

Factor Analysis of the Performance Effectiveness of the Special Education Teachers in Thailand

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Abstract

The purposes of this study were to develop the index of performance of special education teacher's effectiveness and to validate the model of performance of special education teachers effectiveness. The research was divided into two phase ; (I) study to component and indicators of performance of special education teacher's effectiveness using synthesis document and in-depth interview from five selected experts (purposive sampling). (II) to examine model of performance of the special education teachers effectiveness using CFA (Confirmatory Factor Analysis) the sample include 490 Teachers and 60 administrators under the office of Special Education Bureau in Thailand using multi - stage sampling. Data was analyzed using basic statistics such as frequency and percentage which were then summarized. The research found that; 1) The performance effectiveness of special education teachers consists of 5 components 47 indicators; 1) standard of professional practice, 2) specialization in disabilities expertise , 3) professionalism, 4) screening ability, and 5) strategy of early intervention. 2) The performance effectiveness of the special education teachers level factors fit quite well with the empirical data set. $\chi^2 = 66.489$, $df = 92$, $\chi^2/ Df = 1.275$, $RMSEA = 0.037$, $SRMR = 0.036$, $CFI = 0.986$, $TLI = 0.978$

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I. INTRODUCTION

People with disabilities have basic rights that must be addressed. Providing education equally to the general public According to the National Education Act 1999, revised 2010 (version 3) Article 10 states that "Educational Management Must provide equal rights and opportunities for receiving basic education of not less than 12 year that the state has to provide thorough and quality free of charge. Education for persons with physical, mental, intellectual, emotional, social, communication and learning deficiencies. Similarly, people have a physical disability or disabled or people who cannot be self-reliant or do not have a caregiver or disadvantaged Must provide such personnel Have the right and the opportunity to receive special basic education for the disabled to arrange from birth or find a disability free of charge and the said person have the right to receive facilities, media, services and any other educational assistance in accordance with the rules and procedures prescribed in the Ministerial Regulations of Education for persons with special talents must be organized in a suitable format, taking into account the ability of that person "

The statistics showed that people with disabilities are more than one billion people, or 15 percent of the world population. Currently, Thailand

has a population of 66,188,503 people [1] with 1,974,800 people with disabilities or 2.2 percent of the total population with 569,174 disabled children in school age entering the education system [2]. Therefore , the trend of demand for special education teachers in both quantity and quality has increased[3]. Education for people with disabilities should be different from general education in teaching methods. Processes, course content, tools and teaching tools needed, specially organized education, in accordance with individual needs and abilities[4].

Special education management must coordinate the ability of special education teachers with general teachers to be effective[5]. That showed special education teachers are very important. From studies in many countries, it was found that the development of children with special needs has not achieved their goals[6]. In Thailand, according to the Educational Management Plan for People with Disabilities, 3rd edition (2017-2021), there are weaknesses that service recipients are not satisfied with the service. Special education received Shows that the special education management does not achieve the effectiveness of the organization[7].

According to the synthesis and review of the documents showed that the proficiency of teachers in special education major has five

components: 1) the performance standards of the profession[8]. 2) Specialized in disability expertise [9][10]. 3) Special professional education teacher[11][12]. 4) Screening ability[13][14]. and 5) Strategies of early intervention[15][16].

In addition, the effectiveness of the work of the individual is extremely important. Because it is a feature work to achieve the objectives, quality work that meets expectations of the clients, which must be done with satisfaction to the fullest by choosing the most appropriate methods and techniques that will make both quantitative and qualitative to the maximum, but use the least resources and time[17][18]. The effectiveness of a person's work will have a relationship to the effectiveness of the organization to operate. For this objectives, vision and mission have been achieved[19][20][21][22]. Therefore, administrators of all special education centers should have a way to strengthen the operational effectiveness of Special education teachers to work to their fullest performance.

