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Research Article

Key Performance Indicators of Knowledge Competency of Technical Teachers in Thailand: The 21st Century

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Abstract

The objectives of this research are to develop key performance indicators for measuring the knowledge competency of technical teachers in Thailand and to analyze it by subject department. The research samples are 360 vocational teachers from 6 subject departments: machine tool technology, mechanical power technology, electrical power, electronic technology, welding, and civil construction, all affiliated with the Office of the Vocational Education Commission. Stratified random sampling technique is used to select the sample out of a population of 782. The research instrument used is a 5-rating scale questionnaire with reliability of 0.94. Data analysis is done using confirmatory factor analysis, mean, standard deviation, and analysis of variance (One-way ANOVA). The research results found that (1) there are 18 key performance indicators for measuring the knowledge competency of technical teachers, with the goodness of fit index passed all good criteria: Chi-square = 72.490, df = 56, p-value = 0.068, GFI = 0.987, AGFI = 0.965, and RMSEA = 0.022, and (2) technical teachers affiliated with the Office of the Vocational Education Commission in different subject departments, when analyzed, show no differences in teaching competency.

Keywords: *Key Performance Indicator; Knowledge Competency; Technical Teachers*

1. Introduction

Education in the 21st century is on the agenda for educational system meetings, in all countries, as a matter of urgency. Knowledge improvement and speedy changes in working life determine learners to be ready for continuous learning (Niemi & Nevgi, 2014). The gathering of the ASEAN Community in 2015, of all 10 country members in the region including Thailand, majorly aimed to develop and enhance a better quality of life, promote good understanding between people in the region, lift income levels of people so as to install stable fundamentals in ASEAN, create opportunities and handle challenges in all aspects of the current world that everything seems to change rapidly, and increase negotiation power and competitive advantage with other regions. World society has been changed in different dimensions; economics, technology, security, and environment. Such events have an effect both directly and indirectly on the development direction of Thai people (Ministry of Education, 2016), which is consistent with research studies in foreign country contexts, such as in the United States and the United Kingdom, where importance is given to the value and roles of the professional learning community (PLC) to enhance professional practices (Peng, McNess, Thomas, Wu, Zhang, Li, & Tian, 2013). Additionally, a number of research studies show that positive results from schools that implemented professional learning

community scheme have increased (Lomos, Hofman, & Bosker, 2011). Types of teaching methods are very important factors that motivate learners to have good learning (Boelens, Wever, & Voet, 2017). Another factor is the environment associated with learning management, which affects the way learners learn (Civitillo, Juang, & Schachner, 2018).

In the past two decades, countries across the world have started and implemented the improvement and development of new educational management systems, a process called Educational Reformation, which aims to develop and manage education to have more efficiency, quality, and standards that are able to produce qualified manpower for a learning society. Teachers are important persons in educational reform, because they are the group of people in the front line and a key mechanism in developing the quality of learners. Based on changes in social situations, it is necessary to develop and prepare teachers entering the professional learning community to have high capability, because teachers develop learners to be able to confront different situations, both current and in the future. Therefore, education and teacher development to increase professional capability is important and necessary in producing teachers to have competency and capability in being real "professional teachers" (Queensland University of Technology, 2017). This is consistent with Vogt & Rogalla (2009), who mentioned that teachers are important factors in responding to diversified learning requirements and in modifying teaching and learning to comply with different learning abilities, including various interests and motivations in promoting the learning process. It is also consistent with Tronsmo & Nerland (2018), who mentioned that the roles of teachers as being knowledge co-producers in professional learning are greater than merely being operators who acquire knowledge and transmit it to students, and with Joseph (2015), who mentioned that instructors have to manage learning experiences that allow learners to be able to confront changes while they can learn skills and theories and experience self-learning with information technology efficiently. This is in harmony with Kao, Lin, & Chien (2018), who stated that professional development plays an important role in developing capability and the results of teaching in the practice of teachers. Tippayatat (2010) stated that learners' learning needs problem solving, together with processes with all sectors and critical thinking about the effect that learning will have on utilizing innovation. The important thing that allows learning and furthering innovation development is creativity and efficient communication skills. Learners have a chance to analyze, criticize, and critically think with a teaching and learning process that allows communities to have participation with education mobilization (Kaye, 2004), learning in a learning network system through knowledge transmission with discussion, reading, analysis, and reflective thinking that enables learners and instructors to acquire learning together. Learners can learn best when a learning path is in harmony with how the brain works. The brain can learn efficiently when learning is handled without stress, but with happiness and fun. For learners, learning and playing cannot be separated. Consequently, teaching and learning activities must include happy learn play (Guidetti, Viotti, Hindrichs, Camacho-Avila, Girardo, Simon, & Converso, 2018).

