

## Creating Knowledge Practices in School: Exploring Teachers Knowledge Creation

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### Abstract

*The aim of this research is to explore the practice of creating knowledge in Malaysian normal stream school. This study employed Hargreaves (1999) model of creating knowledge in school as the main framework. The processes of creating knowledge involve four main practices; auditing the professional knowledge; managing the process of creating new knowledge; validating the professional knowledge that being created and dissemination of professional knowledge. The main objective of this research is the exploration on how the four elements suggested by Hargreaves (1999) were implemented in school. A total of a hundred questionnaires were distributed and were analyzed and ten in-service teachers were also interviewed.*

**Key Words:** Knowledge management, knowledge sharing and creating knowledge.

### Introduction

The role of schools as disseminator of knowledge cannot be denied, and this is proven by the policies introduced by the governments such as, from the Razak Report 1956 to the National Key Results Areas (NKRA) in 2009 to strengthen the country's education system. Although a variety of new policies is introduced, the government's policies are consistent to the National Education Philosophy which aims to produce workers who are knowledgeable, honourable, responsible and capable of achieving high level of personal well-being as well as able to contribute to the harmony and prosperity of the society and the country (Kachar, 1989). To face the challenges in education, each school is now deposited with vision and mission that will be the future objective of the educational institution. Relying on the school vision, school leaders always try to create and think of the best alternative and strategies to improve teachers and students' performance. In discussing strategies to improve schools' academic capacities, and knowledge management is now intensively applied to the educational setting. Extensive research on knowledge management in journals, seminar papers, books and research papers proved that knowledge management is a vital consideration in maintaining the organizational capabilities and capacities (DiBella&Goiuld 1996). Hence, school leaders need to plan an effective educational system in upgrading the school to be the main source of producing quality graduates who later serves as the nation's workforce.

Knowledge management is defined as an important approach that endorses the concept of learning organization (Wong, 2008; DiBella&Goiuld 1996) or memory organization (Weick, 1979). As a disseminator of knowledge, every school needs to practise knowledge management in order to redesign and updated schools' knowledge practises as part of their professional development process and internal training in enhancing teachers' performances. Hargreaves argues that the pattern of the present education is burdensome (Hargreaves, 1999). Therefore, schools also need to construct knowledge as a main asset to produce an effective and efficient school management. This new alternative in education management is considered as a success when information technology can be effectively managed.

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In reality, knowledge management highlights new knowledge generated by the substitution from implicit knowledge to the explicit knowledge (Nonaka&Takeuchi, 1995). The original element in Nonaka and Takeuchi's model refers to implicit and explicit knowledge as well as the formation of knowledge when implicit and explicit knowledge interrelated with each other (Hargreaves 1999; Nonaka&Takeuchi, 1995). Consequently, knowledge management in schools has a responsibility to ensure that the process of teaching and learning as well as research activities, curricular and extra-curricular and students would be at the high quality (Azlinda, 2010).

**Background of the problem:** Knowledge is the most important asset for any organization. By acquiring knowledge, an entity or institution can accomplish the vision and goal in leading to be a successful organization (McDermott&O'Dell, 2011). Knowledge that is not shared with members or the organization is considered as worthless (Chandran&Raman, 2009). Knowledge management implemented by an organization can be applied in school administration will enhance teaching and learning in schools (Petrides&Guiney, 2002). The issue here is that not every school strives to be the best to bring service to the community. Chen (Chen, 2002) states that the school system is very similar to system found in the public sector when requests strategy in managing their valuable knowledge and knowledge sharing is the alternative to solve on how to store knowledge by using knowledge repository. The rapid development of information and communication technology (ICT) such as websites, students and teachers' examination information systems (EMIS) and the ICT based teaching and learning approaches (Azlinda, 2010) were the other positive strategies that sparked the knowledge sharing culture in school. This emphasis is proven by the Malaysian education development planning that strengthens the new economic model based on innovation, creativity and high moral values in education institutions. However, the government's determination to develop ICT-based schools as a field to build high-valued skills hasn't being emphasised by school administrators as well as teachers (Sharifah&Jamilah, 2010). Consequently, they still do not have effective strategies in accessing information in line with today's modern management that creates various databases that can easily access to the internal and external data related to the operations of organizations such as student records, websites, libraries and financial networks.

