and information. Risk assessments regarding resource availability are conducted, and objectives and strategies are jointly designed. The network ensures efficient resource mobilization and collaboration, reinforcing the network's strength while promoting increased interaction among members.

- **Interdisciplinary Collaborative Learning**

  Knowledge application in disability development is advanced through professional learning communities (PLCs), including supervision, learning monitoring, and adherence to collaborative learning plans. Team-based learning

fosters shared leadership and goodwill among network members, ensuring sustainable development for children with disabilities.

2) Conditions Leading to the Formation of the Collaborative Network for Developing the Potential of Children with Disabilities in Special Education Centers

The establishment of the network is driven by active member participation, common developmental goals, and knowledge and resource exchange. These factors facilitate positive relationships and interactions, leading to improved outcomes for children with disabilities. This aligns with Prasopbua (2019), who emphasized that developing early intervention services in special education centers requires strategies for enhancing network collaboration, promoting educational equity, establishing effective learning communities, and implementing comprehensive performance evaluation systems.

3) Strategies Emerging from the Collaborative Network for Developing the Potential of Children with Disabilities in Special Education Centers

The study identified four key strategies:

- Promoting and Supporting Professional Learning Communities (PLCs)

  Encouraging educators, personnel, and interdisciplinary professionals to apply specialized knowledge in the development of children with disabilities.

- Resource Exchange

  Enhancing and supporting collaborative knowledge sharing among network members to improve capacity development for children with disabilities.

- Collaborative Engagement in Development Initiatives

  Encouraging active participation among network members in co-developing disability support systems. Establishing shared best practices fosters trust and positive interactions in collaborative work.

- Setting Strategic Directions for Disability Development

  Conducting strategic planning meetings to align developmental efforts with shared goals. This aligns with the Office of Special Education Administration (2016), which emphasizes the mission of ensuring inclusive and equitable access to education, developing specialized educators, and enhancing participatory governance models.

4) Contextual Conditions Affecting the Implementation of Strategies

- General Environmental Factors of Special Education Centers
- Operational Constraints Related to Available Resources

5) Intervening Conditions Affecting Strategy Implementation

- Policy Changes by Higher-Level Administrators
- Staff Turnover and Reassignments

6) Outcomes of the Collaborative Network for Developing the Potential of Children with Disabilities in Special Education Centers

The outcomes are observed in three key areas:

1. Professional Learning Communities (PLCs):

   Interdisciplinary professionals, educators, and personnel collaborate in knowledge application for disability development, with support from administrators to implement learning activities.

2. Resource Exchange & Development:

   Special education centers actively engage in resource sharing, enhancing their capacity to support children with disabilities.

3. Collaborative Network Development:

   The network fosters participation and shared best practices, strengthening trust and interaction among members while ensuring a unified approach to disability development.

These findings align with Jaipanta (2020), who studied participatory management in vocational training for students with intellectual disabilities. The study emphasized teamwork, knowledge sharing, and experience exchange, leading to the enhancement of practical skills in vocational education for students with disabilities.

5. CONCLUSION

This study confirms that the collaborative network model for developing the potential of children with disabilities in special education centers in the Northeastern region is statistically valid, as demonstrated through Confirmatory Factor Analysis (CFA). The model fit indices met standard criteria, indicating a strong empirical alignment.

Additionally, the study examined the characteristics, formation conditions, strategies, and outcomes of the collaborative network. The findings indicate that the network operates based on four key components:

1. Mutual Trust Among Network Members
2. Shared Goals and Values
3. Resource Exchange
4. Interdisciplinary Collaborative Learning

The study also identified four key strategies supporting network development, along with two contextual conditions and two intervening conditions affecting strategy implementation. The network outcomes were observed in three main areas: special education centers, administrators and educators, and network members.

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