Education problems are an unsolvable issue in the Thai educational system. This is worrying, especially in terms of the quality of education as, though huge investments have been made in the education budget to improve development, the quality of education seen in Thai students does not match standards (Morjai, Pupat, & Pimdee, 2018). It is of great importance to develop teachers to have competency in accordance with professional standards by managing education to produce personnel at the skilled craftsman and technician levels to be in harmony with national, economic, and social development trends and the demands of a labor market that increasingly requires vocational students every year. Consequently, there are grounds to demand that educational institutes should have teachers who hold knowledge according to the professional standards for teachers, who work efficiently complying with educational curriculums, and who keep pace with rapidly changing technology. Teachers are regarded as a key factor, enabling vocational education management to reach the goals of the Office of the Vocational Education Commission. Thus, the Vocational Education Strategic Plan (2009 – 2018) has been designed to respond to educational reform policy in the second decade of the 21st Century, and to respond to vocational education management. There are 6 strategies and 35 action plans, as follow: Strategy 1: development of vocational education management and profession training to meet standards. Strategy 1, in particular, has main action plans 1) to develop teachers and personnel in vocational education, 2)

to accelerate the quality and competency of learners, 3) to make standards and develop curricula, teaching, and learning processes, and to measure and evaluate, 4) to promote the quality assurance of educational institutions, 5) to enhance professional virtue, merit, and ethics, 6) to develop educational institutions and vocational education institutions to meet the standards of vocational and professional excellence, 7) to enhance professional experience and instill a volunteer spirit through social services, and 8) to promote information technology and innovation media to be used in teaching and learning processes, to enhance the skills of being entrepreneurs, and to maintain the good image of vocational education (Office of the Vocational Education Commission, 2009).

With reference to the development of learning management in vocational education to retain persons who finish vocational education with competency to work in modern industries, the most important personnel are vocational teachers, who have duties to perform their tasks according to the notification of the Teacher Council of Thailand Board about the essence of knowledge and the competency of persons in the teaching profession, based on knowledge standards and professional experience. However, today, it is found that some vocational teachers are in need of knowledge and competency, based on some requirements; for example, capability in bringing new technology to develop or manage teaching and learning to be more efficient. The reason for this is that changes and technological advancement in Thai industry and business speedily occur, which results in vocational teachers being unable to keep pace with such changes or be consistent with the labor structure that indicates or defines the qualifications of educational products. Therefore, competency development of persons in the teaching profession is highly essential, so as to obtain teachers who are qualified to have knowledge and understanding in various matters, such as language and technology, curriculum development, teaching and learning management, educational research, educational innovation, and information technology (Boonyasophon, 2003).

Based on the aforementioned problem situation and concept, the researcher is interested in studying the key performance indicators measuring the knowledge competency of technical teachers in Thailand in the 21st century, which can be beneficial to management executives in the Office of the Vocational Education Commission and vocational education institutions to formulate policies to develop and improve the competency of technical teachers to accordingly acquire better efficiency.

2. Purposes of the Study

The research aims to develop key performance indicators for measuring the knowledge competency of technical teachers in Thailand affiliated with the Office of the Vocational Education Commission, and to analyze this knowledge competency by subject department. The research questions are:

1. Are key performance indicators measuring the knowledge competency of technical teachers affiliated with the Office of the Vocational Education Commission consistent with the empirical data?
2. Does this knowledge competency, when analyzed by subject department, show any differences?

