Synthesis and Confirmatory Factor Analysis of Components of Functional Competencies of Heads of Departments

Teerasak Aebsapap
King Mongkut's Institute of Technology Ladkrabang. Thailand, *57603003@kmitl.ac.th*

Boonchan Sisan
King Mongkut's Institute of Technology Ladkrabang, *kiboonch@kmitl.ac.th*

Pariyaporn Tungkunanan
King Mongkut's Institute of Technology Ladkrabang, Thailand, *pariyaporn.tu@kmitl.ac.th*

This research project has the objective of synthesizing and doing confirmatory factor analysis of components of functional competencies of Heads of Departments of secondary schools under the Office of the Basic Education Commission in Thailand. The technique of the content analysis consists of 3 steps, namely, document synthesis, making inquiries on opinions and carrying out confirmatory factor analysis. The population is the head of the learning group at the secondary school level. The sample group was the head of the learning group at the secondary school level. under the Office of the Basic Education Commission, 500 people. The findings from the research are as follows. There are 7 components, namely, 1) Professionalism Development 2) Curriculum, Measurement and Evaluation of Learning 3) Educational Innovation and Information Technology 4) Intellectual Leadership 5) Quality Management 6) Learning Organization and 7) Professional Ethic. In addition, it is also found out that the development of Heads of Departments needs the clear identification of desirable characteristics in order to develop tools, direction or model that facilitate Heads of Departments to run activities for developing functional competencies of Heads of Departments to cover all dimensions, from personnel recruitment to development and retention. From an overview of secondary schools under the Office of the Basic Education Commission in Thailand, things that are important and necessary for the development of functional competencies of the Heads of Departments of secondary schools in Thailand are the components of the model, which are essential for the planning and development of the quality of Heads of Departments in the sustainable way.

Keywords: functional competencies, head of department, synthesis, components, confirmatory factor analysis

INTRODUCTION

In 21 Century, there are many changes in many respects to the world, which leads to the advancement in industry and the increase of population, which cause rapid destruction of environment. In addition, educational systems in all levels lack of good standard and the development in terms of sciences one technologies are improper. Thus, in order to change to response to aforementioned challenge, Thailand need learning and teaching reform for developing the educational systems to develop the country (Office of the Education Council, 2017). The reform and manage education to catch up with 21 Century, the systems must be changed through the process of self-development in all levels so that learners can practice and research by themselves, whilst teachers play roles in giving guidances and trigger the thinking process of learners. Additionally, career skills of teachers should start with the Ministry of Education accelerates the generation of teachers, set process of teacher's career development, and build the career incentives by boosting morale to attract more people to this career such as salary and welfare in order to attract more good people to the career. The reform of education should be improve the efficiency of educational structure. People should have chances to train career and have self-learning, along with the development of the learning systems of the communities that is easily accessible and have digital platforms for arranging various educations sufficiently (National Strategic Plan Committee, 2018). From the aforementioned change, it is understood that education is an important tool for developing the country because country development relies on people which knowledge and education to build networks for education management in terms of activities and environment management the facilitate the learning leading to the development of the country in qualitative and sustainable manner.

Educational institutes thus play role in building bodies of knowledge to people. Thus, it is necessary to change to way to manage education to be able to catch up with the change in current world. The administrations, teachers and other personnel in the educational institutes must know their owner roles so that they can manage education with quality. At the same time, the administrations must lead the reform of education management (Theera, 2016). The administrations must be able to suggest ways to develop curricula, develop and improve curriculum, run the research on the study, develop learning materials, have teaching direction, design assessment and evaluation methods, and develop educational institutes with efficiency and effectiveness (Ministry of Education, 2016).

However, the management of heads of departments of education institutes may be differentiate because head of each department is a teacher whist the head of a subject is highly experienced or have seniority but is lack of career deficiency. In addition, head of subject has to coordinate with the administrations and heads of subjects in managing different works in different departments and has to respond to different policies. In order to succeed, each subject head must have competencies that can integrate leadership and management in the suitable way to work efficiently (Siriporn, 2015).

