Multi-Level Structural Equation Model of Factors Affecting the Performance Appraisal Effectiveness of Special Education Teachers

Vichuda Chockphukhiao, Khon Kaen University, Thailand
Kanokorn Somprach, Khon Kaen University, Thailand
Jatuphum Ketchatturat, Khon Kaen University, Thailand

The Southeast Asian Conference on Education 2020
Official Conference Proceedings

Abstract
The purposes of this research was to develop and examine the congruence of multi-level structural equation model of factors affecting the special education teacher's performance appraisal effectiveness. The research divided into two phases; (I) The synthesizing the key factors of MSEM of factors affecting the performance appraisal effectiveness of special education teachers, using synthesis documents and an in-depth interview from five academic experts. (II) The MSEM examined the consistency using Confirmatory Factors Analysis and Multi-level Analysis of the factors's influence. The sample include 1,120 special education teachers and administrators under the office of Special Education Bureau in Thailand. The instrument was a questionnaire about teacher's performance appraisal effectiveness and factors affecting teacher's performance appraisal effectiveness in Special Education Centers,Thailand. The research found that; First, MSEM factors affecting the performance effectiveness of special education teachers had 7 variables and 25 components. These variables are: 1) organizational – level variables such as school leadership, organization environments, professional learning communities, and collaboration; and 2) the personal - level consisting of self-efficacy, professional development and job satisfaction. In addition, it was found that the emotional state acting as a moderator also influence on the performance effectiveness of the special education teachers. Second, MSEM factors affecting the performance effectiveness of special education teachers is consistent according to structure, value of $\chi 2 = 23.658$, df = 10, p= .001, CFI = 0.969, TLI = 0.939, RMSEA = 0.026, SRMRw = 0.022, SRMRb = 0.000 and $\chi 2/ Df = 2.366$

Keywords: Multi-level Structural Equation Model, Special education teacher's performance appraisal effectiveness, Factors affecting the special education teacher's performance appraisal effectiveness.

Introduction

There were 66,188,503 people in Thailand. There were 1,974,800 people with disabilities accounted for 2.2 percent of the entire population of the country with children having impairments and gained access to educational system calculated 569, 174 people. From the information obtained from Office of the Basic Education Commission, it was found that there has been the ongoing and rising trend of the number of kids having difficulties in every educational level. Most of them were in the primary level. The lower rank fell on the secondary level. However, the educational provision for children with special needs are different from the general one with special education teachers who have got at least a master degree in a special education field or who have got a bachelor degree in special education; passed an assessment for instructional skills necessary for teaching kids with difficulties as prescribed by The Promotional Commission of Education for Persons with Disabilities; and taught, provided, supervised, or done other things related to educational provision for people with impairments in educational institutes in both public and private sectors. Thus, it is very important to coordinate general teachers, professionals, and parents in order to make special education effective (Gearheart & Weishahn, 1980).

From special education provisions in many countries, it was found that there were rising trends in the number of children having special needs, and the development of kids with difficulties did not reach the goal as set, so there was a need of special education teachers in both quantitative and qualitative perspectives. For the special education provided in Thailand in accordance with the plan for educating persons with disabilities, volume 3 (B.E. 2560 - 2564), the problems were: the ratio of special education teachers and kids having special needs does not meet the standard criteria; special education teachers lack of motivation in working; lacking of knowledge and specific techniques; practices lack effectiveness which makes clients unsatisfied the received special education services. From the reviewed literatures, the indicators for effectiveness of special education teachers consist of 5 elements which are: 1) having the standard for professional practices (Council for Exceptional Children, 2010; William, 2014; Sullivan, 2015; Brownell & Sindelar, 2016), 2) Specific expertise (Allinder, 1994; Hocott, 1996; Brunsting et al., 2014), 3) Being a Professional Special Education Teacher (Heward, 2003; Carlson, 2004; Brownell & Sindelar, 2016), 4) Accurate Screening Exceptional Children, and 5) Early Intervention Strategies (Heward, 2003; Carlson, 2004; Brownell & Sindelar, 2016; Allinder, 1994; Jensen et al. , 2011).; Sullivan, 2015).

