AN ANALYTICAL STUDY OF PRINCIPALS' KNOWLEDGE MANAGEMENT PRACTICES FOR REENGINEERING PRIMARY TEACHERS' TEACHING PERFORMANCES*

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Abstract

The objectives of this research are to analyze the principals' knowledge levels and practice levels on knowledge management (KM), to examine the variations of principals' KM practices due to their knowledge levels, personal factors (academic qualification, professional qualification, attended workshop, teaching service, gender), and school related factors (type of school and school location), to analyze primary teachers' levels of teaching performances, to examine the relationship between principals' KM practices and primary teachers' teaching performances, to identify the predictors of principals' KM practices on primary teachers' teaching performances and the predictors of principals' personal factors on their KM practices. Quantitative and qualitative methods were employed in this study. A total of ninety principals and four-hundred and eighty teachers from Yangon City Development Area were selected as subjects, using the equal stratified random sampling. The required data for quantitative study were collected by using three sets of questionnaire (one for principals and two for teachers). Interview, documentation, and observation checklists were used for qualitative study. Descriptive statistics, independent sample *t* Test, one-way ANOVA, Item Percent Correct (IPC), Pearson product moment correlation, and multiple regression analysis were used to analyze the data in the study. The level of principals' overall KM practices was moderately high. There were significant differences in principals' KM practices grouped by their knowledge levels, school location, and gender, types of school, academic qualification, professional training, and attended workshops. There was an association between principals' KM practices and teachers' teaching performances. The multiple regression results showed that among the predictors of principals' KM practices on primary teachers' teaching performances, process management was appeared as the most influential predictor and among the principals' personal factors, attended workshop was appeared as the most influential predictor for principals' KM practices.

Keywords: Knowledge Management, Reengineering

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Introduction

The role of today schools as major disseminators of knowledge cannot be denied for educational reform of a nation. Leung (2010) posits that principals need to understand how they can facilitate teachers to work intelligently and effectively. Fullan (2002) suggests that the principals' practices of KM can be thought as the most effective and appropriate approach to secure durable exceptional performance of teachers. Strong leadership of principals is importantly needed to provide guidance and orientation for enhancing teachers' teaching performances. KM is important for teachers at all levels in the education sector. Out of these levels, the role of primary school teachers is vital because they are prime and essential resources for education reforms, and primary education has the need to be exceptionally established as it lays the foundation for children in their future year after year. Equally, the primary school principals are crucial resources to build a very basic foundation for the development of every nation's education. To equip teachers with knowledge and skills for improving their teaching learning performances can be undoubtedly attained by principals' strong leadership of implementing KM. Therefore, it is necessarily important to examine the principals' KM practices for reengineering primary teachers' teaching performances. Hopefully, the principals' KM practices in this study were not envisioned as provision benefits solely to the researched schools but were intended to provide a reference model for all primary school principals.

Objectives of the Research

The objectives of this study are as follows.

1. To study knowledge levels of principals on knowledge management for reengineering primary teachers' teaching performances
2. To analyze practice levels of principals on knowledge management for reengineering primary teachers' teaching performances perceived by teachers
3. To examine the variations of principals' knowledge management practices in terms of their school related factors, personal factors and knowledge levels
4. To analyze primary teachers' levels of teaching performances

5. To examine the relationship between principals' KM practices and primary teachers' teaching performances
6. To identify the predictors of principals' KM practices on primary teachers' teaching performances
7. To identify the predictors of principals' personal factors on their KM practices

Research Questions

1. What are the levels of principals' knowledge on KM for reengineering primary teachers' teaching performances?
2. What are the levels of principals' KM practices for reengineering primary teachers' teaching performances perceived by teachers?
3. What are the variations of principals' KM practices in terms of their school related factors, personal factors and knowledge levels?
4. What are the levels of primary teachers' teaching performances?
5. Is there any relationship between principals' KM practices and primary teachers' teaching performances?
6. What are the predictors of principals' KM practices on primary teachers' teaching performances?
7. What are the predictors of principals' personal factors on their KM practices?

Theoretical Framework

The framework for this study takes into consideration of people-based management, process-based management and technology-based management for principals' KM practices. Teachers' teaching performances were based on designing the instruction, delivery of the instruction and assessment of the instruction.