The development of a corroborative component analysis model of causal factors influencing the effectiveness of school academic administration. Secondary education in the central region found that the school environment model was consistent with the historical data. The component weight manifested from 0.83 to 0.91 was statistically significant at the .01 level for all values. Due to managing the school environment is a matter that the administrators must pay attention to. first priority educational institutions that have an environment or atmosphere that is suitable and conducive to learning will affect the performance and the effectiveness of the organization, in particular its impact on attitudes and behaviours in the workplace (Suphitcha, 2021).

Teachers can have professionalism when they have knowledge, skills and experience that are qualitatively accumulated or from curriculum of educational development (Siti & Herwin, 2020). Thus, teachers need self-development in all facets so that they can manage learning to efficiently meet the target (Sekar et al., 2021).

What teachers are expected from the society is student with high learning outcomes. Hence, each teacher has to develop his/her roles in catch up with the societal changes and to match expectancies of parents and the society. Hence, deficiencies must be developed to meet necessary standard, and building the development as academic leader so that students have good learning outcomes that catch up with current societal changes (Mohd et al., 2020).

Career competencies are important thing that subject heads should have because they ensure work with quality and standard. Subject heads are essential to educational institutes. Thus, subject heads have to develop skills and knowledge in the consistent manner.

Therefore, I, the researcher, an interested in the the study on the synthesis and analysis of confirmatory factors on competencies of head subjects of secondary schools under Office of the Basic Education Commission (OBEC) of Thailand, which can be extended as ways to develop competencies of head subjects of secondary school under OBEC of Thailand to meet standard and to satisfy all the parties that take parts.

METHOD

The method of this research project consists of the following activities.

1. The synthesis of document through the study on approaches, theories and other research works, in order to get information of components of competencies, from the content analysis; the databases of Journal of Educational Administration; School Leadership & Management; Leadership and Policy in Schools; King Mongkut's University of Technology North Bangkok; Office of the Basic Education Commission; Srinakharinwirot University; Academic Journal of Eastern Asia University; International Journal of Educational Sciences; Phranakhon Rajabhat University; Chulalongkorn University; Burapha 3 University; Education as Change; Praewa Kalasin Academic Journal Kalasin University, and Krupibul Journal.

2. Survey on opinions with a questionnaire used for collecting data from samples or 500 Heads of Departments of secondary schools under the Office of the Basic Education Commission, which consists of 2 parts, namely, Part 1 consisting of questions relating to the particulars of the studied samples, namely, genders, ages, educational backgrounds, positions and period of time for having the teaching work, to know the opinions of each demographic group, the answers for which are in multiple choices for each sample to choose; and Part 2 testing the samples' opinions towards components of functional competencies of Heads of Departments of secondary schools under the Office of the Basic Education Commission, contains elements 'Intellectual Leadership', 'Quality Management', 'Innovation and Information Technology for Education', 'Professionalism Management', 'Curriculum, Measurement and Evaluation', 'Learning Organization', and 'Professional Ethic'; and

3. Data from the collection of questionnaires of Components of Functional Competencies of Heads of Departments are analyzed for means is the mean value obtained by averaging every data value, the median is the mean value using the data location and standard deviation (S.D.) is the best way to measure the distribution of data, and are analyzed with confirmatory factors analysis technique to prove the correctness of the measurement model.

FINDINGS

From Step 1 of document synthesis, information from the synthesis of the components of functional competencies of Heads of Departments of secondary schools under the Office of the Basic Education Commission, from the sources of including the studies and official papers of Brown et al. (2002); Rawiwan, (2005); Somnuek, (2007); Angela, (2010); Naphason, (2010); Phat & Direk, (2013); Clive & Alfred, (2013); Office of the Basic Education Commission, (2013); Jaruphat, (2013); Namchai, (2007); Kenneth, (2016); Phinit, (2017); Teresa, (2017); and Nannaphat, (2018), is shown in Table 1.