As a result, the researcher as the school administrators are interested in studying and analyze the components of the operational effectiveness of the special education teachers of these 5 components by confirmatory factor analysis. The result of this research, administrators of special education centers can take the duties of special education teachers for the measure the effectiveness of performance of special education teachers and manage operations to be correct according to the effectiveness element. The performance of the special education teachers found and as a guide for the special education teachers has improved themselves, resulting in the educational management of the country in the region to be improved further and it is also in line with the philosophy of special education, resulting in a well-being, being able to live happily with other people in the society and truly improve the quality of their lives.

II. RESEARCH OBJECTIVE

The purposes of this study were to develop the index of performance of special education teacher's effectiveness and to validate the model of performance of special education teachers effectiveness.

III. LITERATURES REVIEW

A. Special Education Teacher Effectiveness

Special education teacher effectiveness play important role in student with special need for developing the potential of them and truly contribute to the enhancement of their

quality of life. At a present, the special education services encountered different problems, namely the shortage of special education teachers. Special education teachers lack knowledge. Specialized techniques for personal development with special needs in each category Service recipients are not satisfied with the service they received. Therefore, the effectiveness of the performance of special education teachers is absolutely necessary for the development of learners with special needs. Special education teachers must be able to analyze the learner's potential and understand the learners individually. Have the knowledge and ability to teach specific subjects, such as using Braille, use of sign language, lip reading and able to evaluate the teaching and learning that is consistent with the learner's true and use the results to modify the teaching and learning to develop learners to their full potential (Ministry of Education, 2008)

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B. Overview of Factor Analysis

Factor analysis is the technique that uses mathematical procedures for the simplification of interrelated measures to discover patterns in a set of variables[23]. Discovering the simplest method of interpretation of observed data is called parsimony, and it is known as the main aim of factor analysis [24]. Factor analysis is used in many areas such as behavioral and social sciences, medicine, economics, and geography as an output of the technological advancements of computers[25].

Factor analysis is the analytical technique to reduce the set of measured variables to a smaller set of underlying factors that account for the pattern of relationships[26]. This reduction of the number of variables serves to make the data more manageable and interpretable. To describe unique variance most successful, the researcher is able to use factor analysis in developing theory through two different techniques. The two main factor analysis techniques are Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). EFA attempts to uncover complex patterns by searching dataset and testing predictions, whereas CFA tries to confirm hypotheses and uses path analysis diagrams to represent variables and factors[23].

IV. RESEARCH METHODOLOGY

This research study focused on the study of the components of performance of special education effectiveness and the validation of the indicators of performance of special education teacher effectiveness in the office of Special Education Bureau, Thailand. This research study was about confirmatory factor analysis which aimed to study the factors of performance of special education teacher effectiveness. The researcher defined the research procedures as follows:

C. Research Sample

The group of sample was selected from this population through multi - stage sampling and for its purpose. This research study was concerned with confirmatory factor analysis. In this case, the sample size should be large enough for the analysis. Normally, the sample size should be at least five times as large as the number of variables to be analyzed; but to be more acceptable; it should be at least ten times as large as the number of variables being used in the research [27]. In this research study, since 47 indicators were constructed and used within the research instrument, the researcher selected 550 participants.

D. Research Instrument

The research instrument was a questionnaire about the performance of special education teacher effectiveness. The questions were

constructed to cover all performance of special education teacher effectiveness which derived from reviewing the previous literature and related research studies. The questions were divided into two parts. Part 1 represented demographic information and background including gender, age, degree level, current position, work experience. All of these were in a checklist. Part 2 referred to the performance of special education teacher effectiveness in the office of Special Education Bureau, Thailand. They were in 47 items with five rating scales including the most, much, moderate, less, and the least. The content validity was carried out to examine item objective congruence (IOC) of the question items and effectiveness which was at .80-100. Only 47 variables from the list were accepted to be used for further process. The discrimination used to check item total correlation was at .99 and the reliability of the questionnaire was at .95. Finally, 13 performance of special education teacher effectiveness and 47 items were used in completed questionnaire for data collection.

V. RESEARCH RESULT

E. Descriptive Statistics

Descriptive Statistics of the Sample The researcher collected data from the sample of 550 special education teachers, administrators in the office of Special Education Bureau, Thailand.