People–Based Approach to KM: The main emphasis was placed upon on people, their behavior, their expectations, and their potential to contribute to the success of the KM effort. The characteristics of adult learners can be identified through the careful investigation of adult learning theories and literatures contributed by Knowles' (1980), Grow's (1991), Tough (1971), and Mezirow (2000). Every knowledge manager needs to consider characteristics of individual knowledge workers such as how they best learn, how they prefer to receive information, and how they can be best helped to

put the knowledge to work. The easier it is for a knowledge manager to find, understand, and internalize the characteristics of adult learners, the greater the principals can identify and utilize the learning strengths of individual teachers for instructional improvement efforts.

Process–Based Approach to KM: Dalkir (2005) discussed that the principals' KM activities and knowledge of what needs to be done for teacher growth and school success have a significant impact on the instruction and instructional efforts of the schools. Serving as role models by providing adequate examples of ideal behavior, communicating clearly with all teachers, sharing and using knowledge themselves are better ways to promote KM in the school. This process involves group discussion, interactive instructions, keeping memos, internal meetings, attending seminars and workshops. The principals must focus on four modes of knowledge creation: socialization, externalization, internalization, and combination. As results, these skills can be helpful to discover alternative approaches to doing things, faster way of completing tasks, and easier paths to accomplishing desired results. The principals can also organize a number of formal activities aimed at creating the environment necessary to share and learn. The function of team learning achievements plays a major role in the transfer of individual learning to organizational learning. Another important aspect of KM is a learning organization in which a group of people continually enhancing their capacity to create what they want to create and in which people at all levels, individually and collectively, are continually increasing their capacity to produce results they really care about.

Technology–Based Approach to KM: The principal has to plan what type of technology is necessary for successful implementation of the KM effort. Principals need to possess right knowledge and skills of giving guidelines to teachers to use ICT tools in their teaching learning effectively. According to Egan (2003), the principals should choose the medium of the knowledge sharing system with care. The principals should ensure that the school has an easily understandable structure and categories so that users can have a better knowledge sharing and find what they are looking for easily. Presentations, publications, and libraries are the most obvious forms of dissemination of

knowledge. All KM systems in schools require a certain level technology and infrastructure support to be effective.

The study of teachers' teaching performances has advanced in a holistic approach to teaching practices and takes into consideration of dimensions as follows.

Designing the Instruction: It requires planning a logically organized course that aligns objective/ outcomes, learning experiences (content and delivery), and assessments based on sound principles from the learning subjects (NRC, 1999). The teacher plans using the school's curriculum, effective strategies, resources, and data to meet the needs of all students.

Delivery of the Instruction: The teacher effectively i) engages and maintains students in active learning; ii) builds upon students' existing knowledge and skills; iii) differentiates instruction to meet students' needs; iv) reinforces learning goals consistently throughout the lesson; v) uses a variety of effective instructional strategies and resources; vi) uses instructional technology to enhance student learning; vii) communicates clearly and checks for understanding; viii) arranges the classroom to maximize learning while providing a safe environment; ix) establishes clear expectations, with student input, for classroom rules and procedures early in the school year; and x) enforces them consistently, fairly; xi) maximizes instructional time and minimizes disruptions; xii) establishes a climate of trust and teamwork by being fair, caring, respectful, and enthusiastic; and xiii) respects students' diversity and special needs.

Assessment of the Instruction: It requires that the teacher designs and uses valid, reliable methods of (i) measuring student learning of the established objectives and (ii) providing meaningful feedback to students (James, 2010). The teacher systematically gathers, analyzes, and uses data to measure student progress, guide instruction, and provide timely feedback. A teacher uses pre-assessment data to develop expectations for students and to document learning, creates or selects valid and appropriate assessments, aligns student assessment with established curriculum standards and benchmarks, uses a variety of formal and informal assessment strategies to guide instruction, uses assessment tools for both formative and summative purposes and gives constructive and frequent feedback to students on their learning.

Definition of Key Terms

Knowledge Management: KM is defined as 'the systematic process of acquiring, organizing, and communicating the knowledge of organizational members so that others can make use of it to be more efficient and productive (Alavi & Leidner, 2001).

Reengineering: Reengineering an organization is simply the process of reviewing all the different levels of an organization's way of doing work and considering how to improve things (Liberman and Pointer Mace, 2008).

Operational Definition

Knowledge Management is the formulation of the processes so as to establish an environment to foster teachers to create, share, learn and use knowledge together for the organizational advantages.

Research Method

Both quantitative and qualitative research methods were employed.