Another problem in terms of the implementation of knowledge management according to Dixon (2000) is related to teachers' unwillingness to share their tacit knowledge. He also explains that most teachers do not know how to manage their knowledge with other teachers and never plan to improve their knowledge due to excessive workload. On the other hand, the readiness of teachers to gain new knowledge is very low due to the lack of support and encouragement from certain parties (Azman, 2003). Zurina (2010) suggests that the main ideas of knowledge management were the application of what we have learned, the knowledge of the professional network as well as the role of community in practicing the existing knowledge. Zurina (2010) study proves that science teachers in primary schools do not use wisely the scientific software provided by the Ministry of Malaysia Education (MOE). In another study, Jingyuan (2010) also found that teachers are having problems in managing their knowledge because of limited resources to gain knowledge and there is a lesser amount of campaign conducted by the school for the teachers to enhance their professionalism. Teachers also focus too much on the training techniques in teaching, and ignore the importance of activities in improving their knowledge in teaching. This will restrict them from expanding their already existed knowledge. What is happening in Malaysia is that less competent teachers receive less attention from the management board (Amin, 2005). These teachers need to attend courses, supervision, guidance and instruction (Sharifah, 2010). Consequently, these teachers cannot improve themselves and are unable to receive new knowledge in line with current issues.

On the other study conducted by Azizi *et al.* (2003) shows that school principals focus too much on goal setting that involves matters related to academic achievement and less focus are given in achieving the goals of the organization (school) as a whole. Whilst an organization focuses on learning, more concentration should be given to the school development processes that include teachers' motivation and personal development especially related to managing teachers' knowledge. As school administrator, the essential strategies should not only focus on how to achieve the schools' vision, but also to think of creating effective strategies that benefited the teachers, students and the school as a whole as an effective school. Azizi *et al* also points that school leaders should eliminate the weaknesses of their teachers and endeavour to create an effective knowledge network for an innovative school organisation (Hargreaves, 1999). Therefore, for the betterment of education institution, every school needs to manage the existing knowledge and expertise efficiently and effectively. This is in line with the government's policy to create more high-performing schools stated in the National Key Result Areas (NKRA).

**Theoretical framework:** The idea of creating professional knowledge was first introduced in the book *The Knowledge Creating Company* written by two Japanese management scholars named Nonaka and Takeuchi. Nonaka and Takeuchi explore novelty ideas on how companies create their valuable knowledge and later enhance creativity, innovation and learning within the organization. The theory of organizational knowledge creation depicts the framework on how organizational leaders amplify the professional knowledge created by individuals and later knowledge becomes crystallized as part of knowledge network internally and externally (Hargreaves, 1999).

Later, Hargreaves (1999) introduced the concept of knowledge creation to the educational setting specifically schools as learning organization as part of initial training process (Nonaka&Takeuchi, 1995). Hargreaves concentration was related on strategies that fabricates the culture of knowledge creation in school, suggests four main processes that later supposed to improve teachers' tacit and implicit knowledge. Theoretically, Hargreaves ideas were regarded as initiatives to improve teachers' knowledge, skills and expertise that soon will contribute schools' academic performance. The four core practises of knowledge creation in school are auditing the professional knowledge acquired by teachers. In this practise, teachers' tacit and explicit intellectual capital was assessed in determining teachers' academic proficiencies. Secondly, the practise of advocating the process of creating new knowledge, the process deals with school leaders creating opportunities of managing knowledge comprehensively internally such as creating awareness for continual improvement, recognition for teachers expertise, creating partnership and eliminates blaming culture in school (Hargreaves, (2003).

Validating the knowledge is the practises on how school leaders judged and assessed based on internal judgement especially from professional bodies, other related practitioner or school's stakeholders. Finally, the dissemination of the professional knowledge that created in schools where knowledge was transferred internally and transposed externally with other related parties (Nonaka&Takeuchi, 1995; Hargreaves, 2003). In auditing knowledge practices, two forms of knowledge, implicit and explicit knowledge were audited by teachers. While in the process of managing the knowledge practices, two constructs -features and process- are involved while validating practices of knowledge includes five major practises which consists of self-validation, scientific, Social, Judiciary and Liberal practices. Last construct that supports the knowledge creation process in school suggested by Hargreaves is dissemination of knowledge which is shared internally and externally between teachers and education institutions.

### **Research Questions**

Research questions are determined as below:

- i. What kind of knowledge is frequently practiced in schools?
- ii. What are the main management practices in the process of creating new knowledge in schools?
- iii. What is the main evaluation in the practices of validity in schools?
- iv. What is the medium used for dissemination that are often used in schools?