Table 1

Analysis of components of functional competencies of heads of departments of secondary schools under the office of the basic education commission

Components of Functional Competencies of Heads of Departments of Secondary Schools under the Office of the Basic Education Commission	Brown et al., (2002)	Angela. (2010)	Clive & Alfred (2013)	Kenneth (2016)	Teresa (2017)	Rawiwan (2005)	Nam (2007)	Somnuek (2007)	Naphason (2010)	Jaruphat (2013)	Phat & Direk (2013)	Office of the Basic Education Commission (2013)	Phinit (2017)	Nannaphat (2018)
1. Participation	*			*							*			
2. Decision Making	*							*						
3. Planning for School Development	*								*					
4. Utilization of Special Competencies of Each Teacher to the Full Capacity		*												
5. Creation of Vision		*					*			*				
6. Empowerment for Teachers		*								*				
7. Change in Beliefs and Enhancement of Capabilities of Colleagues		*												
8. Promotion of Status of Colleague among Teachers	*			*						*				
9. Becoming Learning Leader		*	*	*	*								*	
10. Bearing Responsibility		*	*	*				*						*
11. Monitoring and Evaluation of Teachers' Performances				*	*			*	*	*	*			*
12. Motivation for Colleagues				*										
13. Consistent Self-Development				*									*	
14. Trust					*									
15. Good Communication					*		*						*	
16. Creation of the Atmosphere for Working Together					*					*				
17. Making of Strategic Plan						*								*
18. Attachment to Organization							*							
19. Leadership for Change		*					*			*				
20. Exchange of Work-related Knowledge among Teachers for Teaching Innovations						*								*

From the table of the analysis, it is apparent that the components of functional competencies of Heads of Departments of secondary schools under the Office of the Basic Education Commission can be synthesized and categorized as follows.

1.Item 2 - Decision Making, Item 4 - Utilization of Special Competencies of Each Teacher to the Full Capacity, Item 5 - Creation of Vision, Item 6 - Empowerment for Teachers, Item 7 - Change in Beliefs and Enhancement of Capabilities of Colleagues, Item 9 - Becoming Learning Leader, Item 12 - Motivation for Colleagues, Item 16 - Creation of the Atmosphere for Working Together, Item 19 - Leadership for Change

and Item 23 - Creativity, are grouped together as the 'Intellectual Leadership (INL)' component.

2. Item 17 - Making of Strategic Plan, Item 26 - Planning and Management, Item 40 - Making of Academic Plan and Item 43 - Development of Internal Quality Assurance System and Educational Standard are grouped together as the 'Quality Management (QUA)' component.

3. Item 20 - Exchange of Work-related Knowledge among Teachers for Teaching Innovations, Item 29 - Research for Learning Development, Item 37 - Capability of Designing of Innovative Media and Technologies Suitable for Contents, Activities and Learners and Item 44 - Development and Utilization of Media and Technologies for Education   are grouped together as the 'Innovation and Information Technology for Education (IIT)' component.

4. Item 13 - Consistent Self-Development, Item 22 - Work Experience, Item 32 - Learning Pursuit and Item 33 - Building of Network for Professionalism Development are grouped together as the 'Professionalism Management (PRO)' component.

5. Item 27 - Curriculum Development, Item 34 - Supervision, Item 35 - Capability of Making Curriculum for Educational Institute, Item 38 - Capability of Consultation and Development for Teachers to Develop Curricula, and Make Assessment and Evaluation, Item 39 - Development or Execution Relating to Contents of Curricula and Item 42 - Process of Learning Development are grouped together as the 'Curriculum, Measurement and Evaluation (CME)' component.

6. Item 28 - Learning Organization, Item 36 - Capability of Learner-oriented Learning Organization with Diversified Methods and Item 41 - Learning Organization in Educational Institutes are grouped together as the 'Learning Organization (LEA)' component.

7. Item 1 - Participation, Item 8 - Promotion of Status of Colleague among Teachers, Item 10 - Responsibility, Item 14 - Trust, Item 15 - Good Communication, Item 18 - Attachment to Organization, Item 21 - Justice, Item 24 - Service Mind, Item 25 - Teamwork, Item 30. - Ethicality and Item 31 - Good Service are grouped together as the 'Professional Ethic (ETH)' component.