(i) Sample: For quantitative study, the sample comprised 90 schools in total including 67 Basic Education Primary Schools and 23 Basic Education Post-Primary Schools from downtown, inner suburban and outer suburban in Yangon City Development Area (YCDA). As using the equal stratified random sampling method, 30% of principals and 160 teachers (33.33%) from each of the location- 90 principals and 480 teachers in total were selected as subjects. Purposive sampling method is used to choose the participant principals and teachers for qualitative study. Among the selected schools, 4 schools from (Group I), the group with the highest mean scores, and 4 schools from (Group II), the group with the lowest mean. Therefore, 8 principals, and 2 teachers from each school, sixteen teachers in total were interviewed to know and observe the actual situations of those principals' KM practices.

(ii) Instrument: Questionnaire for "principals' knowledge on KM" was based on people management (item 1-23), process management (item 24-41), and technology (item 42-48, measured by two types, true-false item and multiple-choice item scoring 1-mark for one true item and 0-mark for one false item on

48-item-questionnaire. The Questionnaire for Principals' KM Practices was operationally defined to observe a principal in action judging the extent of their practices in KM on a four-point Likert scale ranging from 1 to 4 (1=never, 2=sometimes, 3=often and 4=always). In every case, the four points on the scale are defined in the same way. There were 36 items focused on three components - items of 1-12 were for the area of "people management", items of 13-28 were for the area of "process management", and items of 29-36 were for the area of "technology". The internal consistency (α) of the whole scale of the questionnaire for the principals' knowledge of KM was 0.92, and for the principals' KM practices was 0.85. Interview and documentation were used in qualitative study. Questionnaire for Teachers' Teaching Performances might be operationally defined by observing a teacher in action judging the extent of their performances in teaching based on a four-point Likert scale ranging from 1 to 4 (1=never, 2=sometimes, 3=often and 4=always). In every case, the four points on the scale are defined in the same way. There were 31 items focused on three components such as "designing the instruction, delivery of the instruction and assessment of the instruction" with specific indicators to analyze the extent of primary teachers' teaching performances. Among them, items of 1-8 were related to the area of "designing the instruction", items of 9-26 were related to the area of "delivery of the instruction", and items of 27-31 were related to the area of "assessment of the instruction". The internal consistency (α) of the whole scale of the questionnaire for the teachers' teaching performances was 0.93.

(iii) Procedure: The researcher thoroughly reviewed related literature and received some pieces of advice and guidance for the questionnaires from the panel of experienced teachers. The use of words and content of items were modified. Discussion the modified ones with those experts was also conducted. With the permission from the Deputy Director General (Education) of Yangon Region, the questionnaires were delivered to the respondents between 11th July 2017 and 30th July 2017. All questionnaires were collected after two weeks and were completely answered. Interviews were conducted with selected principals and teachers to obtain much accurate information of principals' KM practices from November, 2017 to January, 2018.

(iv) Data Analysis: Descriptive, Item Percent Correct (IPC), Pearson Correlation, Independent Sample *t* Test, One way ANOVA followed by Tuskey post hoc analyses, and Multiple regression were used for quantitative data analysis. To analyze the qualitative data, the cyclical process was used.

Findings

Table 1: Number and Percentages of Participant Principals Showing the Levels of Knowledge on People Management (N=90)

Variable	No. of Principals (%)	Remark
People Management	6 (6.7%)	Above Satisfactory level-Group A
	70 (77.8%)	Satisfactory level-Group B
	14 (15.5%)	Below Satisfactory level- Group C

Scoring range: > (*M*+1SD) = above satisfactory level, (*M*-1SD)-(*M*+1SD) = satisfactory level, < (*M*-1SD) =below satisfactory level

Table 2: Number and Percentages of Participant Principals Showing the Levels of Knowledge on Process Management (N=90)

Variable	No. of Principals (%)	Remark
Process Management	8 (8.9%)	Above Satisfactory level
	77 (85.5%)	Satisfactory level
	5 (5.6%)	Below Satisfactory level

Scoring range: > (*M*+1SD) = above satisfactory level, (*M*-1SD)-(*M*+1SD) = satisfactory level, < (*M*-1SD) =below satisfactory level

Table 3: Number and Percentages of Participant Principals Showing the Levels of Knowledge on Technology (N=90)

Variable	No. of Principals (%)	Remark
Technology	14 (15.6%)	Above Satisfactory level
	66 (73.3%)	Satisfactory level
	10 (11.1%)	Below Satisfactory level