3. Conceptual Framework

The synthesis of related documents and research studies, expert interviews, and group discussions is employed in this research.

The synthesis of documents and research studies associated with the knowledge competency of technical teachers in Thailand affiliated with the Office of the Vocational Education Commission includes:

Interviewing experts and instructors affiliated with the Office of the Higher Education Commission; 9 persons, including representatives from King Mongkut's University of Technology Thonburi, King Mongkut's Institute of Technology Ladkrabang, Rajamangala University of Technology Thanyaburi, Rajamangala University of Technology Lanna, Rajamangala University of

Technology Srivijaya, Rajamangala University of Technology Isan Khon Kaen Campus, Rajamangala University of Technology Krungthep, Rajamangala University of Technology Phra Nakon, and Rajamangala University of Technology Suvarnabhumi.

Group discussions with experts comprising 7 Deputy Directors of Academic Affairs from Samut Songkram Technical College, Ratchaburi Technical College, Rayong Technical College, Chiang Mai Technical College, Maesod Technical College, Pra Na Khon Si Ayutthaya Technical College, and Nakhon Si Thammarat Technical College.

The conclusions show that the knowledge competency of technical teachers affiliated with the Office of the Vocational Education Commission includes 8 aspects, as per the following:

1. Teachership
2. Communication
3. Psychology for teachers
4. Curricula
5. Learning and classroom management
6. Research for learning development
7. Educational innovation and information technology
8. Measurement and evaluation of learning outcomes

4. Research Hypotheses

Key performance indicators measuring the knowledge competency of technical teachers in Thailand affiliated with the Office of the Vocational Education Commission developed by the researcher are consistent with the empirical data.

There are differences in the knowledge competency of technical teachers in Thailand affiliated with Office of the Vocational Education Commission when analyzed by subject department.

5. Research Methodology

The steps used to conduct this research are concerned with:

1) Population and sample; the population used in this research is 782 technical teachers in the subject departments of mechanical power technology, machine tool technology, electrical power, electron technology, welding, and civil construction, all affiliated with the Office of the Vocational Education Commission, from educational institutions in the Bangkok, Nonthaburi, Pathum Thani, Ratchaburi, Samut Songkram, and Samut Sakorn provinces. The sample is composed of 360 technical teachers from the aforementioned subject departments (Hair, Black, Babin, & Anderson, 2010). The sample is selected by stratified random sampling technique.

Table 1: size of population and sample, classified by types of educational institutions

Subject department	Population (person)	Sample (person)
Mechanical power technology	199	92
Machine tool technology	114	52
Electrical power	173	80
Electronic technology	144	66
Welding	74	34
Civil construction	78	36
Total	782	360

2) Research instrument: questionnaires about the knowledge competency of technical teachers in Thailand were used in the research, and comprised 2 parts; part 1: information about subject departments; part 2: the knowledge competency of technical teachers in Thailand. The type of questions used was multiple choice,, with 18 question items and a 5-rating scale questionnaire (the Likert-type scale, 1967). The questionnaires contained

content validity, and the IOC (index of item objective congruence) ranged between 0.60 – 1.00. The Cronbach's Alpha Coefficient was 0.94.

3) Data from the questionnaires were collected from technical teachers in the Bangkok, Nonthaburi, Pathum Thani, Ratchaburi, Samut Songkram, and Samut Sakorn provinces by the researcher and classified based on the respondents who were the research sample from the following subject departments affiliated with the Office of the Vocational Education Commission; mechanical power technology, machine tool technology, electrical power, electronic technology, welding, and civil construction.
4) Confirmatory factor analysis was the statistical technique used in this research, based on the criteria of Chi-square, degrees of freedom (df), p, AGFI , RMSEA values, mean, standard deviation, and One-way ANOVA analysis.