### **Methodology**

The design of this study is mixed method design consisting of questionnaire administration and interviews. The participants of this study were school teachers that enrolled their postgraduate study at the Faculty of Education, Universiti Teknologi Malaysia and were selected randomly. Among the 120 teachers, only 100 set of questionnaire that were returned and analysed by the researcher. Fifty of the teachers were from primary school and another fifty teachers were from secondary schools. In addition, ten teachers were also being interviewed by the researcher to explore the in-depth information related to the implementation of knowledge sharing in school. This research was based on the Hargreaves' practices on creating knowledge in school. Four main constructs were derived from Nonaka and Takeuchi and later Hargreaves models, assessment of knowledge, managing knowledge, validation of knowledge and dissemination of knowledge were constructed. There are eighty seven items in the instrument that were self-construct by the researcher and six questions for the interview. The reliability of the instrument was measured using Alpha Cronbach to determine the consistency of the item was at 0.93 and considered as high reliability of measurement. Items were based on the Likert's five scales ranging from strongly disagreed noted as (1) and strongly agreed (5) based on level of agreement. To measure the uni-dimensionality of the instrument, Rasch Measurement Model through Winsteps application was used.

Three important measurements were the point measure correlation (PtMea Corr); outfit mean square (MNSQ) and the z-standard for each item. Based on the data, the value for PtMeaCorr ranging between 0.5 to 0.80; the mean square values were between 0.6 to 1.4 value and the z-standard between -1.8 to 1.9 [28]. Multi-collinearity test also measures between  $r = 0.45$  to  $r = 0.75$  which indicates no existence of colinearity in the items signifies the uni-dimensionality concept of the instrument. Based on the measurement, the self-constructed items were considered as consistent and acceptable in implementing survey research.

The second part of this research pertained to the qualitative interviews in order to gain in-depth knowledge in relation to the creation of knowledge in school practises. According to Jacob (1989) by using interview, more in-depth and comprehensive information and reaction in line with people's perceptions can be gathered and extensive understanding about people experience, perception and ideas will be explained. The interview sessions were conducted with 10 in-service teachers. All the conversations were recorded electronically and ethical consideration was also taken to protect the subjects' identities.

## Findings

A total of 100 questionnaires were returned and analysed. In addition, 10 in-service teachers were interviewed. Demographic variables of the in-service teachers were shown in Table 1. This study examined the four practices that signify the process of creating professional knowledge in schools which were auditing, managing, and verifying and dissemination knowledge in local stream schools.

### Auditing Practises of knowledge

In studying the practices of auditing knowledge in school, there are two forms of knowledge, explicit and implicit knowledge. Explicit knowledge related to the information and knowledge was on the basis of the job specification which is called as knowledge being stored and codified through certain types such as, manual and procedural. While implicit knowledge is defined as experiential, intuitive knowledge is considered as tacit knowledge which is commonly known as habits, skills and behaviours (Frappaolo, 2008).

Table 1 shows the mean scores of explicit knowledge are higher than implicit knowledge. It reflects that the assessment/auditing process focuses on more explicit knowledge than implicit knowledge. Explicit knowledge is easier to be identified because it is easy to be coded and shared. In contrast, implicit knowledge is difficult to be understood by others and only known by certain individuals. In addition, researchers also found that teachers were familiar to the concept of monitoring process by their school leaders. The monitoring system helps teachers in identifying the level of knowledge they acquired. The most frequent numbers of monitoring approach basically explains that the school leaders' accountability in relation to acquired knowledge of teaching prepared by the teachers as well as their professional development.

**Table 1: Teachers Demographic Variables**

<b>Variables</b>	<b>Frequencies</b>	<b>Percentage</b>
<i>Types of School</i>		
Secondary	50	50
Primary	50	50
<i>Gender</i>		
Male	32	32
Female	56	56
<i>Studies enrolled</i>		
Masters	82	82
Doctor of Philosophy	18	18

**Table 2: Means and Standard Deviations of Research Questions**

Variables	Mean Scores	Level
Professional Knowledge/Auditing Practices		
Implicit Knowledge	3.90	High
Explicit Knowledge	4.11	High
The Knowledge Management Practices		
Features	3.98	High
Process	4.06	High
The Knowledge Validity Practice		
Self-validation (ipsative)	4.00	High
Scientific	3.86	High
Social	3.93	High
Judiciary	3.65	Moderate
Liberal	3.97	High
Dissemination Process		
Externally	3.87	High
Internally	3.93	High

In describing the auditing process through qualitative interviews, teachers were asked on how they create knowledge practices. One teacher responds and gives her view to the auditing process conducted by school leaders. The practise of auditing process was explained by an in-service female teacher

