Knowledge Management Develops Teaching-Learning Activities in School

Ferry Doringin [1,*], Stepanus Silaban [1], Nensi Tarigan [1], Kristianus Oktriono [2], Pingkan Doringin [3]

[1] *ARO Gapopin, Jakarta, Indonesia*
[2] *Bina Nusantara Univesity, Indonesia*
[3] *Tourism Faculty, Bina Nusantara Univesity, Indonesia*
[*] *Corresponding author. Email: fdoringin@gmail.com*

ABSTRACT
The research has the objective of analyzing the impact of Knowledge Management (KM) for the improvement of Teaching Quality in schools. Using a qualitative case study, the researchers interview the Foundation and school leaders, observe the process of data handling, and analyze the documents of a foundation with four schools in North Jakarta. As the finding, the KM changes the quality of teaching-learning activities, develops the culture of sharing and learning among teachers, develops their best practices, and strengthens their autonomy to make some development programs. The study mentions its newness in changing the management and mindset in schools from an individual and compartmental basis to the culture of teamwork, especially to best practices, creativity, and new ideas. The study recommends another research to find the model of KM implementation in primary and secondary education.

Keywords: knowledge management, sharing culture, primary education, secondary education, school quality

1. INTRODUCTION

O'Neill (2010) explains knowledge management (KM) as a systematic process for acquiring, managing, maintaining, applying, sharing, and updating knowledge. The process has a goal to improve organizational performance, enhance organizational adaptability, increase the value of existing products and services, and to create new knowledge-intensive products, processes, and services [1], [2].

At first, Knowledge Management is a concept applied in the business field. KM brings successful organizations to develop the capabilities of knowledge infrastructure (culture, structure, and technology), and the ability of the knowledge process (achievement of knowledge, a transformation of knowledge, application of knowledge, and conservation of knowledge) [3], [4].

Sharifuddin & Rowland (2004), who explained that the KM concept has some success stories in Higher Education. KM strengthens the sustainability of the learning system through actions that are taken systematically to find and manage an organization's intellectual property and make it accessible. Khakpour (2015) found in his research that the KM improves the efficiency and effectiveness of education. Khakpour (2015) said that Knowledge Management is about using the brainpower of an organization in a systematic and organized way to achieve efficiency, ensure competitive advantage, and spur innovation [5], [2].

How to use the success of KM in Primary and Secondary education? This paper discusses the way KM improves the quality of primary and secondary education in North Jakarta. The research uses the qualitative case study to address primary and secondary education problems in KM implementation, including the lack of creativity in learning, limitation of sharing knowledge, limitation of collaboration and teamwork [6], [7], [4]. The paper shows that the implementation of KM in a school in North Jakarta can change the quality of some aspects of the school. This paper shows the newness in management and mindset changes from the individual and compartmental basis to the teamwork, shared knowledge, sharing best practices, and shared creativity and new ideas that rarely took place in the school before. The lack of sharing ideas and teamwork among teachers can be a new concept in primary and secondary education [8], [9], [10].

According to Cheng (2015), knowledge is the information used by humans. By using that information, humans give it meaning and purpose. However,

according to Cheng, knowledge means more than information. Cheng (2015) Cites Davenport (1998) and states that knowledge is information that is combined with experience, context, interpretation, and reflection [11]. At the school level, KM strengthens the school database and enriches schools with a lot of information.

Chu, Wang & Yuen (2011) describe two ways that are commonly used to differentiate knowledge management. They refer to some scholars, such as Kogut and Zander (1996), who differentiate between know-what and know-how. They also explain the other authors, like Nonaka (1994), who prefer to use tacit and explicit knowledge based on Polanyi's theory [12].

Cheng (2015) quotes Nonaka and Takeuchi (1995) and states that explicit knowledge usually refers to knowledge that can be transmitted in the formal and systematic language, which is more precise and can be formally articulated, and removed from the original context of that knowledge. On the other hand, tacit knowledge is the knowledge that is closely related to the quality and depth of a person's personality, which makes it difficult to formalize and communicate. Tacit knowledge is usually understood and applied unconsciously, developed from direct experience and action, and is usually conveyed through informal conversations and shared experiences of a particular group or community [11]. The challenge of KM is to change the good quality of tacit knowledge into explicit knowledge. Through KM, the information is enriched with experience, context, interpretation, and reflection. Knowledge is managed from individual to institutional or group properties, from personal to shared knowledge [11].