From the previous studies, there were various factors influencing the working effectiveness of special education teachers which could be divided into 2 levels: **Organizational level** which consists of 4 components: 1) School Leadership (Cook & Semmel, 1999;), 2) Environment Organization (Skaalvik and Sidsel Skaalvik, 2017; Day et al., 2007) 3) Collaboration (Lynne Cook, 2014; Olivos, 2011; Fiedler & Craig, 2000), and 4) Professional Learning Community: PLC (Kenrick, Neuberg, & Cialdini, R. B. ,2007).). **Personal level** consists of 3 components which are: 1) Self-Efficacy (Hagen et al, 1998 ; Podell, 2011; Caprara et al., 1996), 2) Professional Development (Little, 2004), and 3) Job Satisfaction (Day et al., 2007; Chiu, 2011). Therefore, studies of causal relationships among social sciences variables in researches must suitably be designed. The empirical data analysis is a method to answer the question

whether the causal model developed by the researcher agrees with the empirical data or not. There are various statistical analysis methods that help confirm or refuse a causal model, but popular and generally accepted methods are the Path Analysis and the Structural Equation Model: SEM. If there are various levels of the variables, the Multi-Level Structural Equation Model: MSEM is commonly used.

The study of the factor relationships that affect the working effectiveness of special education teachers will lead to the development of instructional processes for exceptional children to thoroughly gain opportunities and educational services with good quality and standard and in various forms in order to achieve the goal and meet the philosophy of special education provision so that people with disabilities will have wellbeing and be able to live happily together with other people in society as well as to truly shift their quality of life.

Research Objective

1. To develop a Multi-Level Structural Equation Model of the factors affecting the performance appraisal effectiveness of special education teachers.
2. To examine the congruence of the Multi-Level Structural Equation Model of the factors affecting the performance appraisal effectiveness of special education teachers and the empirical data.

Literature Review

1. 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)

2. The factors affecting the performance appraisal effectiveness of special education teachers

The effectivity of a person will have the association with the effectiveness of an organization leading to achievements of prescribed objectives, visions, and missions. Effectivity may be considered as 2 levels (Lawless, 1979; Mundel, 1983; Baird, Post, & Mahan, 1990; Bartol & Martin, 1991) which are:

2.1 Personal effectiveness is an individual character with working abilities to achieve the goal. It makes direct and complete outcomes prescribed in the objectives. It makes quality results such as the righteousness, value, and appropriateness that meet expectations and desires of the team, society, and implementers. It is resulted from efficient practices which mean practicing with satisfactions, full capability; with most suitable strategies and techniques to maximally achieve in both quantity and quality; and with the least capital, resources, and time.

2.2 Organizational effectiveness can be considered from many aspects which are: quantitative and qualitative products that meet the organization's desires; the proportion of used resources and the obtained products agrees with wants and expectations of members; flexible practices meeting situations; the development to increase potentiality and ability of the organization to be advanced in accordance with both internal and external environmental changes in the organization.

3. Overview of Multi-Level Structural Equation Model (MSEM)

Researches on social sciences can step from descriptive studies to causal phenomenal explanations gained from non-experimental research designs by using the techniques of the analysis of relationship structures among variables which can be differently called as Causal Analysis, Structural Equation Modeling (SEM), Linear Structural Relationships (LISREL), Confirmatory Factor Analysis, or Analysis of Covariance Structures. (Bentler, 1995; Joeskog & Sorbom, 1989)

The important principles of those mentioned techniques are composed of creating a causal model of the analysis of relationship structures among variables and applying empirical data to examine the appropriateness of the created model.

Research Methodology

This analysis of Multi-Level Structural Equation Model is a mixed methods research according to the ideas of Creswell & Plano Clark (2013).

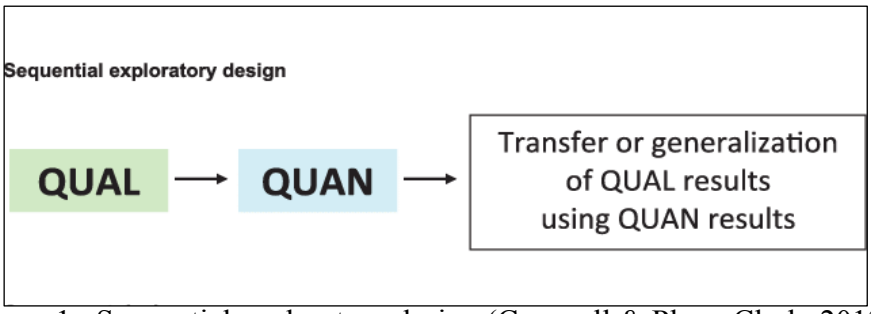

Figure 1: Sequential exploratory design (Creswell & Plano Clark, 2013)

1. Research Sample

1.1 Development of a Multi-Level Structural Equation Model that influence the working effectiveness of special education teachers: the target groups were 5 experts selected by using purposive sampling separated as 2 high rank executives from the Ministry of Education; 1 academician in a higher educational institute; and 2 executives of special education centers.