6. Results

6.1 Symbols used in the research:

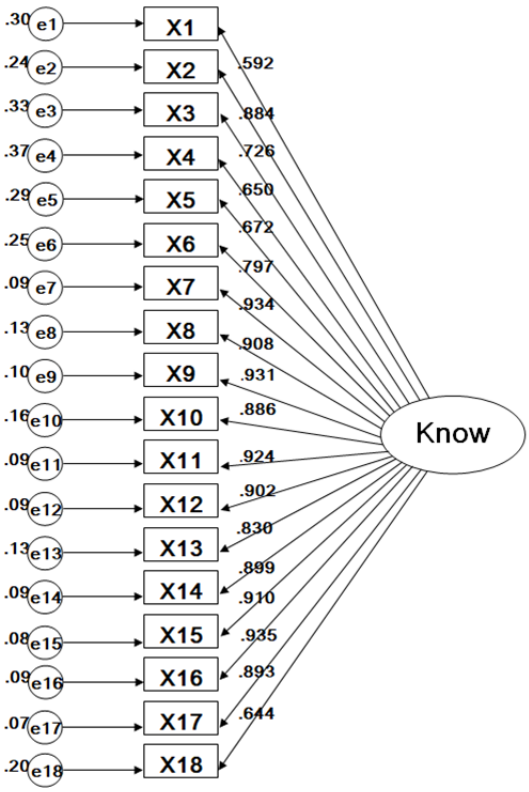
$\bar{X}$	=	arithmetic mean
S.D	=	standard deviation
RMSEA	=	root mean square error of approximation
GFI	=	goodness of fit index
AGFI	=	adjusted goodness of fit index
Know	=	knowledge of technical teachers
(X1)	=	knowledge about learner-teacher interaction principles
(X2)	=	teacher spirituality
(X3)	=	knowledge about how to raise a question
(X4)	=	knowledge about how to use questions that promote deeper thinking
(X5)	=	technique of giving advice to assist learners
(X6)	=	knowledge and understanding about psychology in organizations
(X7)	=	knowledge about theory of curriculum analysis by subjects
(X8)	=	knowledge about theory of curriculum evaluation by subjects
(X9)	=	knowledge about theory of teaching methods
(X10)	=	knowledge about principles of learning management design
(X11)	=	knowledge about how to write a lesson plan
(X12)	=	knowledge of the research process
(X13)	=	knowledge about how to collect and analyze data
(X14)	=	knowledge about how to apply research results in teaching and learning management and learner development
(X15)	=	knowledge about how to build innovation and information technology media for learning,
(X16)	=	knowledge about how to choose instructional media
(X17)	=	knowledge about diversified measurement and evaluation of learning outcomes
(X18)	=	knowledge about principles of applying evaluation results to develop learners

Table 2 shows the relationships between 18 observed variables, key performance indicators measuring the knowledge competency of technical teachers affiliated with the Office of the Vocational Education Commission. Bartlett's Test of Sphericity tests the hypothesis that the correlation matrix of observed variables is an identity matrix. The analysis results found that Chi-square = 13689.859, df = 153 , p = 0.000, which are different from zero, with a statistical significance level of 0.05, and is consistent with the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy test value that equals to 0.970 and close to 1, indicating that the correlation matrix of the observed variables is not an identity matrix with high correlation between variables. The test results of the key performance indicators measuring the knowledge of technical teachers affiliated with the Office of the Vocational Education Commission found that the model is consistent with the empirical data, with Chi-square value (χ) = 72.490, degrees of freedom (df) = 56, p-value = 0.068, GFI value = 0.987, AGFI value = 0.959, and RMSEA value = 0.022.