Table 1: Frequency and percentage of the respondents in terms of demographic data

Variables	Description	Respondents	Percentage (%)
Gender	Male	118	21.5
	Female	432	78.5
Age	under 30	166	30.2
	31-40	281	51.1
	41-50	86	15.6
	51-60	17	3.1
Degree Level	Bachelor	382	69.5
	Master	164	29.8
	Doctor	4	0.7
Position	director	17	3.1
	Deputy director	12	2.2
	Special teacher(public servant)	416	75.6
	Special teacher(government employees)	105	19.1
Work experience	Less than 5	251	45.6
	6-10	177	32.2
	11-20	110	20.0
	21-30	8	1.5
	More than 30	4	0.7

As can be seen from Table 1 provided background characteristics of respondents. Nearly half 78.50% of the respondents were female whereas 21.50% of them were male. The respondents between 31 - 40 were in the most number of 51.10% whereas 3.10% of them were 51-60 years of age. Mostly of the respondents 69.50% had an educational background in bachelor and below where a few of them 0.70% had a higher degree. The respondents with a longer experience less than 5 years were in the most number whereas a few were in lower experience. The respondents of

special teacher (public servant) 75.60% replied the questionnaire much more than the others.

F. Factor analysis Model of performance of special education teachers' effectiveness

The result for factor analysis for this measure yield an 5 factor solution such as: 1) standard of professional practice, 2) specialization in disabilities, 3) professionalism, 4) screening ability, and 5) strategy of early intervention.

Table 2: Descriptive statistics of performance of special education teachers' effectiveness

factor	Mean	S.D
1. standard of professional practice	4.18	0.53
2. specialization in disabilities	4.16	0.51
3. professionalism	4.11	0.51
4. screening ability	4.15	0.53
5. strategies of early intervention.	4.14	0.53
Total	4.15	0.47

As can be seen from Table 2, performance of special education teachers' effectiveness in the office of Special Education Bureau, Thailand had mean scores ranging from 4.11 to 4.18. All standard deviation values were between 0.51 and 0.53

G. Second Order Confirmatory Factor Analysis Model of the performance of special education teachers' effectiveness The results of second order confirmatory factor analysis Model of the performance of special education teachers' effectiveness were defined as 5 explicit factors with 47 variables as follows:

Table 3: Second Order Confirmatory Factor Analysis

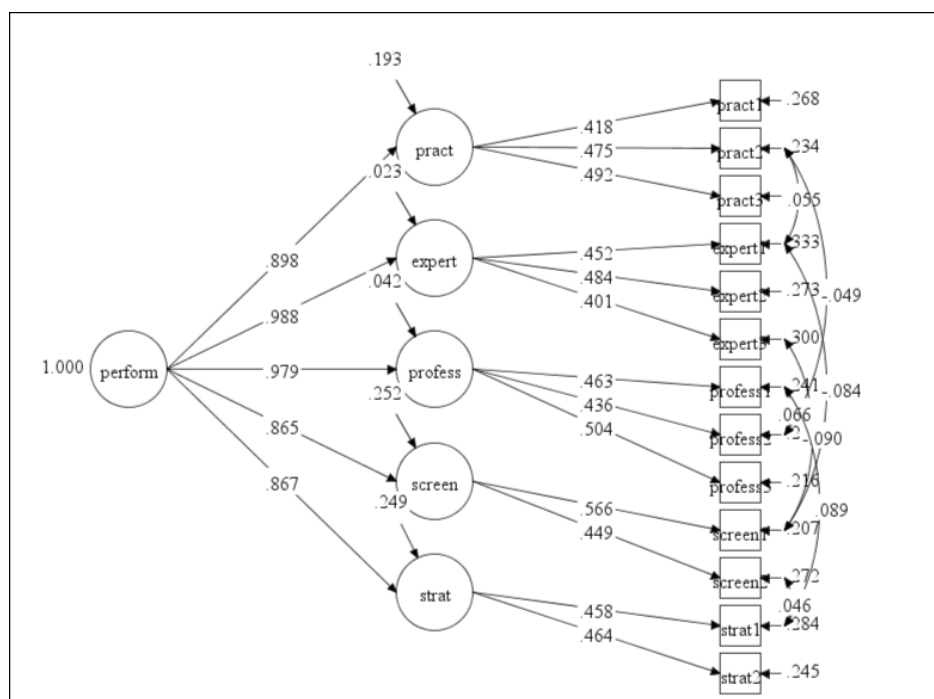
Special education teachers' effectiveness	Factor loading		t	R ²
		b (SE)		
1. standard of professional practice (10variable)	0.898	0.040	22.714**	0.807
2. specialization in disabilities (9variable)	0.988	0.042	23.456**	0.977
3. professionalism (13variable)	0.979	0.038	26.096**	0.958
4. screening ability (8variable)	0.865	0.053	16.443**	0.748
5. strategy of early intervention(7variable)	0.867	0.055	15.678**	0.751