The 7 groups of components of functional competencies of Heads of Departments of secondary schools under the Office of the Basic Education Commission are shown in Figure 1.
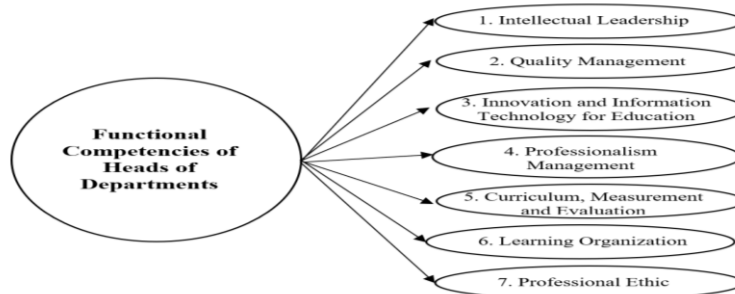
Figure 1
Components of functional competencies of heads of departments

Step 2: Findings from Survey on Opinions

Results from the analysis of the particulars of the respondents to the Questionnaire of Components of Functional Competencies of Heads of Departments of Secondary Schools under the Office of the Basic Education Commission are shown in Table 2.

Table 2
Results from the analysis of particulars of respondents

Particulars	Frequency	Percentage
Gender		
Male	193	38.99
Female	302	61.01
Total	495	100.00
Age		
21-30 Years	58	11.72
31-40 Years	158	31.92
41-50 Years	175	35.35
51-60 Years	104	21.01
Total	495	100.00
Education Background		
Bachelor Degree	144	29.09
Master Degree	345	69.70
Doctoral Degree	6	1.21
Total	495	100.00
Position		
Teacher Assistant	31	6.26
Teacher	133	28.87
Expert Teacher	162	32.73
Special Expert Teacher	166	33.54
Senior Teacher	3	0.61
Total	495	100.00
Period of Time of Working		
1-10 Years	103	20.81
11-20 Years	217	43.84
21-30 Years	161	32.53
31-40 Years	14	2.83
Total	495	100.00

The results of general data analysis of the respondents found that the respondents were 193 males representing 38.99% and 302 females representing 61.01%. Age 21-30 years old, 58 people, equivalent to 11.72%, 31-40 years old, 158 people, 31.92 %, 41-50 years old, 175 people, 35.35 %, 51-60 years old, 104 people, representing a hundred. 21.01 each with bachelor's degree, 144 people, or 29.09%. Master's degree, 345 people, or 69.70%, Doctoral degree, 6 people, or 1.21%. The positions of assistant teachers were 31 people, accounting for 6.26%, teachers positions were 133 people, accounting for 28.87 percent, positions of professional teachers were 162 people, accounting for 32.73%, and positions of specialized teachers were 166 people, accounting for 33.54%, and the positions of professional teachers were 33.54%. 3 people, representing 0.61%, teaching period 1-11 years, 103 people, representing 20.81%, teaching practice period 11-20 years, 217 people, representing 43.84%, teaching practice period 21-30 years, number 161 People accounted for 32.53%, teaching period 31-40 years, 14 people accounted for 2.83%.

Step 3 is the confirmatory factor analysis (CFA) to examine the construct validity of components of functional Competencies of Heads of Departments, the results from which are shown in Tables 3, as follow.

Table 3
The analysis of the Model of Secondary Confirmatory Analysis of Competencies of Heads of Subjects of Secondary School