In further discussion, Cheng (2015) said that knowledge is capital. Knowledge is an essential factor that determines the quality and performance of a good school/organization. Cheng (2015) further emphasizes that the transformation of information into knowledge is an important step in value creation, which determines what advantages a company has in competition. Knowledge management tries to add value to personal or tacit knowledge [11].

More deeply from Cheng (2015), Gerami (2010) states that KM is knowledge in action or knowledge that is implemented. He quoted Francis Bacon as saying that knowledge is not power but the only possibility. Action is power. Action has the highest manifestation when directed by knowledge and goes out of knowledge into a movement of implementation [13], [8], [14].

Abdul Samad (2014) emphasized the use of KM in organizations when he stated that KM develops systems that have a long-term impact. KM in organizations involves individuals, processes, activities, technology, and the environment on a large scale. In the process, KM encourages a number of positive things, for example, identification, creativity, communication, and sharing of intellectual assets, which results in the long-term performance of any organization [15]. Eftekharzade & Mohammadi (2011) emphasized the enormous impact of KM by stating that KM makes universal wealth accessible to an organization so that the organization is strengthened very significant because it creates a sustainable education and learning system [3].

Cheng (2015) asserts that KM becomes meaningful when it can fill existing knowledge gaps and improve organizational performance (Cheng, 2015). Abdul Samad (2014) states that KM is needed because the world is changing rapidly, especially in technology and multimedia. Khakpour (2015) added that through the use of knowledge management activities, including the creation, storage, distribution, and dissemination of knowledge, educational institutions in a changing society could achieve their goals. Therefore, their performance will be improved [5], [16].

Cheng (2015) discusses KM in schools. According to him, KM in schools can be categorized or conceptualized as strategic management activities. KM in schools is very strategic in supporting teachers to collect information or utilize organizational knowledge sources to carry out their teaching and assignments effectively. KM provides schools with adequate communication channels for teachers to discuss school problems with management. Teachers can reflect on and review feedback from others and develop strategies and plans to improve further school-based policies and teaching effectiveness (Cheng, 2015). Chu, Wang, & Yuen (2011) describe KM as an alternative strategy by schools to improve competitive performance because it allows people to develop a set of practices for gathering information and knowledge and sharing what they know, leading to actions that improve services and outcomes [12], [17], [19].

Chu, Wang, & Yuen (2011) discussed the role of KM in improving teacher competence. There are many types of knowledge that need to be managed in schools. Teachers develop and acquire various kinds of knowledge in schools where KM must be applied to achieve teacher knowledge. KM enables teachers to store, share, transfer, or change knowledge, among others [12]. Samad (2014) says that teachers acquire knowledge by attending meetings with other teachers, observation, experience, and online sources [15], [20]. Leung (2010) states that KM supports innovative teaching and active learning and enables teachers to retain the expertise of experienced teachers, increase their effectiveness in teaching and learning performance, support the development of knowledge communities in schools, and foster a learning culture [11], [21], [22].

Chu, Wang, & Yuen (2011) mention three elements of KM. According to them, to balance organizational information culture and technology culture, KM brings together three core company resources. They are people,

processes, and technology. These three elements enable organizations to use and share information and knowledge more effectively [12].

Eftekharzade & Mohammadi (2011) mention almost the same elements as Chu, Wang, & Yuen but explain the second point (process) in more detail. It is said that the aspects of KM development include information technology, organizational structure, human resources, and corporate culture (Eftekharzade & Mohammadi, 2011). Some authors describe KM elements but only break down the three main components (human, process, and technology) [2], [3].

Several experts mentioned the implementation strategies of KM. First, schools identify teachers' perceptions of KM [12]. Prior to implementation, schools must survey and map the knowledge landscape (teachers' opinions on how to apply KM), including teachers' understanding of KM, teachers' concerns about KM application, teacher prerequisites, expectations of KM application, and what benefits students get after implementation. It is essential to have the same concept and motivate teachers with explicit knowledge about what they need to do to achieve success [15].