Scoring range: > (*M*+1SD) = above satisfactory level, (*M*-1SD)-(*M*+1SD) = satisfactory level, < (*M*-1SD) =below satisfactory level

Table 4: Number and Percentages of Participant Principals Showing Levels of Knowledge on Overall Knowledge Management (N=90)

Variable	No. of Principals (%)	Remark
Overall Knowledge Management	8 (9%)	Above Satisfactory level
	68 (75.5%)	Satisfactory level
	14 (15.5%)	Below Satisfactory level

Scoring range: $>$(*M*+1SD) = above satisfactory level, (*M*-1SD)-(*M*+1SD) = satisfactory level, $<$ (*M*-1SD) =below satisfactory level

Table 5: Mean Values and Standard Deviations of Principals' KM Practices Perceived by Teachers (N=480)

Variables	Mean	SD	Remark
People Management	2.81	0.81	Moderately high
Process Management	2.75	0.77	Moderately high
Technology	2.41	0.69	Satisfactory
Overall KM Practices	2.70	0.73	Moderately high

Scoring range: 1.00-1.75= Low, 1.76-2.50=Satisfactory, 2.51-3.25= Moderately high 3.26-4.00= High

Table 6: ANOVA Results of Principals' KM Practices Perceived by Teachers

Variables	Group	Mean	SD	*F*	*P*
Knowledge Levels	Group A	3.09	0.72	25.223	.000***
	Group B	2.69	0.73		
	Group C	2.31	0.52		
School Location	Outer Suburban	2.46	0.73	14.401	.000***
	Inner Suburban	2.78	0.73		
	Downtown	2.86	0.68		
Teaching Service	less than 3 years	2.27	0.51	26.125	.000***
	4 - 6 years	2.62	0.58		
	7 - 18 years	2.99	0.77		
	19 – 30 years	2.46	0.59		
	31 years and above	2.18	0.48		

Variables	Group	Mean	SD	*F*	*P*
Professional Training	BEd	3.87	.18	93.130	.000***
	JTTC	2.54	.62		
	PTTC	2.34	.61		
	DTEC/ PPTT	2.58	.08		
Refresher Courses/ Attended Workshops	None	1.99	.283	116.591	.000***
	CCA	1.86	.101		
	KG	3.13	.504		
	Grade 1	2.78	.189		
	Any Two	3.09	.628		
	All	3.55	.354		

*p<.05, **p<.01,*** p <.001

According to Table 6, it was found that there was significant difference in overall knowledge management practices depending on their knowledge levels, school location, teaching service, professional training, and refresher courses/attended workshops. In Table 6, Group A is above satisfactory level of knowledge, Group B is satisfactory level of knowledge, and Group C is below satisfactory level of knowledge.

Table 7: Results of Independent Samples *t* Test for Principals' KM Practices Perceived by Teachers

Dependent Variable- Overall Knowledge Management Practices

Independent Variables	Group	Mean	SD	*t*	*df*	*P*
Qualification	BA /BSc	2.52	.62	-16.413	478	.000***
	BEd	3.78	.32			
Type of School	Post-primary school	3.53	0.62	13.669	478	.000***
	Primary school	2.52	0.62			

*p<.05, **p<.01,*** p <.001

In Table 7, there was significant difference in overall KM practices depending on their qualification and type of School.

Table 8: Means and Standard Deviations, and Levels of Primary Teachers' Teaching Performances (N=480)

Variables	Mean	SD	Level
Designing the instruction	2.57	.80	Moderately high
Delivery of the instruction	2.56	.70	Moderately high
Assessment of the instruction	2.57	.82	Moderately high
Overall Teaching Performances	2.57	.72	Moderately high

Scoring range: 1.00-1.75=low, 1.76-2.50=satisfactory, 2.51-3.25=moderately high,3.26-4.00= high

Table 9: Correlation between Principals' KM Practices and Primary Teachers' Teaching Performances

Two Groups	KM Practices	Teaching Performances
KM Practices	1	.918**
Teaching Performances	.918**	1

**. Correlation is significant at the 0.01 level (2 tailed)

According to Table 9, there is an association between principals' KM practices and primary teachers' teaching performances ($r = .918$, $p < .01$).

Potential Factors of KM Practices Affecting Teachers' Teaching Performances

To investigate predictors of KM practices for reengineering primary teachers' teaching performances, simultaneous multiple regressions was conducted through predictors: people management; process management and technology. When the combination of variables to predict primary teachers' teaching performances included people management; process management and technology, (F (3, 476) = 850.56, $p < .001$).