1.2 Congruence examination of the Multi-Level Structural Equation Model that factors affecting the special education teacher's performance appraisal effectiveness and empirical data: representative sample was executives and special education teachers working in special education centers, the size of the individual sample (Within) should be at least 200 samples. In this research, 1,120 people participated. Organizational level (Between) should be at least 20 samples (Hox, 1995). Therefore, 77 special education centers were engaged by implementing multi-stage sampling technique.

2. Research Instrument

2.1 A semi-structured interview form was applied to be considered and provided ideas significant content components, definitions, and indicators of the working effectivity of special education teachers and factors affecting the working effectiveness of special education teachers.

2.2 A questionnaire about the working effectivity of special education teachers and factors affecting the working effectiveness of special education teachers. It was a 5-level rating scale questionnaire.

Result

The Multi-Level Structural Equation Model of factors affecting the performance appraisal effectiveness of special education teachers : results from the analyzed data are as shown in Table 1 – 2 and the Figure 2.

Table 1 Results from the Within Analysis of Multi-Level Structural Equation Model of factors affecting the performance appraisal effectiveness of special education teachers. (Individual Level)

Dependent variable	Effect	Independent Variable			
		Emotional state (MT)	Self-efficacy (SEEW)	Professional Development (PDDW)	Job satisfaction (JSSW)
Self-efficacy (SEEW)	DE	0.101*	-	-	-
	IE	-	-	-	-
	TE	0.101*	-	-	-
	R^2	0.010	-	-	-
Professional Development (PDDW)	DE	-	0.886*	-	-
	IE	-	-	-	-
	TE	-	0.886*	-	-
	R^2	-	0.784	-	-
Job satisfaction (JSSW)	DE	0.104*	-	-	
	IE	-	-	-	-
	TE	0.104*	-	-	-
	R^2	0.011	-	-	-
Appraisal effectiveness (EFFW)	DE	-	0.273*	0.281*	0.276*
	IE	-	0.249*	-	-
	TE	-	0.522*	0.281*	0.276*
	R^2	-	0.230		

*p< .05,**p< .01 DE = Direct effect IE = Indirect effect TE = Total Effect
Form Table 1 When considering the causal relationship of variables that affect the effectiveness variables of the special education teachers (EFFw), it is found that; *(1)* The emotional state variable (MT) is the moderator variable between the self-potential latent variable (SEEW) with the total influence size which is a direct influence equal to .101 at the statistical significance level of .05, the reliability coefficient (R2) is .010. And the job satisfaction latency variable (JSSw) with the total influence size which is a direct influence equal to. 104 at the statistical significance level of .05, the reliability coefficient (R2) is .011. *(2)* Latent variable, self –efficacy (SEEw) affects the latent variables, the effectiveness of the performance of special education teachers (EFFw) with direct influence equal to .0273, indirect influence equal to. 249 and total influence equal to .522 at the statistical significance level of .05. Precision (R2) is .230.

In addition, self –efficacy variables affecting professional development latency variables have the total influence which is a direct influence equal to .886 at the statistical significance level of .05, the reliability coefficient (R2) is .784. *(3)* Latent variables in professional development (PDDw) affect latent variables in the effectiveness of performance of special education teachers (EFFw) with the total influence size which is a direct influence equal to .281 at the statistical significance level of .05. Noon (R2) is equal to .230. *(4)* Latent variable in job satisfaction (JSSw) affects the effectiveness variables of the special education teacher (EFFw) with the total influence size which is a direct influence equal to .276 at the statistical significance level of .05, the coefficient of reliability (R2) is equal to .230.