Variable	b	S.E.	t	R^2
Intellectual Leader (INL)	0.80	0.03	10.58**	0.56
INL1	0.78	0.04	14.36**	0.72
INL2	0.77	0.03	12.18**	0.75
INL3	0.63	0.04	21.28**	0.81
INL4	0.75	0.04	10.63**	0.70
INL5	0.82	0.03	13.66**	0.83
INL6	0.88	0.04	22.36**	0.85
Quality Management (QUA)	0.78	0.04	4.15**	0.55
QUA1	0.69	0.03	11.62**	0.74
QUA2	0.74	0.03	17.25**	0.68
QUA3	0.78	0.04	18.29**	0.90
QUA4	0.68	0.03	17.44**	0.67
QUA5	0.81	0.03	20.12**	0.85
QUA6	0.86	0.04	15.89**	0.84
QUA7	0.74	0.04	16.88**	0.78
QUA8	0.75	0.03	19.34**	0.84
QUA9	0.82	0.03	24.36**	0.92
QUA10	0.87	0.03	15.63**	0.81
QUA11	0.89	0.03	12.58**	0.79
Innovation and Information Technology for Education (IIT)	0.92	0.03	8.75**	0.64
IIT1	0.80	0.03	17.35**	0.81
IIT2	0.74	0.03	23.18**	0.75
IIT3	0.76	0.04	19.24**	0.83
IIT4	0.81	0.04	14.62**	0.68
IIT5	0.90	0.04	20.97**	0.79
IIT6	0.89	0.03	18.65**	0.76
IIT7	0.75	0.04	15.63**	0.87

|				
IIT8	0.79	0.03	13.64**	0.91
IIT9	0.94	0.04	14.89**	0.88
IIT10	0.92	0.03	10.36**	0.82
Professionalism Management (PRO)	0.87	0.03	2.91**	0.56
PRO1	0.89	0.03	18.96**	0.70
PRO2	0.85	0.04	14.34**	0.92
PRO3	0.79	0.04	16.89**	0.67
PRO4	0.84	0.03	23.64**	0.86
PRO5	0.86	0.04	10.39**	0.95
PRO6	0.72	0.03	12.75**	0.83
Curriculum, Measurement and Evaluation (CME)	0.90	0.04	19.03**	0.59
CME1	0.76	0.03	15.33**	0.71
CME2	0.70	0.03	18.98**	0.75
CME3	0.79	0.04	17.63**	0.84
CME4	0.93	0.03	18.36**	0.82
CME5	0.87	0.03	21.11**	0.76
CME6	0.86	0.03	17.88**	0.79
CME7	0.78	0.04	12.56**	0.85
CME8	0.84	0.04	17.15**	0.90
CME9	0.87	0.04	15.39**	0.87
Learning Organization (LEA)	0.75	0.03	4.13**	0.62
LEA1	0.70	0.04	9.57**	0.72
LEA2	0.79	0.04	10.36**	0.85
LEA3	0.82	0.04	19.63**	0.69
LEA4	0.76	0.03	15.75**	0.81
LEA5	0.94	0.03	23.37**	0.89
LEA6	0.81	0.04	19.72**	0.78
LEA7	0.89	0.03	9.12**	0.76
LEA8	0.90	0.03	17.43**	0.88
LEA9	0.68	0.04	13.51**	0.84
LEA10	0.83	0.03	19.92**	0.91
Professional Ethic (ETH)	0.86	0.04	8.75**	0.49
ETH1	0.92	0.04	12.88**	0.68
ETH2	0.70	0.04	21.30**	0.83
ETH3	0.73	0.03	18.63**	0.86
ETH4	0.78	0.04	14.85**	0.74
ETH5	0.88	0.03	12.38**	0.72
ETH6	0.81	0.03	14.72**	0.79
ETH7	0.79	0.04	22.43**	0.84
ETH8	0.90	0.04	21.45**	0.76
ETH9	0.76	0.03	18.63**	0.94
ETH10	0.85	0.04	14.34**	0.87
ETH11	0.81	0.03	24.19**	0.89
ETH12	0.86	0.04	12.98**	0.90
$\chi2 = 5852.90$; df = 1883; p = 0.00; RMSEA =0.065; GFI = 0.93; AGFI = 0.93; RMR=0.04				