Table 10: (a) Means, Standard Deviations, and Inter-correlations of Primary Teachers' Teaching Performances and Predictors Variables

Variables	Mean	SD	People	Process	Technology
Teaching Performances	2.57	.71			
Predictor Variables					
People Management	2.81	.81	.895**		
Process Management	2.75	.77	.904**	.945**	
Technology	2.41	.70	.779**	.760**	.784**
***p<.001 **p<.01 *p<.05					

**. Correlation is significant at the 0.01 level (2 tailed)

Again, in Table 10 (b), People management, process management and technology significantly predict primary teachers' teaching performances when all three variables are included. The adjusted R squared value was .84. This indicates 84% of the variance in primary teachers' teaching performances was explained.

Table 10: (b) Simultaneous Multiple Regression Analysis for KM Factors Predicting Primary Teachers' Teaching Performances

Variables	B	Std. Error	Beta
People Management	.312	.050	.353***
Process Management	.412	.055	.441***
Technology	.169	.030	.165***
(Constant)	.148	.050	
R^2= .84; F (3, 476) = 850.56	***p<.001	**p<.01	*p<.05

According to the beta weight, out of three variables, 'Process management' appears to be most striking.

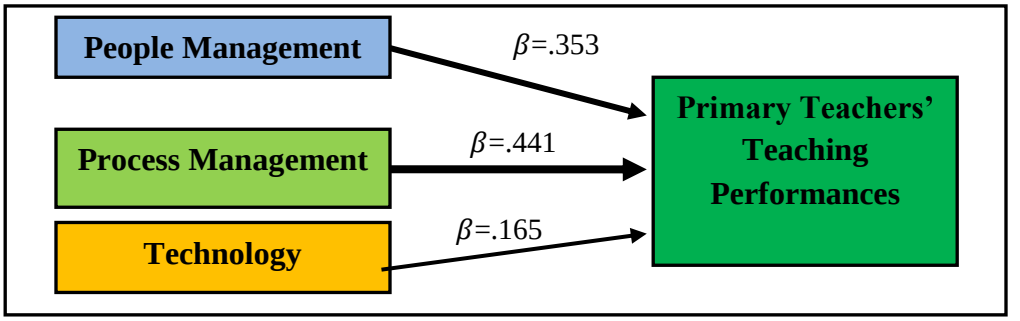

Figure 1: Potential KM Factors Affecting Primary Teachers' Teaching Performances

→ Predicting on Primary Teachers' Teaching Performances (Statistically significant)

Four variables were identified as predictors of demographic data for principals' KM practices as academic qualification (Q), professional Training (T), refresher courses or workshop (W), and teaching service (TS). The mean values, standard deviations, and inter correlations were described in Table 11 (a).

Table 11: (a) Means, Standard Deviations, and Inter-correlations of Principals' KM Practices and Predictors Variables

Variables	Mean	SD	Q	T	W	TS
KMP	2.70	.73	.458***	.431***	.529***	.092*
Qualification	2.31	.68		.557***	.301***	.181***
Training	1.94	.45			.259***	.191***
Workshop	2.20	1.82				.158
Teaching Service	11.19	5.89				

***p<.001 **p<.01 *p<.05

When the combination of variables to predict primary teachers' teaching performances included academic qualification (Q), professional Training (T), refresher courses or workshop (W), and teaching service (TS), (F (6, 473) = 106.53, p <.001). They significantly predict principals' KM practices when all four variables are included. The adjusted R squared value was .57. This indicates that 57% of the variance in principals' KM practices was explained.

Table 11: (b) Simultaneous Multiple Regression Analysis for Principals' Demographic Data Predicting Principals' KM Practices

Variables	B	Std. Error	Beta
Qualification	.221	.042	.227***
Training	.303	.063	.207***
Workshop	.151	.014	.416***
Teaching Service	.006	.004	.054*
R^2= .57; F (6, 473) = 106.5 ***p<.001 **p<.01 *p<.05			

According to the beta weight, out of three variables, effects of workshop were most striking. Effects of Teaching Service appeared as less striking for principals' KM practices.