Table 2 Outcomes from the Within Analysis of Multi-Level Structural Equation Model of factors affecting the performance appraisal effectiveness of special

Dependent variable	Effect	Independent Variable			
		School leadership (LSSB)	Professional learning community (PLLB)	Environment organization (ENNB)	Collaboration (CLLB)
Professional learning community (PLLB)	DE	0.889*	-	-	-
	IE	-	-	-	-
	TE	0.889*	-	-	-
	R^2	0.790	-	-	-
Environment organization (ENNB)	DE	0.815*	-	-	-
	IE	-	-	-	-
	TE	0.815*	-	-	-
	R^2	0.696	-	-	-
Collaboration (CLLB)	DE	0.155*	-	-	-
	IE	-	-	-	-
	TE	0.155*	-	-	-
	R^2	0.024	-	-	-
Appraisal effectiveness (EFFW)	DE	0.108*	0.287*	0.438*	0.444*
	IE	0.681*	-	-	-
	TE	0.789*	0.287*	0.438*	0.444*
	R^2	0.483*			

education teachers. (Organizational Level)
*p< .05,**p< .01 DE = Direct effect IE = Indirect effect TE = Total Effect

Form Table 2 When considering the causal relationship of variables that affect the effectiveness variables of the special education teachers at the organizational level (EFFb), it is found that; *(1)* The latent variable in school leadership (LSSb) affects the latent variable in the performance of the special education teacher (EFFb). The direct influence is .108, the indirect influence is .681 and the total effect is .789 at the significance level. Statistical significance .05, Coefficient of reliability (R2) is .483. *(2)* The latent variables of the Professional Learning Community (PLLb) had an effect on the performance variables of the special education teachers (EFFb) with the total influence size which was a direct influence equal to .287 at the statistical significance level of .05. Coefficient of precision (R2) is .483. *(3)* The latent variables in the organizational environment (ENNb) affect the effectiveness variables of the special education teacher (EFFb) with the total influence size which is a direct influence equal to .438 at the statistical significance level of .05. (R2) is equal to .483. *(4)* The collaboration latency variable (CLLb) affects the latency variable of the performance of special education teachers (EFFb), with the total direct influence size equal to .444 at the statistical significance level of .05. Coefficient of precision (R2) is .483.

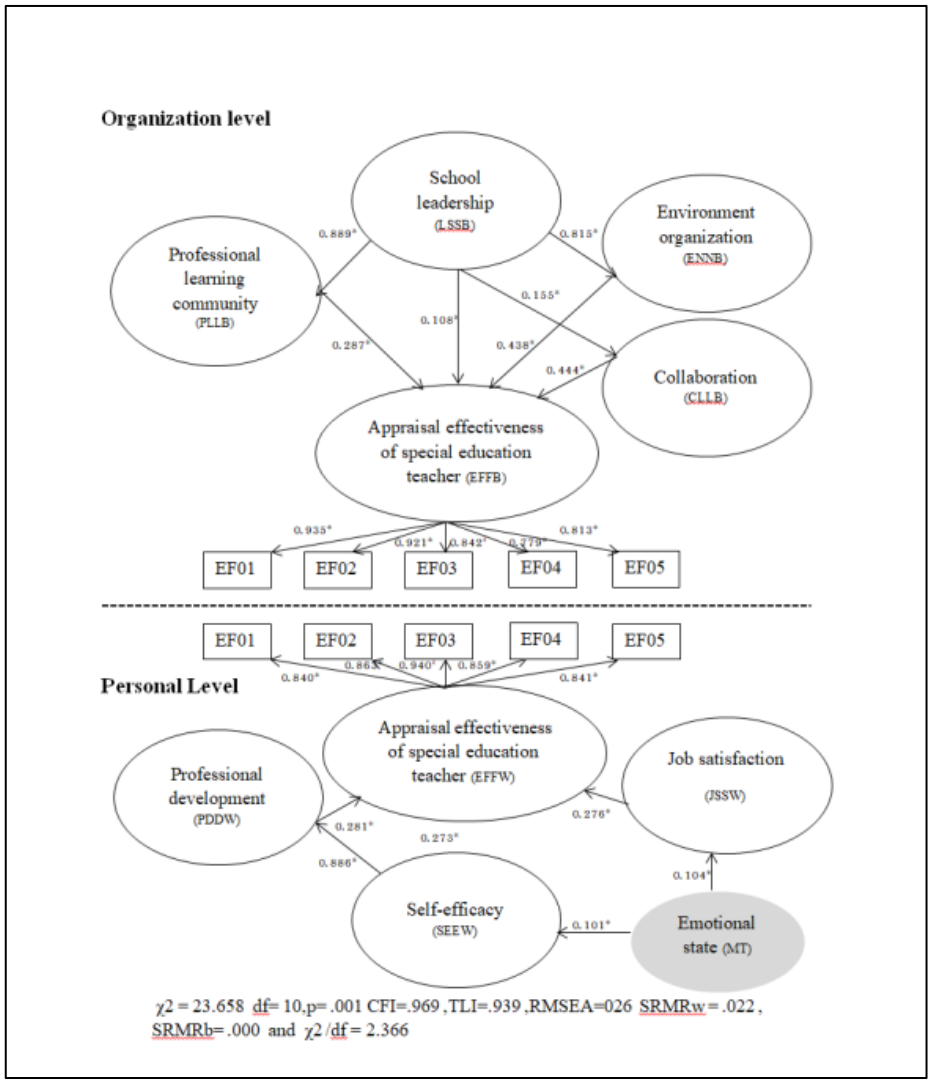

Figure 2 The Multi-Level Structural Equation Model of factors affecting the performance appraisal effectiveness of special education teachers.