**p≤.01
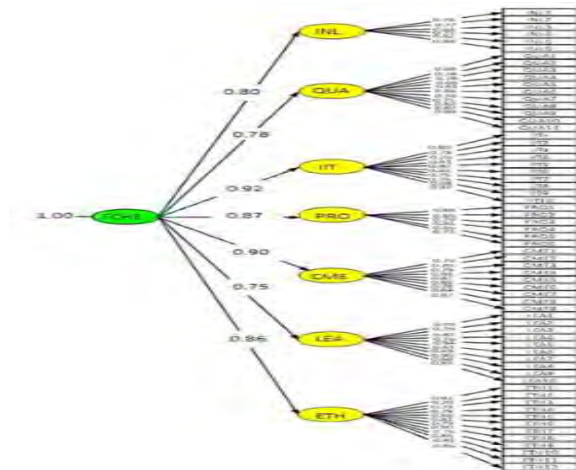
Figure 1
Chi-Square=5852.90, df=1883, P-value=0.00, RMSEA=0.065

Model of Secondary Confirmatory Analysis of Competencies of Heads of Subjects of Secondary School

DISCUSSIONS

The analysis of the Model of Secondary Confirmatory Analysis of Competencies of Heads of Subjects of Secondary School, Office of the Basic Education Commission, shows that each of the competencies has the standard weight of 0.75 - 0.92, and reliability from R^2 between 0.49 – 0.64, with the competency of Innovation and Information Technology (IIT) as the highest of reliability. Consider separately, it is found out that the competency of Intellectual Leader (INL) has the standard weight of 0.63 – 0.88, and reliability from R^2 between 0.70 – 0.85; Quality Management (QUA) has the standard weight of 0.69 – 0.89, and reliability from R^2 between 0.67 – 0.92; Innovation and Information Technology for Education (IIT) has the standard weight of 0.74 – 0.94, and reliability from R^2 between 0.68 – 0.91; Professionalism Management (PRO) has the standard weight of 0.72 – 0.89, and reliability from R^2 between 0.67 – 0.95; Curriculum, Measurement and Evaluation (CME) has the standard weight of 0.70 – 0.93, and reliability from R^2 between 0.71 – 0.90; Learning Organization (LEA) has the standard weight of 0.68 – 0.94, and reliability from R^2 between 0.69 – 0.91; Professional Ethic (ETH) has the standard weight of 0.70 – 0.92, and reliability from R^2 between 0.68 – 0.94.Therefore, Heads of Departments feel that the component of Innovation and IT is of the greatest importance.

Natalya, Irina, Elena & Anastasia, (2020) have explained that active education can change mediocre learning to promote the new learning strategies by using resource and technological technology and training that has efficiency. New learning was of Russian class has taken place because the necessity in the creation of the relation of the

participant to the education. Another factor is the use of electronic resource and technology to use training methods that are efficiency that leads to efficient education.

Likewise & Ika, (2021) have explained that the types and the quantity of the approaches that teachers implemented in their study significantly influenced students of State Vocational High School 7 to adopt electric vehicle technology innovation. Secondly, the types and the amount from the influences of the teachers' approaching obstacles to the adoption of electric technology innovation by students of State Vocational High School 7 ranged from significantly influential to not influential. Thirdly, there were various model of teachers' approaching that had been implemented with the aim of tackling the obstacles to the adoption by students of State Vocational High School 7, of the electric vehicle technology innovation.

Ali et al., (2021) have explained that the training of the head of the department enters the process of working together as a faculty member from universities around the world share teaching methods using existing educational technology.

Muhammad et al., (2021) have stated that School Innovation Management is an effort of managing educational institutions at present. This study aimed of determination on what happened to the implementation of school innovation management that took place, with educational background in Batam City. The results of his research could be concluded that the implementation of school innovation management that took place with an educational background in Batam City was very good. Meanwhile, innovation and system that run well should be conserved and improved. Management of educational innovation aims of ensuring the quality of human resource management by building strong motives, good communication, solidarity, and problem-solving capability.

Also, Suti & Dina, (2021) have explained as follows. First, Innovation Development of PAI learning methods and strategies is possible with learning innovation in the context of design; learning innovation in the context of development; learning innovations in the context of utilization; learning innovations in the context of management and learning innovation in the context of assessment. Also, challenges in the New Normal Era, with efforts to develop innovative methods and learning strategies, require the adaptation of learning methods and strategies for IT (Information Technology), with the theme of PAI material. There was confusion in the aspects of assessment and evaluation of moral-spiritual PAI material.