Table 2: Correlation coefficients of key performance indicators of knowledge competency of technical teachers

Observed Variables	Correlation Coefficient																	
	X1	X2	X3	X4	X5	X6	X7	X 8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18
X1	1.000																	
X2	0.708	1.000																
X3	0.642	0.842	1.000															
X4	0.588	0.706	0.673	1.000														
X5	0.596	0.731	0.691	0.782	1.000													
X6	0.621	0.774	0.714	0.684	0.745	1.000												
X7	0.561	0.743	0.722	0.609	0.649	0.775	1.000											
X8	0.531	0.743	0.708	0.591	0.588	0.717	0.843	1.000										
X9	0.568	0.765	0.729	0.622	0.628	0.756	0.863	0.871	1.000									
X10	0.546	0.730	0.676	0.556	0.571	0.700	0.817	0.804	0.852	1.000								
X11	0.531	0.752	0.697	0.580	0.587	0.708	0.852	0.838	0.856	0.811	1.000							
X12	0.473	0.710	0.673	0.575	0.856	0.695	0.812	0.819	0.843	0.799	0.860	1.000						
X13	0.447	0.646	0.612	0.550	0.567	0.645	0.768	0.742	0.773	0.732	0.781	0.771	1.000					
X14	0.499	0.691	0.654	0.529	0.561	0.701	0.842	0.815	0.833	0.790	0.844	0.831	0.762	1.000				
X15	0.483	0.714	0.667	0.567	0.605	0.710	0.843	0.814	0.833	0.790	0.844	0.832	0.810	0.853	1.000			
X16	0.560	0.753	0.727	0.616	0.654	0.748	0.868	0.832	0.864	0.823	0.851	0.841	0.806	0.830	0.853	1.000		
X17	0.475	0.666	0.661	0.542	0.555	0.700	0.812	0.798	0.821	0.793	0.828	0.791	0.731	0.811	0.811	0.800	1.000	
X18	0.542	0.585	0.551	0.452	0.456	0.539	0.599	0.595	0.618	0.623	0.611	0.551	0.520	0.586	0.584	0.584	0.791	1.000

Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.970, Bartlett's Test of Sphericity : Chi-Square = 13689.859, df = 153, p = 0.000



Chi-square = 72.490, df = 56, p = 0.068, GFI = 0.987, AGFI = 0.959, RMSEA = 0.022

Figure 1: Model of knowledge competency of technical teachers

6.2 Comparison of results of knowledge competency of technical teachers

Table 4 shows that the means and standard deviations of the knowledge competency of technical teachers are overall at a high level ($\bar{X}$= 4.40, S.D. = 0.26). Considering each sub-item, it was found that the item having the highest mean was educational innovation and information technology ($\bar{X}$= 4.44, S.D. = 0.55), followed by learning and classroom management ($\bar{X}$ =4.42, S.D.=0.58), teachership ($\bar{X}$=4.41, S.D.=0.52), and research for learning development ($\bar{X}$= 4.41, S.D. = 0.55).

Table 3: Means and standard deviations of knowledge competency of technical teachers

Subject department	Mechanical power technology (n = 360)		Machine tool technology (n = 360)		Electrical power (n = 360)		Electronic technology (n = 360)		Welding (n = 360)		Civil construction (n = 360)		Overall (n = 360)	
	$\bar{X}$	S.D	$\bar{X}$	S.D	$\bar{X}$	S.D	$\bar{X}$	S.D	$\bar{X}$	S.D	$\bar{X}$	S.D	$\bar{X}$	S.D
Teachership	4.43	0.56	4.55	0.50	4.42	0.56	4.40	0.44	4.25	0.48	4.34	0.50	4.41	0.52
Communication	4.41	0.57	4.42	0.53	4.40	0.58	4.41	0.59	4.20	0.68	4.30	0.69	4.38	0.59
Psychology for teachers	4.38	0.62	4.44	0.60	4.30	0.56	4.30	0.58	4.38	0.60	4.18	0.63	4.33	0.59
Curricula	4.38	0.57	4.28	0.60	4.33	0.63	4.43	0.55	4.50	0.50	4.38	0.72	4.38	0.59
Learning and classroom management	4.40	0.59	4.48	0.57	4.40	0.58	4.41	0.49	4.55	0.56	4.33	0.71	4.42	0.58
Research for learning development	4.43	0.56	4.28	0.66	4.42	0.54	4.43	0.50	4.58	0.49	4.30	0.52	4.41	0.55
Educational innovation and information technology	4.44	0.56	4.28	0.57	4.51	0.52	4.46	0.50	4.30	0.66	4.59	0.47	4.44	0.55
Learning measurement and evaluation	4.42	0.51	4.38	0.56	4.40	0.54	4.43	0.51	4.23	0.65	4.52	0.59	4.40	0.55
Total	4.41	0.33	4.39	0.23	4.40	0.23	4.41	0.21	4.37	0.18	4.37	0.28	4.40	0.26