Conclusions

The research results could be summarized that:

1. The development results of the Multi-Level Structural Equation Model of factors affecting the special education teacher's performance appraisal effectiveness: they were found that the effectiveness of special education teachers was composed of 5 elements which were:

1) having the standard for professional practices, 2) Specific expertise, 3) Being a Professional Special Education Teacher, 4) Accurate Screening Exceptional Children, and 5) Early Intervention Strategies. There were 7 studied causal variables with 25 components and by classifying the variables in accordance with the variable levels: organizational levels which were: educational institute leaderships, organizational environments, powerful participations, and professional learning community; individual levels which were: self-capability, professional development and satisfaction, and controlled variables which were emotional conditions.

2. The results of the congruence examination of Multi-Level Structural Equation Model of factors affecting the performance appraisal effectiveness of special education teachers: it was found that they met the empirical data which were construct validity which could be calculated:

Recommendations

From the outcomes of the research entitled Multi-Level Structural Equation Model of Factors Affecting the Performance Appraisal Effectiveness of Special Education Teachers, the researcher had recommendations as follows:

1. Executives should possess the characters of educational institute leaderships; show the special education teachers and staffs the willingness to provide assistances and supports in all perspectives, because the potentiality of special education teachers come from experiences and models. Should executives be good role models, special education teachers will have self-confidence, collaborations and can create concrete works.

2. Special Education teachers can bring the working effectivity of special education teachers which are composed of having the standard for professional practices, specific expertise, being a professional special education teacher, accurate screening exceptional children, and early intervention strategies to be analyzed in order to find outstanding or improvable points and then to improve the profession to meet self-aptitudes, self-interests, and wants of kids with exceptional needs; parents and the organization.

3. The development of special education teachers to gain good performances should be as both individual and organizational levels by providing both formal and informal learnings; improve the environments in the organization; have processes to create new knowledge and provide new experiences both within and outside the special education centers in order for the organizational advancements; as well as increase the self-potential confidence of the special education teachers through empowering, adapting, collaborating and activities that lead to new knowledge; and also continuously create

co-working works for the whole organization which will lead to the sustainable development.

Acknowledgements

This thesis is well completed with the truly kindness of Assoc. Prof. Dr. Kanokorn Somprach, the thesis advisor, and Assist. Prof. Dr. Jatuphum Ketchatturat the co-advisor, who provided suggestions and amended faults with good care; always supported and encouraged the researcher. My sincere thanks go to teachers at the Department of Educational Administration, Khon Kaen University; experts who examined the quality of all the instruments. At last, beneficial results, all goodness gained from studying this research go to my beloved parents and family. Should this research have any fault, the researcher will embrace it with high thankfulness.

Referrences

Allinder, R.M. (1994). *The relationship between efficacy and the instructional practices of special education teachers and consultants.* Teacher Education and Special Education, 17(2), 86–95.

Baird, L.S., Post, J.E., & Mahan, J.E. (1990). *Management: Functions and responsibilities.* NewYork: Harper and Row Publisher.

Bartol, K.M., & Martin, D.C. (1991). *Management.* New York: McGraw-Hill.

Bentler, P. M. (1995). Evaluating model fit. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (p. 76–99). Sage Publications, Inc.

Brownell, M.T., Sindelar, P.T., Kiely, M.T., & Danielson, L.C. (2010). *Special education teacher quality and preparation: Exposing foundations, constructing a new model.* Exceptional Children, 76(3), 357–377.

Caprara et al., (1996). *A Tyrosyl-tRNA Synthetase Recognizes aConserved tRNA-like Structural Motifin the Group I Intron Catalytic Core.* Cell, 87(13), 1135–1145.

Carlson, E., & Lee, H. (2004). *Study of personnel needs in special education, paperwork substudy: Nonresponse component.* Rockville, MD: Westat.

Chiu. (2011). *Toward a Social Psychology of Globalization***.**Social Issues, 6(74), 663-676.

