THE ROLE OF KNOWLEDGE MANAGEMENT SYSTEM IN SCHOOL: PERCEPTION OF APPLICATIONS AND BENEFITS

YOHANNES KURNIAWAN

Bina Nusantara University, Department of Information Systems, Jakarta – 11480, Indonesia

E-mail: kurniawan_yohannes@yahoo.com

ABSTRACT

The role of knowledge management is to assure competitiveness, through capturing, storing, sharing, and utilizing knowledge in an innovative way. In this paper, discusses the role of knowledge management from the perception of application features and benefits. Knowledge management is a new field and experiments are just beginning in school. We believe there is tremendous value to school institutions that develop initiatives to share knowledge to achieve business objectives. This knowledge management can be classified as support for teaching and non-teaching staff. After we understand the application features, we will then become far more motivated to look further at the value and benefits of knowledge management in school. The article seeks to identify the features for application of knowledge management in school (primary and secondary education sector). It also details the nature of the role of knowledge management in innovation, improve academic services, or achieve operational excellence. The conclusion is that knowledge based system, could be used in schools, facilitating the knowledge management within the school for academic services.

Keywords: *Knowledge Management, School, Application, Benefit, Application*

1. INTRODUCTION

Recently, the roles of knowledge and understanding for organizational performance have become clearer. Previously Managerial emphasis was placed on work included the role of information. But now, focus is shifting to include knowledge in managerial aspect. However, the knowledge focus has tended to be on the individual and not on systematic considerations of broader work processes or knowledge mechanisms within organizations.

According to Cong and Pandya, Knowledge Management is "An ability of an organization to use its collective knowledge through a process of knowledge generation, sharing and exploitation enabled by technology to achieve its objectives" [1]. As well as from the perspective of strategies uit Beijerse, Knowledge Management is "The achievement of the organization's goals by making the factor knowledge productive" [2].

School need to capture the key knowledge of its workforce and learn from its lessons is evident. The Administration staff and our own workforce are calling for School to infuse knowledge management practices into the daily work of the Academic Operation Area. What is "knowledge management"? "Knowledge management is achieving organizational goals through the strategy-driven motivation and facilitation of (knowledge) workers to develop, enhance and use their capability to interpret data and information, experience, skills, culture, through a process of giving meaning to these data and information" [3].

There have been many firms and organizations that have implemented KM principles, methods, practices or tools. However, academic operation areas in particular school have taken more interest recently in introducing KM approaches. Schools usually use information technology for time table processing (scheduling), examination, reporting operations, student operations, and performance evaluations of students. ICT enables KM by allowing vast amounts of data to be captured, processed, stored and disseminated to the right people at the right time. Internet technology, web-based interfaces, intranets, and portals are key KM infrastructures [4].

Amrit clearly defined the three fundamental processes of knowledge management as: (1) **knowledge acquisition**. The process of development and creation of insights, skills, and relationships. Knowledge formalization tools are examples of direct knowledge acquisition. Data

capture tools with filtering abilities, intelligent databases, note-capture tools, and electronic whiteboards are examples of information technology components that can support indirectly knowledge data acquisition; (2) **knowledge sharing**. Disseminating and making available what is already known. A decision support system that provides a novice teacher best teaching practice is an example of knowledge that is being shared with that school agent. Possibly, the sharing process has to be optimized on the specific context; (3) **knowledge utilization**. Learning is integrated into the organization. Whatever is broadly available throughout the company can be generalized and applied, at least in part, to new situations [5].

Schools are increasingly recognizing the contribution of knowledge to their bottom line if effectively managed. But what are the key levers of a knowledge-based strategy that realize these benefits? And the 7 such levers, that can be used to create value for the business. According to Skyrme [6], there are 7 lever of knowledge as following, as shown in Table 1.

Table 1: Seven Knowledge Levers

Lever of Knowledge	Description
Customer Knowledge	Developing deep knowledge sharing relationships. Understanding the needs of your customers' customers. Articulating unmet needs. Identifying new opportunities.
Stakeholder Relationships	Improving knowledge flows between suppliers, employees, shareholders, community, etc. using this knowledge to inform key strategies.
Business Environment Insights	Systematic environmental scanning, including political, economic, technology, social and environmental trends. Competitor analysis. Market intelligence systems.
Organizational Memory	Knowledge sharing. Best practice databases. Directories of expertise. Online documents, procedures and discussion forums. Intranets.
Knowledge in Processes	Embedding knowledge into business processes and management decision making.
Knowledge in Products and Services	Knowledge embedded in products. Surround products with knowledge e.g. in user guides, and enhanced knowledge-intensive services.
Knowledge in People	Knowledge sharing fairs. Innovation workshops. Expert and learning networks. Communities of knowledge practice.