In general, the knowledge of technical teachers in mechanical power technology departments was at a high level ($\bar{X}$=4.41, S.D.= 0.33). Considering each sub-item, it was found that the item having the highest mean was educational innovation and information technology ($\bar{X}$=4.44, S.D.=0.56), followed by teachership ($\bar{X}$ =4.43, S.D.=0.62), research for learning development ($\bar{X}$ =4.43, S.D.=0.56) and learning measurement and evaluation ($\bar{X}$=4.42, S.D.=0.51).

Overall, the knowledge of technical teachers in machine tool technology departments was at a high level ($\bar{X}$=4.39, S.D.=0.23). Considering each sub-item, it was found that the item having the highest mean was teachership ($\bar{X}$=4.55, S.D.=0.50), followed by psychology for teachers ($\bar{X}$=4.44, S.D.=0.60) and communication ($\bar{X}$=4.42, S.D.=0.53), which are at a high level.

With reference to the knowledge of technical teachers in electrical power departments, overall, it was at a high level ($\bar{X}$=4.40, S.D.=0.23). Considering each sub item, it was found that the item having the highest mean was educational innovation and information technology ($\bar{X}$ =4.51, S.D.=0.52), followed by research for learning development ($\bar{X}$ =4.42, S.D.=0.54), teachership ($\bar{X}$=4.42, S.D.=0.56), communication ($\bar{X}$=4.40, S.D.=0.58), learning and classroom management ($\bar{X}$=4.40, S.D.=0.58), and learning measurement and evaluation ($\bar{X}$=4.40, S.D.=0.54).

In relation to the knowledge of technical teachers in electronic technician departments, in general, it was at a high level ($\bar{X}$=4.41, S.D.=0.21). Considering each sub-item, it was found that the item having the highest mean was educational innovation and information technology ($\bar{X}$=4.46, S.D.=0.50), followed by curricula ($\bar{X}$=4.43, S.D.=0.55), research for learning development ($\bar{X}$=4.43, S.D.=0.50), learning measurement and evaluation ($\bar{X}$=4.43, S.D.=0.51), communication ($\bar{X}$=4.41, S.D.=0.59), and learning and classroom management ($\bar{X}$=4.41,S.D.=0.49).

With regards to the knowledge of technical teachers in welding departments, overall, it was at a high level ($\bar{X}$=4.37, S.D.=0.18). Considering each sub-item, it was found that the item having the highest mean was research for learning development ($\bar{X}$=4.58, S.D.=0.49), followed by learning and classroom management ($\bar{X}$=4.55, S.D.=0.56), and curricula ($\bar{X}$=4.50, S.D.=0.50).

In general, the knowledge of technical teachers in civil construction departments was at a high level ($\bar{X}$=4.37, S.D.=0.28). Considering each sub-item, it was found that the item having the highest mean was educational innovation and information technology ($\bar{X}$=4.59, S.D.=0.47), followed by

learning measurement and evaluation ($\bar{X}$=4.52, S.D.=0.59), and curricula ($\bar{X}$=4.38, S.D.=0.72) respectively.

Table 4 shows that, overall, technical teachers in machine tool technology, mechanical power technology, electrical power, electronic technology, welding, and civil construction subject departments have differences in their competency.