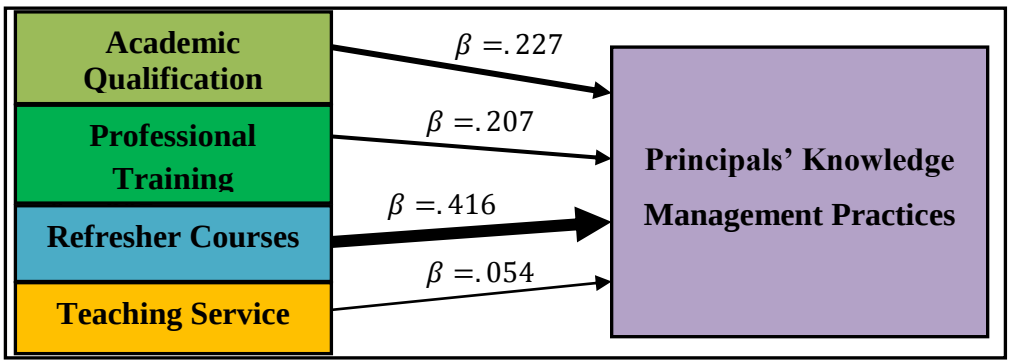

Figure 2: Potential Factors Affecting Principals' Knowledge Management Practices

→ Predicting on Principals' Knowledge Management Practices (Statistically significant)

Based on the KM practices in their schools for reengineering primary teachers' teaching performances, principals gave the following responses.

- Although they want to implement KM activities for teachers on the school schedule and maintain it to its completion, because of too much workload, they do not have much time to focus on it. (n=6, 75%)

- They have financial problems for providing teachers with teaching learning materials such as books and video lessons in order to improve content and pedagogical knowledge of the subject they teach. (n=6, 75%)
- They find it difficult to change teachers' attitude towards appreciating KM activities because teachers still do not know the importance of knowledge sharing activities and have resistance to such activities. (n=5, 62.5%)
- Because of their encouragement, teachers actively join professional development courses or refresher courses related to their teaching subject, however, they do not have enough time to share what they gained from those courses as the explicit forms. (n=2, 25%)
- Since most of the knowledge development programs were conducted at township level, the distance to travel was a problem for teachers to participate in these programs. (n=2, 25%)
- They also find it difficult to save time to carry out KM activities because they were sometimes very busy with other school related affairs (attending a whole day meetings). (n=4, 50%)
- Principals think it is better for them if school-based knowledge sharing trainings are arranged in their locals so that all teachers and principals from nearby schools can join without giving much time. (n=6, 75%)
- Principals also think it is better for them if schools are provided with a separate fund for supporting teachers with books and teaching - learning materials. On the other hand, principals think that they want to request their township education officers to provide them with books and materials necessary for teachers' teaching and learning. (n=6, 75%)
- Principals want their schools to be provided with a good library for teachers and students. For improving their teaching and learning, principals believed that having a reliable school library is importantly needed. (n=4, 50%)
- Principals want their schools to have a room facilitated with what it needs for teachers to conduct knowledge sharing. (n=6, 75%)

- Principals responded that they themselves still need to possess the ability to run knowledge sharing activities in their schools, therefore they want to experience with many opportunities as attending trainings of knowledge sharing activities. (n=6, 75%)

According to the qualitative findings, Group I principals encouraged their teachers to share what they had learned with their colleagues individually and in groups. They assigned teachers to lead their learning teams in turn and involved as a member in their discussions. They wanted teachers to see them as their colleagues or as a knowledge leader and sometimes as a knowledge provider who can share knowledge and skills with them. However, Group II principals could not focus the activities of knowledge sharing. They could not assign their teachers to participate in learning teams and could not lead the role of a knowledge leader and sometimes as a knowledge provider. Teachers from Group I principals really satisfied their principals' KM practices while those from Group II were not satisfied with their principals' management practices for improving their teaching and learning. Principals and teachers in primary schools frequently revealed that they did not have enough number of teachers and faced with burdens of teaching many subjects; they seem to ignore most KM activities in their school although KM needs to be importantly focused.

Conclusion

Conclusion and Discussion

As regards knowledge levels of overall KM practices for reengineering primary teachers' teaching performances, the principals were found to be with different knowledge levels; eight principals were at above satisfactory level, sixty-eight principals were at satisfactory level and fourteen principals were at below satisfactory level.

According to the responses of teachers, the level of principals' KM practices was found to be as moderately high in the first two categories, people management and process management, and satisfactory in the category of technology. Ranking from people management to technology, principals' practices over people management has been higher points amongst all three categories of KM.