Kuo [7] further emphasized the trend and necessity of using information technology to conduct knowledge management in schools and believed that school members should gain a deeper understanding of knowledge management. Therefore, schools should continue to improve their existing operating models and should understand the appropriate procedures of searching, storage, duplication, and application in order to gather necessary knowledge [8].

The main reasons for KM in Management Education is [9]: (1) All Management institutes possess a state of the art modern information infrastructure; (2) Sharing knowledge among staff, students, course, programs, placements and administration is usually done in all management institutes; (3)The academic environment in general is considered trustful in the sense that no one is hesitating nor being afraid of publishing knowledge; (4) Each institute wants its internal documentation management and the level of information and knowledge sharing to improve; (5)There is an increased demand for new strategies that help management institutions meet external and internal demands.

Knowledge management can be built and integrated into the structures and processes of educational institutions to improve their performances. Knowledge management can benefit educational institutions in at least five areas: research, curriculum development, student and alumni services, administration, strategic planning, and traditional classroom enhancement [10],[11].

2. RESEARCH METHOD

Writing method for this paper is qualitative. The method used in data collection was reviews from the literature and direct observation at BINUS International School. Reference sources used are a variety of books, journals, and articles obtained from the library. Another source of internet is includes electronic book and other supporting sites. Retrieving information or data by quoting the contents of the books or from the internet and using the available data to be used as supporting evidence the authors put forward of a statement. The nature and form of paper to be presented in descriptive format.

3. RESULTS AND ANALYSIS

Most knowledge management technologies focus on the actionable application of knowledge [12]. This notion of knowledge for action directly applies to curriculum development and assessment. The knowledge gained from assessment is used to create and improve upon the curriculum which is comprised of courses, topics, instructional materials, presentations, assignments, etc.

The key to knowledge management is capturing intellectual assets for the tangible benefits for the

school. As such, imperatives of knowledge management are to: (1) Transform knowledge to add value to the processes and operations of the business leverage knowledge strategic to business to accelerate growth and innovation; (2) Use knowledge to provide a competitive advantage for the business, esp. for school.

Table 2 presents the need of knowledge in any school activities. Students acquire knowledge through their interactions with student, parent, staff, and teachers. The major areas for us to start working on are encouraging and supporting people sharing information, enhancing the processes by which we capture and manage that information, and augmenting or building new technology to make this happen. Initial priorities relate to enhancing knowledge capture, managing information, and enabling for collaboration. Teachers share knowledge with students (teaching and learning activities) while the administration process shares the knowledge with key stakeholders.

Table 2: Knowledge in any School Activities

Functional / Activities	Knowledge	Tacit	Explicit
Administration	School Procedures (Handbook)		√
	Resources and Institutional plan analysis.	√	
	Time table Analysis		√
	Student Histories Analysis		√
	Financial Analysis (budged and school fee)		√
	Event Analysis		√
Academic (Teaching and Learning)	Teaching activities	√	√
	Teacher ethic and law		√
	Curriculum analysis	√	√
	course evaluation (content and exam)	√	√
	Report Analysis		√
Guidance and Counseling	General Case Analysis		√
	Specific Case Analysis	√	√
Library Services	Acquisition Analysis		√
	Cataloging Analysis		√
	Circulation Analysis and Evaluation		√
Health Information (Clinic)	Health information evaluation	√	√
	Medical Report		√

There are three processes that can be done to accommodate the knowledge in school activity with the aim to improve the efficiency in terms of time management for school decision making and provide mutual value in the form of accuracy over the quality and quantity of school decisions generated in each case are faced by teachers. The processes included: (1) Knowledge reused or Access, the reuse of knowledge from database (either in the form of student record or documentation of policies and procedures that are used); (2) Knowledge sharing, perform distribution tacit and explicit knowledge using internal network facilities between one user to another user or between a user system that will reduce both redundancy In terms of action and in an effort to analyze school data so that it can improve user performance directly (teaching / non-teaching staff) and provide strategic impact to organizational performance indirectly; (3) Knowledge Creation, efforts to create new knowledge from accumulated range of both theoretical knowledge and experiential documented in the form of a knowledge which can be distributed throughout the education internally as a reference method for enhance personal and organizational competence. Some of the benefits identified are to enhance the quality of curriculum, improve responsiveness to student evaluations, leverage the best practices, improve teaching and learning, and monitor outcomes.

In case, effective knowledge management systems are able to access information from documents and databases across the department in school, capture it in a centralized knowledge-based, and continually enhance it for ongoing use by stakeholders seeking answers. For an academic operation services to succeed with knowledge management, the solution must equal with the natural current work processes, whereby knowledge is accessed, captured, and improved as an intrinsic part of how staff and teacher interact with student and parent to solve their problems. In other words, the software not only assists a staff and teachers for the problem at hand, but extracts additional knowledge from the interaction to improve content for subsequent interactions.