Kalthoum & Abdullah (2022) have explained that the mixture between the design and the technology in the management of education that can facilitate the learning and teaching to have efficiency in the learning section and can increase learning quality, and the use of advance technology in the creative way to enable efficiency learning.

From the study of the functional competency components of the Heads of Departments of secondary schools in Thailand, it can be summarized as follows: educational institutions that can develop the head of the department to be able to perform their duties. Must pay attention to all the elements mentioned above. In addition, the results

of this study confirmed that the competency component of the head of the secondary school department Under the Office of the Basic Education Commission of Thailand, include Professional Ethic, Professionalism Development, Measurement and Evaluation, Intellectual Leadership, Curriculum, Learning Organization and Quality Management. These components were included in the performance model of the heads of secondary schools under the Office of the Basic Education Commission in Thailand, which was developed based on the research findings.

CONCLUSION

The Competency of Heads of Subjects of Secondary School, Office of the Basic Education Commission, hold that the most important for heads of subjects are the direction for the administer of school to promote the competencies of heads of subjects which will have effects and helps students to be good and sufficient and helps schools to be efficiency.

REFERENCES

Ali, U.H., Baohui, Z., Abdo, H.A., & Sarfraz, A. (2021). A Collaborative Teacher Training Approach in Different Cultures in the Era of Technology. *International Journal of Instruction*, 14(4), 21-32.

Angela Choi Fung Tam. (2010). Understanding the leadership qualities of a head of department coping with curriculum changes in a Hong Kong secondary school. *School Leadership & Management,* 30(4), 367-386.

Arbuckle, J. J. (1995). *AMOS user's guide.* Chicago: Small Waters.

Brown, M., Boyle, B., & Boyle, T. (2002). Professional development and management training needs for heads of department in UK secondary schools. *Journal of Educational Administration*, 40(1), 31-43.

Clive, S., Raj, M. & Alfred, B. (2013). Role-players' experiences and perceptions of heads of departments' instructional leadership role in secondary schools. *Education as Change.* 17(1), 163-176.

Fan, X., & Sivo, S. (2005). Sensitivity of fit indexes to mis specified structural or measurement model components: Rationale of two-index strategy revisited. *Structural Equation Modeling.* 12(3), 343-367.

Goffin, R. D. (2007). Assessing the adequacy of structural equation model: Golden rules and editorial policy. *Personality and Individual Differences*. 42(1), 831-839.

Hair, et al. (2010). *Multivariate data analysis*. 4th ed. New Jersey: Pearson Education International.

Jaruphat, B. (2013). *Development of teaching leadership indicators of the heads of Thai learning subject groups in secondary school under the Office of the Basic Education Commission Northeastern Region.* Ph.D. Department of Leadership in Educational Administration. graduate school. Phranakhon Rajabhat University.

Kalthoum, A., & Abdullah, A. (2022). Enhancement of Preservice Islamic Studies Teachers' Autonomous Learning Skills: Designing a Reverse Learning Project. *International Journal of Instruction,* 15)1(, 153-166.

Kenneth, L. (2016). Department-Head Leadership for School Improvement. *Leadership and Policy in Schools.* 15(2), 117-140.

Ministry of Education. (2016). *Education Development Plan of the Ministry of Education, Vol. 12 (2017 - 2021).* Bangkok: Office of Policy and Strategy. Office of the Permanent Secretary, Ministry of Education Ministry of Education.

Muhammad, D. S., Fithri, M. A., Neri, A., Yuli, F. W., & Andry, F. (2021). School Innovation Management. *Psychology and education,* 58(2), 6881-6887.

Mohd, F. M. Y., Yahya, D., Ibrahim, S., & Mat, R. Y. (2020). Teachers' Professional Development Level across Cohort of Generations in Malaysia. *International Journal of Instruction,* 13(4), 443-456.