*“In my schools, the principals always observed our teaching and learning process. Every teacher was assessed and then called for a short discussion. During the session, the principals focused on our strengths and weaknesses in teaching and learning. I think it was important for us to be assessed by school principals. From the auditing process, we realize our real capabilities and reflect them our knowledge during teaching and learning process.”*

In contrast, some teachers give the reflections that even though they obviously are monitored by their principal, the process of auditing cannot be used as a standard benchmarking in accessing their knowledge and skills. During the interviews, in-service teachers stressed that their principal normally focuses on the teaching strategies practised by teachers but ignores teachers’ knowledge and abilities. One teacher added:

*“I have been monitored by the principals but, I do not think they know our abilities and knowledge as they just focus on teaching and learning strategies. Although they can view our teaching and learning process they still do not know our inner strength. Sometimes the principals miss our potential especially in term of giving and applying good ideas to improve schools performance.”*

From the statement above, it can be concluded that monitoring functions well in auditing teacher’s knowledge and skills. It is wisely for school leaders to determine the level of knowledge acquired by teachers as it is important for teachers’ professional development. In addition, monitoring process focusing on teachers’ capabilities help school leaders to manage knowledge more effectively. Teachers would also be able to implement better teaching and learning process in class. Nevertheless, there were few teachers who were unable to perform teaching and learning due to several reasons. This indicates that teachers will not be able to manage their knowledge if their weaknesses are being indicated properly and perfectly. School leaders should address this problem in order to transform school into a good disseminator of knowledge. Good and competent teachers who know the extension of their internal and external knowledge will be able to apply their knowledge effectively.

### **Managing practises of creating new knowledge**

Table 2 above also clarifies the aspect of managing knowledge in the process of creating new knowledge. Managing knowledge through Hargreaves (1999) involves in two main constructs features and process. The mean score for management process construct (4.06) is higher than the management features (3.98). Although both scores have different mean scores, both means were categorizes as high. From the interview, it can be summarized that both formal and informal meetings were the vital medium of communicating and sharing knowledge among in-service teachers. Meetings were organized to give better understanding and to deliver their implicit knowledge to the other in-service teachers while their explicit knowledge expands. One of the teachers interviewed opines the ideas:

*“Normally, the management encourages teachers to involve in any programme that can gain our knowledge for example in-house training. Besides, we also need to attend some courses that are related with our teaching subject. While, during meeting sessions we always share our ideas and opinions how to improve our school’s system and achievement.”*

Therefore, it can be concluded that in management process in creating knowledge in schools, teachers were ready to gain and sharing knowledge among teachers is considered as important method of managing knowledge in schools.

### **Validation Practices of knowledge**

The third research objective focuses on the practice of knowledge validity. Based on the theoretical framework, the evaluation on the practices of validity by in-service teacher mainly used is self-validation or (ipsative) self-comparison approach as their medium. Based on the answers given by in-service teachers, there are several methods exercised to verify their effectiveness on teaching and learning process. Finding reveals that the frequently method used to verify the effectiveness on their teaching compares their teaching process with the more experienced teachers. Other than this, in-service teachers are more interested in listening and received feedback from colleagues and administrators in order to upgrade their skills and knowledge especially related to teaching. By using this comparative approach, in-service teachers able to obtain reflection and feedback and later, thinking about the improvement on their teaching and learning processes. They say that:

*“I like to compare my teaching with other teachers. Normally, I will look other teacher teaching and learning process and compared it with mine. From that, I can realize my weaknesses. But, it is a bit challenging when I need to admit my weakness and mistakes. To do my own comparison and judgement, I need to make sure that I can be honest with myself. There is also certain time, whereby I get a feedback from my seniors. They help me on perceiving my problem better.”*

In addition, some in-service teachers also prefer to establish liberal validity approach which is an attempt based on the achievement of their students. If their students achieve good results, their teaching approach is considered as effective and successful. One teacher replies:

*“When I see my students’ achievement increased, I know that I already have good methods in my teaching. I do not need to depend on others and compared our style of teaching.”*

### **Dissemination practises**

In analysing medium that often being used for dissemination process in school, Table 2 depicts that school management often uses outer exposition to disseminate their own knowledge. This shows that school leaders always try to find an initiative to gain knowledge from external parties and at the same time trying to convey existing knowledge within the school to the external parties. From the interviews, it is concluded that most teachers agree that sharing and transferring of knowledge, either internally or externally, is important to improve knowledge and skills of their teachers. Nevertheless, greater attention should focus on knowledge sharing within the school. Knowledge transfer among teachers will enhance the culture of sharing and creating knowledge. One teacher stated that:

*“It is better if we can share and transfer the knowledge among us in schools. Teaching in the same school will allow us to understand about school’s culture and it is easier to communicate each other. We can improve our schools achievement if we are ready to work together.”*

At the same time, teachers also believed by establishing positive collaboration with other school, managing knowledge will became easier and benefited both schools. For example one teacher mentioned:

*“I have 30 years experience in teaching. I realize that every school has its own management system. Collaboration and sharing knowledge between schools give us some advantages. We can learn how to improve our management for the sake of schools’ achievement.”*

### **Discussion**

The results show that explicit knowledge is often applied by teachers compared to implicit knowledge. Theoretically, explicit knowledge is easier to understand and it is adapted by teacher in their teaching process.