Many programs start by focusing on the thrust of better sharing of **existing** knowledge e.g. sharing best practices. Most programs will leverage value through knowledge by concentrating on just a few of seven knowledge levers. Table 3 presents identification and categorization school knowledge resources on seven knowledge levers.

Table 3: Identification and Categorization School Knowledge Resources

Types	Levers	Knowledge
Structural Knowledge	Organizational Memory	Rules and Procedures: 1. Teachers Ethic and law 2. General Procedures Parents and Students Guidance(Handbook)
	Stakeholder Relationships	Stakeholder overview: 1. Revenue Forecast 2. Student statistics 3. Policies
Functional Knowledge	Knowledge in People	Teaching and Learning Methodology
	Customer Knowledge	Students and Parents Acknowledgement 1. Student Education (affective and academic) 2. Student Monitoring Student Issues: 1. Student Relationship Management 2. Parent Relationship Management
	Knowledge in Process	Student Case Analysis: 1. Student Histories 2. General Case Analysis 3. Guidance and Counseling Report 4. ISO (If Any) 5. Specific Case Analysis Monitoring and Evaluation: • Time table analysis • Score evaluation • Analysis new courses, program, interdisciplinary subject, Communities of practice between teachers and staff. • Student statistics Education Report and Standard: 1. General Case Report 2. Specific Case Report 3. Progress Report (Report Card) 4. Government Report
	Knowledge in Products and Services	Education Intelligent
Behavioral Knowledge	Business Environment Insights	Practitioner Learning 1. Internal Meeting 2. Seminars and Workshops

From Table 3 that identifies the knowledge in the "Operational Aspects of School" can be domain knowledge is described, divided into several major categories, as follows: (1) The general procedure,

(2) case management, (3) Relationship Management.

Comprehensive KM can be pursued with any potential activities. Figure 1 provides a few such activities with indications of how they fall into three main functional areas:

- Governance functions to direct and support KM-related efforts throughout the school from school perspective and goals.
- Staff or infrastructure functions that support KM objectives and individual activities of many kinds including supporting capabilities like special expertise teams, institutions, and technological facilities.
- Operational functions to obtain and create knowledge and to capture, organize, distribute, and manipulate it and the value of knowledge-related investments through understanding of how to leverage knowledge in use, in products and services, in technology, or in other kinds of structural knowledge such as systems and procedures in school.
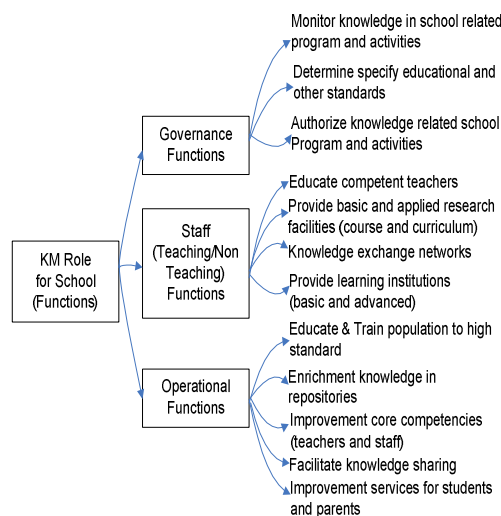

Figure 1: KM Role In Functional Area Of School

In designing the relationship between knowledge resources in school and the goal of developing knowledge-based applications, knowledge represented in the concept mapping features on the portal knowledge management as shown in Table 4. Development of knowledge management portal feature uses only required field as a component in every feature that must be filled or selected by the user in full to be categorized in a database of knowledge. In Table 4 presents mapping the

features that are part of the knowledge management portal of school.

Table 4: Mapping Features Knowledge Management Portal

Knowledge goals Core Knowledge	**Normative goals**	**Strategic goals**	**Operational goals**
Knowledge capture and communication			
Organization Memory	**Features:** Guidance Data Work report	**Features:** School Case	**Features:** Library (Repository) and Idea sharing
Stakeholder Relationships	News Event Data		
Knowledge in People	References Blog		
Customer Knowledge	Idea sharing		
Knowledge in Process	Discussion References		
Knowledge in Products and Services	Idea sharing		
Business Environment Insight	Discussion and learning management		
Knowledge preservation			
Evaluation and feedback module			
Supporting - Security - IT Infrastructure			