As can be seen from Table 3, the model of the performance of special education teachers' effectiveness data with a chi-square of 66.348 on 52 degrees of freedom and a p-value of 0.01, a goodness of fit index (GFI) of 0.90, an adjusted goodness of fit index (AGFI) with value of 0.91, a comparative fit index (CFI) of 0.98, a standardized root mean square residual (Standardized RMR) of 0.036, and a root mean square error of approximation (RMSEA) of 0.037.

The five factors were importance to ensure the performance of special education teachers' effectiveness as their factor loading were

statistically significant at the .01 level with the range from 0.87 to 0.99. The factor with the highest factor loadings was specialization in disabilities (0.99) and followed by professionalism with factor loadings of 0.98; standard of professional practice with factor loadings of 0.90; strategy of early intervention with the factor loadings of 0.88; and the lowest factor loadings was screening ability of 0.87. All the factor loading shared covariance with the performance of special education teachers' effectiveness at the levels of 98%, 96%, 81%, 75% respectively.

Figure 1: Model of the performance of special education teachers' effectiveness



$\chi^2 = 66.489$, $df = 92$, $\chi^2 / Df = 1.275$, $RMSEA = 0.037$, $SRMR = 0.036$, $CFI = 0.986$, $TLI = 0.978$

VI. CONCLUSIONS AND RECOMMENDATIONS

I. Conclusions

The purposes of this study were to develop the index of performance of special education teacher's effectiveness and to validate the performance model of special education teachers effectiveness. The sample size of this research study was 550 school principals, deputy directors, and teachers who were under the office of Special Education Bureau in Thailand.

The related research studies and literature review were conducted so as to construct the model of performance of special education teacher's effectiveness in the office of Special Education Bureau, Thailand. As a result, a model of 5 factors with 47 variables was developed. According to the confirmatory factor analysis results, it was a suitable model for performance of special education teacher's effectiveness. The results also demonstrated that the model of indicators of performance of special education teacher's effectiveness with five performance and 47 observed variables were important to ensure the performance of special education teacher's effectiveness as their factor loading were positive and statistically significant at the level .01 with the range from 0.87 to 0.99. The model measurement

used in this factor analysis consisted of five performance such as:

- 1) specialization in disabilities; 2) professionalism;
- 3) standard of professional practice; 4) strategy of early intervention; and
- 5) screening ability. Among all performance of special education teacher's effectiveness were in the good fit of the empirical data.

J. Recommendations

1) For Administrators

Administrators in each Special Education Center should pay more attention to the process of special education teachers development for specialization in disabilities especially on the quality of special teachers in every fields such as screening ability, planning and preparation for progress of children in their class; the ways special education teachers organize the class; what they knows about early intervention. Furthermore, administrators also need to find ways to give them opportunities to join workshop or encourage them to do works full potential.

2) For Special education teachers

The Special education teachers in Special education Center should learn about themselves, find out what are their strengths and weaknesses, and spend time improve their weaknesses. Special education teachers should adopt new special

techniques and different from general teacher. Special education teachers should not only prepare and plan Individualize Education Program (IEP) well, also they need to screening abilities correctly and choose the best strategies of early intervention for their children with special need. Moreover, Special education teachers should know the variety of knowledge and skills so that they can provide knowledge to learners easier and gain more success from them.

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