Nannaphat, B. (2018). Development of a curriculum to enhance academic leadership for heads of learning subject groups in educational institutions under local government organizations. *Krupibul Journal,* 6(1), 134-150.

Namchai, S. (2007). *Study of the relationship of multilevel linear structures Leadership factor Factors of learning subject groups and personal factors affecting social exchange networks in the workplace and variables affecting psychology of subject group leaders and secondary school teachers in Bangkok.* Ph.D. Applied Behavioral Science Research Program. Graduate School, Srinakharinwirot University.

Naphason, S. (2010). *Training model for department heads to develop a problem-based learning training course for teaching and learning management.* Doctorate of Industrial Education Vocational Administration and Technical Education. Department of Technical Education Administration. graduate school. King Mongkut's University of Technology North Bangkok.

Natalya, A., Irina, A., Elena, M., & Anastasia, I., (2020). Transformation of Classroom Teaching in Modern Russian Schools: State of the Art. *International Journal of Instruction,* 13(2), 343-364.

National Strategic Plan Committee. (2018). *National Strategy 2018 - 2037.* Bangkok: Office of the Secretary of the National Strategy Board Office of the National Economic and Social Development Board.

Office of the Basic Education Commission. (2013). *School Management Manual in the Juristic Person Management Development Project.* Bangkok: Agricultural Cooperative Association of Thailand.

Office of the Education Council. (2017). *National Education Plan 2017 – 2036.* Bangkok: Sweet Pepper Graphic.

Phat, S., & Direk, P. (2013). Transformational Leadership Empowerment Model Academic Teacher Head of Department High School under the Office of the Basic Education Commission. *Academic Journal of Eastern Asia University*, 3(2), 57-70.

Phinit, N. (2017). Development of a competency training course for the subject group leader in secondary schools Under the Office of Secondary Education Service Area, Region 20. *Praewa Kalasin Academic Journal Kalasin University,* 4(3), 454-472.

Rawiwan, P, (2005). *Administrative competence of departmental level executives Nursing Science State University*. Department of Educational Administration. Graduate School, Burapha University.

Rosmawaty, H. P., & Ika, R. D. (2021). The Influence of Teachers' Approaching Obstacle on the Adoption Technological Innovation within the Electric Vehicle Among the Vocational High School Educations. *Psychology and education*, 58(2), 6058-6071.

Sekar, P. K., Suminto, A. S. A. & Siti, I. A. D. (2021). Teachers Quality and Educational Equality Achievements in Indonesia. *International Journal of Instruction,* 14(2), 811-830.

Siti, A. T., & Herwin. (2020). The Influence of Teacher Certification on the Performance of Elementary School Teachers in Gorontalo Province, Indonesia. *International Journal of Instruction*, 13(4), 347-360.

Siriporn, S. (2015). *Development of character indicators that facilitate participatory management of the subject group leader. in schools affiliated with Bangkok.* Doctorate of Education Department of Educational Administration. Graduate School, Srinakharinwirot University.

Somnuek, T. (2007). *Developing a model for developing administrative competency for middle-level executives in an autonomous university.* Doctor of Education. Education Administration Department of Policy Educational Management and Leadership. Faculty of Education, Chulalongkorn University.

Steiger, J. H. (2007). Understanding the limitation of global fit assessment in structural equation modeling. *Personality and Individual Differences,* 42(1), 893-898.

Suphitcha, M. (2021). Causal Factors Influencing the Effectiveness of Academic Administration of Secondary Schools in Central Area of Thailand. *E-Journal of Education Studies, Burapha University,* 3(2), 19-36.

Suti, S. & Dina, M. (2021). Innovation in the Development of Islamic Education Learning Strategies (PAI): *Concepts and Challenges in Facing the New Normal Era. Psychology and education*, 58(2), 7262-7271.

Theera, R. (2016). *Professionalism of educational institution administrators, problems, necessities and practices.* Bangkok: Khao Fang.

Teresa, A. O. (2017). How heads of Departments Understand Their Roles as Instructional Leaders: A South African Study. *International Journal of Educational Sciences,* 18(1), 224-230.