From the investigation into the principals' KM practices grouped by their knowledge level, KM practices of Group A principals at above satisfactory level of knowledge and that of Group B principals at satisfactory level of knowledge were found to be often practiced, and that of Group C principals at the below satisfactory level of knowledge were found to be sometimes practiced respectively. Principals with high knowledge level were found to be more performable than those with low knowledge level. Interview results also gave Group A principals could highly focus on KM practices.

As the results from the investigation into the principals' KM practices grouped by their school location, KM practices of principals from downtown and inner suburban schools were found as often practiced and that of principals from outer suburban schools were found as sometimes practiced in the overall KM practices. For each dimension, practices of downtown and inner suburban schools principals were better than that of outer suburban school principals. As the results of their type of school, post-primary school principals' KM practices were perceived as always practiced and that of primary school principals was perceived as often practiced not only in the overall KM practices but also in each of three dimensions.

As the results from the investigation into the principals' KM practices grouped by their teaching service, KM practices of two groups of principals with teaching service of four to six years and seven to eighteen years were perceived as often practiced, and that of the other three groups with teaching service of less than three years, nineteen to thirty years and thirty one years and above were perceived as sometimes practiced in the overall KM practices. For each dimension of KM, the groups with teaching service of seven to eighteen years and four to six years could perform most, the groups with teaching service of nineteen to thirty years, less than three years or thirty-one years and above could perform low in people management. The results in process management and technology was found as the same as that of people management.

As the results of examining principals' KM practices grouped by the academic qualification showed that KM practices of principals who hold BEd were perceived as always practiced and that of principals who hold bachelor degree of Arts or Science were perceived as often practiced in the overall KM practices. There were significant differences in these two groups with

different academic qualification. Principals who hold BEd were seen more performable than principals who hold bachelor degree of Arts or Science in overall practices of KM.

As the results of the principals' KM practices grouped by their professional training, for the overall KM practices, that of principals completed BEd were perceived as always practiced, that of principals completed JTTC or DTEC/PPTT were perceived as often practiced respectively. However, that of principals completed PTTC was perceived as sometimes practiced. Practices of each group in the overall KM practices came to the conclusion that the group with a professional training, BEd, was the most performable among the groups.

As the results of the principals' KM practices grouped by their attended the refresher courses, the practices of principals attended all refresher courses for primary schools were perceived as always practiced, that of principals attended any two of refresher courses or KG or Grade 1 were perceived as often practiced, and that of principals completed CCA or no refresher courses were perceived as sometimes practiced respectively. The outcomes of KM practices of principals of these groups in the overall KM practices came to the conclusion that the group with all refresher courses was the most performable than the other groups.

As the results of analyzing the extent of the sampled teachers' teaching performances based on their responses, the level of teachers' teaching performances was found to be moderately high in each of three categories of teaching performances such as lesson preparation, lesson implementation and lesson evaluation respectively. Accordingly, the level of teachers in the overall teaching performances was found to be moderately high.

As the result of finding the relationship between principals' KM practices for reengineering primary teachers' teaching performances and primary teachers' teaching performances, it was found that there was a relationship between these two variables at ($r = .918$, $p < .01$).

The results of finding the potential factors of principals' KM practices affecting teachers' teaching performances appeared that principals' KM practices were significantly predicted by people management, process management, and technology when all three variables were included. Among

these variables, the study found that process management was the most striking or potential factor.

The results of finding the potential factors of principals' personal factors affecting principals' KM practices appeared that principals' KM practices were significantly predicted by academic qualification, professional training, Teaching service, and refresher courses when all four variables were included. Among these variables, the study found that refresher courses or attended workshop was the most striking or potential factor.