Council for Exceptional Children. (2010). *Council for exceptional children annual conference April 2010-Nashville.* Retrieved January 15, 2019, from https://education.ufl.edu/ncipp/council-for-exceptional-children-2010/

Cook, B.G., & Semmel, M.I. (1999). *Peer acceptance of included students with disabilities as a function of severity of disability and classroom composition.* The Journal of Special Education, 33(1), 50–61.

Creswell, J.W., & Plano Clark, V.L. (2007). *Designing and conducting mixed methods research.* Thousand Oaks, CA: Sage.

Day et al., (2007). *Teachers' professional learning goals in relation to teaching experience*. European Journal of Teacher Education, 40(4), 487-504

Skaalvik, Einar M. & Sidsel Skaalvik, (2017). *Motivated for teaching? Associations with school goal structure, teacher self-efficacy, job satisfaction and emotional exhaustion*. Teaching and Teacher Education, Volume 67, 152-160

Fiedler & Craig, (2000). *Making a difference: Advocacy competencies for special education professionals.* ERIC.

Gearheart, B.R., & Weishahn, M.W. (1980). *The handicapped student in the regular classroom.*2nd ed. St. Louis: Mosby. Hagen, K. M., Gutkin, T. B., Wilson, C. P., &

Oats, R. G. (1998). *Using vicarious experience and verbal persuasion to enhance self-efficacy in pre-service teachers:* "Priming the pump" for consultation. *School Psychology Quarterly, 13*(2), 169–178.

Heward, W.L. (2003). *Exceptional children: An introduction to special education.* 6th ed. Upper Saddle River, NJ: Merrill.

Hocutt, A.M. (1996). *Effectiveness of special education: Is placement the critical factor*. Future of Children, 6(1), 77–102.

Hox, J. (1995). *Applied Multilevel Analysis.* https://www.researchgate.net/publication/27706367

Joreskog, K. G., & Sorbom, D. (1989). Lisrel 7. *A guide to the program and applications (2nd ed.).* Chicago, Illinois: SPSS Inc.

Jensen, C. D., et al. (2011). *Effectiveness of motivational interviewing interventions for adolescent substance use behavior change: A meta-analytic review.* Journal of Consulting and Clinical Psychology, *79*(4), 433–440. https://doi.org/10.1037/a0023992

Kenrick, D. T., Neuberg, S. L., & Cialdini, R. B. (2007). *Social Psychology: Unraveling the Mystery.4th Edition.* Allyn and Bacon.

Lawless, D.J. (1979). *Organizational behavior.* 2nd ed. New Jersey: Prentice-Hall.

Little, J.W. (2004). *Looking at student work in the United States: Countervailing impulses in professional development. In C. Day & J. Sachs (eds.).*

International handbook on the continuing professional development of teachers. (pp. 94-118). Buckingham, UK: Open University Press.

Lynne Cook. (2014). *Interactions: collaboration skills for school*. on Amazon.com.

Ministry of Education, (2008). *Educational Management Act for People with Disabilities 2008.*Government Gazette, 125 (28a), 1-13.

Mundel, M.E. (1983). *Improving productivity and effectiveness.* New Jersey: Prentice-Hall.

Nelson C. Brunsting, Melissa A. Sreckovic, Kathleen Lynne Lane. (2014). *Special Education Teacher Burnout: A Synthesis of Research from 1979 to 2013*. Education and treatment of children 37(4), 681-711

Olivos, P.,& Aragones, J. I. (2011). *Psychometric properties of Environmental Identity Scale(EID).* Psychology, 2(1) , 65-74

Podell,J.L.(2011). *Assessing and treating child anxiety in schools.*Special Issue: Cognitive- Behavioral Therapy in the Schools.Volume48, Issue3.Pages 223-232.

Skaalvik, E.M., & Skaalvik, S. (2007). *Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout.* Journal of Educational Psychology, 99(3), 611–625.

Sullivan, C.A. (2015). *The effectiveness of a special education teacher on meeting the needs of students with disabilities and meeting the common core state standards: A self-study.* Retrieved January 15, 2019, from http://digitalcommons.brockport.edu/cgi/viewcontent.cgi?article=1559&context=ehd_thesis

Williams.P. (2014**)**. *Preschool – an arena for children's learning of social and cognitive knowledge*.Early Years. 34:3, 226-240.

Contact email: Vichuda.fairy2551@gmail.com
kanoklin@kku.ac.th
jketchatturat@hotmail.com