Being able to become an excellent teacher necessitates various forms of knowledge especially explicit knowledge vital process for teachers. Polanyi (1966) states explicit knowledge refers to knowledge which is formal in systematic manner, recorded and easy to understand. In contrast, teachers also face some difficulty in understanding implicit knowledge, which are more institutionalised and difficult to be translated and transfer (Nonaka&Takeuchi, 1995). Secondly, results also shows in-services teachers focus on the process of creating knowledge compared to features of creating knowledge because the latter is much easier to acquire knowledge while at the same time they realize the school's vision. This finding is consistent with the argument of Snyder and Templeton (1997). In order to gain high quality knowledge in achieving the school objective, school leaders should enhance with effective knowledge management process and conducted indirectly (Nazmona, 2002).

In addition, establishing a culture of creating new knowledge related to creativity and innovation derive from collaboration with other teachers and also from students were also important process of knowledge management that should implement by school leaders. On the other hand, it is easier for school leaders in knowledge management process if teachers willing and accepting new knowledge and comments from other parties (Azman, 2003). This study also admits that teachers also aware of creating new knowledge is important as part of positive process of enhancing their new creativity and skills. Acquiring new knowledge is apparently paramount in order to enhance the schools' academic performance. Knowledge also serves as a benchmark to the credibility of schools. Hafizi and Zawiyah (2006) state that knowledge as a salient asset advances the organizational performance improves competitiveness and later used as medium managing conflict in organization.

Finding also reveals that the practice of self-validation is the main evaluation used by in-service teachers in order to improve their teaching skills even though it also can create the imbalances of information. Hargreaves (1999) asserts that the process of self-validation is the most frequent practices implemented and considered as effective method by teachers. In addition, validation process helps in-service teachers to deliver systematic and high quality teaching. Feedback, comments and suggestion received from the school inspectorate are commonly used as assessment and verification process in order to improve in-service teacher's teaching skills. Nor Azlina (2010) points that the process of verification also inspires creativity and motivation in order to improve teachers' teaching performance. In addition, innovation and creativity are important to cultivate knowledge management.

In discussing the process of disseminating knowledge, two forms of disseminating knowledge are internal and external transferring knowledge commonly used in schools. The internal transfer of knowledge is a process of sharing knowledge internally between in-service teachers through seminars, workshop and professional development. O'Dell (1996) explains that sharing knowledge is the most effective tool to educate and improve the skills of teachers especially novice teachers to improve their skills and level of confidence. On the other hand, external transfer of knowledge among schools helps of creating and learned new skills commonly used by other school in order to improve the school system and procedure gain new knowledge especially in improving school performance. Nevertheless, according to Hutchinson and Huberman (1994), knowledge exposition process is quite difficult to be implemented because it involves two parties and needs to possess a positive bilateral collaboration between two schools. Based on findings, it also revealed that teachers agree on sharing and transferring knowledge either externally or internally in order to gather new knowledge. Nevertheless, this transferring process will consider successful approach if teachers prepared to share and use them in their teaching process (Amin, 2005). Each party should work accordingly together so that the understanding of this new knowledge can be realized. The role of school leaders is to motivate and encourage teachers so as to share knowledge whether internally or externally. Incentives given to teachers in order to support the initiatives of creating and sharing knowledge should be used widely to build a culture of knowledge creating in school (Michailova&Nielsen, 2006).

Based on relevant findings, suggestions were forwarded in creating knowledge creation in for school leaders as part of internal teacher training which were:

- (a) Trained teachers with research skills and to be research practitioner,
- (b) Create opportunities of enhancing knowledge among teachers as part of improvement and learning process in school, =
- (c) Build academic networks that will enhance the validating and auditing teachers' tacit and implicit knowledge.

- (d) Stem the apprenticeship model such as mentorship in school setting which enhancing teachers; sharing experiences.
- (e) Enhance and supports teachers' collaboration efforts as part of internal reflections of sharing idea and knowledge.

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