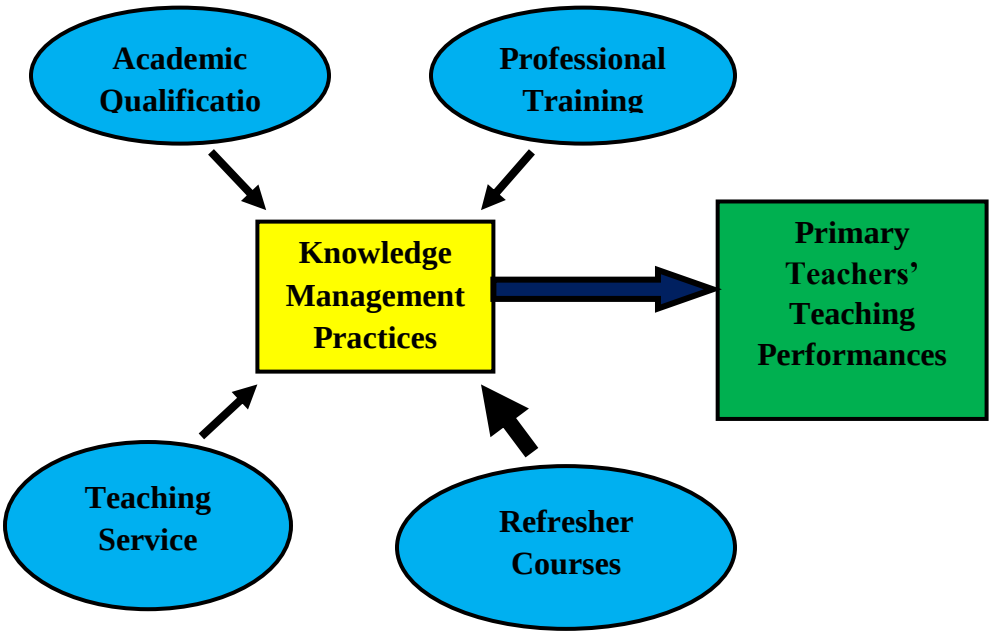

Figure 3: Proposed Knowledge Management Model for Reengineering Primary Teachers' Teaching Performances

→ Predicting on Principals' Knowledge Management Practices (Statistically significant)

⇒ Predicting on Primary Teachers' Teaching Performances (Statistically significant)

Suggestions

The pace of change is escalating in our society due to the explosion of knowledge. Schooling for today society does require restructuring and re-culturing of all schools especially primary schools. For primary school principals to be able to act as knowledge managers, the Ministry of Education necessarily leads to the following ways.

- Needs assessment is necessarily to be done for all primary schools to determine whether they have right teacher resources or not, to run all school activities including teachers' knowledge sharing.
- Every primary school is importantly to have the supporting places where principals and teachers can collaboratively learn and work together for the school goal, try new things of teaching-learning, work in groups, and discuss methods of teaching, and reflect their teaching lessons.
- Provision of equal school facilities to every primary school is necessarily to be emphasized. Regardless of school location, having enough and equal facilities can motivate principals and teachers to try for better teaching and learning.
- Principals need to be financially supported to set up a library with a separate room since a school library is importantly necessary for building habits of reading that is crucial to make our nation be a human resource country.
- Funds for every primary school are necessary to be raised to spend on introduction of knowledge sharing activities in schools and carrying them out well.
- Primary school principals are necessarily to be provided with the opportunities of learning knowledge and skills from education experts for dealing with managing knowledge of teachers so that they find it easy to build a school environment where teachers have trust, ethical behavior, mutual respect, support, and open communication about individual teachers' teaching roles, and contribution as professional members to the society.

- It is also certainly important for the school principals to conceptualize how to create a learning culture for their teachers to have a deep understanding on KM and complete involvement in it.
- It is necessarily important for the school principals to possess the power of role models as teachers will find them as resource person in receiving knowledge and appreciate their principal's enthusiasm in kicking off KM initiatives.
- Focusing on keeping records or documents of teachers' knowledge sharing is necessarily considered for the school so that teachers can easily access the data or information.
- Schools are necessarily to have satisfaction with IT support for KM implementation.
- School principals' ability of conducting KM is necessarily to be improved with education and experience significantly associated with conducting KM.
- Creating professional development programs are helpful for principals to encourage their teachers to participate in a culture of collaboration.
- It is necessarily important for the school principals to be provided with the opportunities of attending workshops that can enhance their knowledge and skills to put more emphasis on conducting activities of knowledge creation and knowledge sharing.

Need for Further Research

Investigation into skills and competencies of principals to be able to implement KM in their schools will need to be conducted as a further research. Additionally, examining of KM practices of middle and high school principals and the barriers of the principals to launch KM in their schools will need to be for the further research. The study analyzed primary teachers' teaching performances based on the overall subjects, not on a specific subject matter, thus the further investigations should be led to teachers' teaching performances in different teaching areas. Another important topic for further research that every school has to work with is the change in the behavior of teachers. Managing teachers to happen in the behavior towards knowledge

gaining and sharing is quite important. It is necessarily recommended to reveal the barriers for principals to launch KM practices for reengineering teachers' teaching performances.

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