Table 4: Comparison results of knowledge competency of technical teachers analyzed by subject department with One-Way ANOVA analysis

Knowledge of technical teachers	Source of Variance	SS	df	MS	F	Sig.
1. Teachership	Between Groups	2.189	5	.438	1.106	.158
	Within Groups	96.475	354	.273		
	Total	98.664	359			
2. Communication	Between Groups	1.547	5	.309	.858	.510
	Within Groups	127.686	354	.361		
	Total	129.233	359			
3. Psychology for teachers	Between Groups	1.848	5	.370	1.029	.401
	Within Groups	127.202	354	.359		
	Total	129.050	359			
4. Curricula	Between Groups	1.305	5	.261	.725	.605
	Within Groups	127.558	354	.360		
	Total	128.864	359			
5. Learning and classroom management	Between Groups	1.173	5	.235	.689	.632
	Within Groups	120.529	354	.340		
	Total	121.702	359			
6. Research for learning development	Between Groups	2.367	5	.473	1.538	.177
	Within Groups	108.964	354	.308		
	Total	111.331	359			
7. Educational innovation and information technology	Between Groups	3.144	5	.629	2.095	.066
	Within Groups	106.245	354	.300		
	Total	109.389	359			
8. Learning measurement and evaluation	Between Groups	1.625	5	.325	1.070	.377
	Within Groups	107.508	354	.304		
	Total	109.389	359			
Total	Between Groups	.078	5	.016	.223	.952
	Within Groups	24.594	354	.069		
	Total	24.671	359			

7. Discussion

The analysis results of the key performance indicators measuring the knowledge competency of technical teachers in Thailand contain construct validity, as they are from 18 key performance indicators. The index of item objective congruence indicates p-value = 0.093, from interviewing experts and instructors affiliated with the Office of the Higher Education Commission and from the group discussions with experts. The results are consistent with the research study conducted by Apa-adul, Poolkrajang, and Siripan (2011) about the standards of the vocational education teaching profession. The research results indicated that the standards of vocational education teaching profession comprised standards of knowledge competency that all teachers must have, which are numerical analysis skill, information technology and communication, systematic problem solving, interpersonal relationship and responsibility, and continuous self-development. Professional competencies for teachers are teaching competencies that teachers of all fields must have, which are curriculum design and development, learning management, measurement and evaluation, psychology for vocational teachers, learning measurement and evaluation, administration and management environment for learning, educational research, educational innovation and technology, professional qualifications of teachers, vocational education quality assurance, guidance and organizing activities that promote learning, and educational management with communities and business corporations.

Based on the comparison of the knowledge competency of technical teachers in Thailand affiliated with the Office of the Vocational Education Commission, analyzed by subject department,

it is found that technical teachers who teach different subjects show no difference in their overall knowledge competencies for 8 sub-items; teachership, communication, psychology for teachers, curricula, learning and classroom management, research for learning development, educational innovation and information technology, and learning measurement and evaluation. It might be said that technical teachers affiliated with the Office of the Vocational Education Commission have prepared or developed themselves to acquire knowledge and capability in various aspects regularly, and their educational institutions provide support to them to have opportunities in different competency training programs, so that they can further develop their knowledge and capability; this can also enable vocational national educational test results to be satisfactory and in harmony with educational quality assurance, regarding internal and external quality assurance in education, in which the Office of National Education Standards and Quality Assessment emphasizes the quality of technical teachers and competencies of learners, with working capability that can satisfy business corporations. Therefore, educational institutions provide training for technical teachers to be able to develop themselves and their knowledge competencies. For this reason, levels of the knowledge competency of technical teachers shall be key performance indicators, measuring the success of the educational management of education institutions and their affiliates. The research results are consistent with the study conducted by Noreerat (2002) about the competency of teachers of science at the junior high school level of schools located in Yasothon province. The research results indicated that, overall, these teachers showed no difference in competency of all aspects.

8. Implications

The study results on the knowledge of technical teachers in Thailand affiliated with the Office of the Vocational Education Commission show that technical teachers in civil construction subject departments have knowledge outcomes in psychology for teachers at the lowest level. Therefore, knowledge development should be implemented accordingly.

9. Further Studies

There should be development of the key performance indicators measuring skills and qualifications of technical teachers and training curricula to strengthen the competency of technical teachers in all aspects.

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