Web-based technologies that support e-business are now being applied to support knowledge management. A more powerful reason is that both disciplines are about creating conversations, sharing knowledge, and building communities. Using knowledge management technologies in school is as vital as it is in the corporate sector. If done effectively, it can lead to better decision-making capabilities, reduced "product" development cycle time (for example, curriculum development and research), improved academic and administrative services, and reduced costs (See Figure 2).
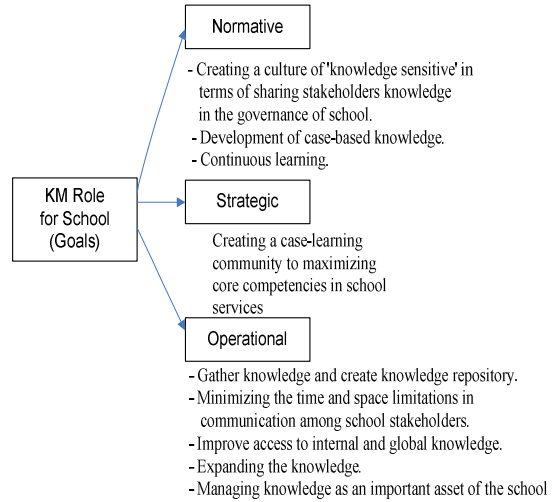

Figure 2: KM Role In Functional Area Of School

The KM stakeholders will accomplish this through deployment of portals (customizable web sites that provide targeted information to staff and teachers and allows them to publish to specific communities), support of e-learning technologies, enhanced capture and distribution of lessons learned, support for the development of communities of practice, and creation of collaborative environments to enable sharing and managing of the knowledge developed within a community.As information and knowledge has become an important productive factor for the modern school system, the society will inevitably require intensified management of information and knowledge. How to manage knowledge will become an important subject facing schools in the near future.

And in the future work, knowledge management in schools should be focus on effective research and development of knowledge, creation of knowledge basis, exchange and sharing of knowledge between school staff (teaching and non-teaching), training of staff, speeding up explicit processing of implicit knowledge and realizing of its sharing.

4. CONCLUSIONS

In this paper, we have (a) fundamental knowledge per functional areas in school, (b) knowledge identification and categorization school knowledge resources in seven levers of knowledge, (c) illustrated the use of that framework in representation KM role based on governance, staff, and operational functions, and (4) offered a features and benefits of KM for school.

In this paper, we introduced the role of knowledge management in school and developed a framework ontology-based knowledge management system. At present, the system focuses on the issue of knowledge capture, sharing and utilization (provides for knowledge searching and preservation of knowledge). In the future work, the inference of domain ontology should be incorporated into knowledge searching to support more precise and effective knowledge sharing. The implication of this paper is discussed in 3 areas. The first discusses the implication for theory in knowledge management, secondly, it the implication for school stakeholders. Finally it suggests direction for future research of knowledge management in school.

REFRENCES:

[1] U.A. Rachmawati, and D.I. Sensuse, "Perspektif Knowledge Management pada E-Government di Indonesia", *Seminar Nasional Aplikasi Teknologi Informasi*, June 19, 2010, pp. 53-59.

[2] Jashapara Ashok, "Knowledge Management: An Integrated Approach". (2th Edition). England: Pearson Education Limited, 2011.

[3] R. Beijerse, "Questions in Knowledge Management: defining and conceptualising a phenomenon", *Journal of Knowledge Management,* MCB University Press, Vol. 3, No. 2, 1999, pp. 94-109.

[4] J.D. Stonehouse, and G.H.Pemberton, "Organizational learning and knowledge assets", *The Learning Organization*, Vol. 7, No. 4, 1999, pp. 184-193.

[5] Amrit Tiwana, "The Knowledge Management Toolkit", Prentice Hall, 2002.

[6] Skyrme, David, J., "Developing a Knowledge Strategy", 2008, available from http://www.skyrme.com/pubs/knwstrat.htm, 2013

[7] Y. F. Kuo, "A study on service quality of virtual community", *Total QualityManagement & Business Excellence*, Vol. 14, No. 4, 2003, pp. 461-473.

[8] D.R. Richard, "Technology: Where students learn". *American School & University*, Vol. 47, No. 3, 2001, pp. 360-363.

[9] J. Ranjan, and S. Khalil, "Application of Knowledge Management in Management Education: A Conceptual Framework", *Journal of Theoretical and Applied Information Technology*, Vol. 3, No. 3, 2007, pp. 15-25.

[10] I. Dediana, and L. Aroyo, "Knowledge Management for Networked Learning Environments: Applying Intelligent Agents", available from http://projects.edte.utwente.nl/proo/italo.htm, 2013

[11] J.J., Kidwell, K.M Vander Linde, and S.L. Johnson, "Applying Corporate Knowledge Management Practices in Higher Education" , *Educase Quarterly*, vol. 4, 2000, pp. 28-33.

[12] Sallis, E. & Jones, G., "Knowledge Mangement in Education". London: Kogan Page, 2002.