Second, develop three factors of KM from organizational management: leadership, interpersonal trust, and management trust. Third, integrating KM and educational administration. Fourth, extra training for teachers to improve their skills. Fifth, manage school equipment funding appropriately. Sixth, encourage teachers to use and apply technology and communication at higher frequencies. Seventh, cultivating KM culture. Eight, creativity [15].

Several obstacles faced by schools in implementing KM: First, schools must pay attention to the lack of competence of teachers, especially in implementing technology. Second, there is a tendency, among others, that teachers have difficulty sharing their knowledge. It is important to change the problem. Third, they do not find an adequate transfer method if the school does not establish a system and prepare good facilities.

2. METHOD

2.1 Data Collection and Analysis

This research uses a qualitative case study method. The study collected data on how the school foundation runs knowledge management in schools (one Foundation has 4 schools: Kindergarteen, Elementary School, Junior High School and Senior High School). The data collection uses several instruments, including interviews, observations, and document analysis [18]. Researchers interviewed four Principals (Kindergarten, Elementary School, Junior High School, Senior High School), eight Deputy Principals, and three Foundation Leaders. The researchers ask the four questions to the respondents: (1) why do schools develop knowledge management; (2) how does the school make a process to implement the KM in schools; (3) how will the implementation of KM affect schools; and (4) what are the challenges and difficulties in implementing KM in schools?

Researchers observe the school process to get data, especially learning documents (syllabus, action plans, material presentations, and modules), find their regular meetings (every month or twice a month), and their discussions on their social media. Researchers analyze documents, including their strategic planning, their learning documents, and minutes of their meetings and programs. Researchers analyze data and develop concepts by comparing respondents' answers, observations, and document analysis.

2.2 The Context of the Study

The school foundation in North Jakarta is the case example of how to implement KM properly. This private education foundation manages Kindergarten, Elementary School, Junior High School, and Senior High Schools with 1,700 children and 120 teachers. The researchers only interviewed the leaders of the Foundation and schools but observed and used the data of all teachers. The school foundation with four schools (Kindergarten, Elementary School, Junior High School, and Senior High School) has operated around 30 years. It has a good image in the community so that the four schools under the Foundation have a particular and promising market. However, their demand has been eroded by new schools offering modern models of handling and progressive curriculum.

Through focus group discussion, surveys, and analysis, this school made a strategic plan, and one of the focuses of the development was KM. In its 30 years, the school foundation still did not have the idea to unite their resources to work together with a good database and integrated design. The teachers and non-teachers work individually without a good database and lack of sharing ideas.

Based on the in-depth analysis, the Foundation develops the KM integrated with the Learning Management System prepared by a vendor. The school foundation starts the design with the system that helps all of the foundation members to understand and guide the vision and mission. The Operating Chair said that their first step is to make sure that the school's vision and mission are well socialized and become a guide for all decisions. Second, the database is created and developed. The school manages all documents, mostly curriculum documents, as the assets and data that become the basis of the development. Third, sharing knowledge and technology across units through joint learning activities and sharing best practices. Fourth, a system that pushes all teachers and staff to write and share their best

practices. It happened that the KM initiatives develop other aspects of the school foundation [12].

3. RESULTS AND DISCUSSIONS

3.1 KM Improves the Quality of Teaching-Learning Activities

KM improves the quality of teaching very significantly. This is reflected in the administration of the curriculum, which is submitted by all teachers to the management at the beginning of each school year. Previously, teachers submitted curriculum administration with minimum analysis, minimum creation, and usually only copy and paste government materials or materials from other schools.

KM encourages teachers to organize their curriculum administration to maximum quality. It starts with the teacher's commitment, which is at the beginning of the school year. The teachers will submit the administration according to the deadline. Moreover, the administration that will be submitted into a database and can be accessed by other friends will be analyzed, developed, and given specific points of excellence. With this initial commitment, the quality of curriculum administration made by the teachers is highly qualified. The document has a sharp analysis, is made based on the context of the school and students, and is equipped with some excellences that will give the uniqueness to the curriculum.

According to the vice principal of the curriculum of the Junior High School, each teacher supports the ideas to make a plus in the syllabus and lesson plans. The step helps teachers avoid the copy-paste process of the curriculum. With that, they must design their curriculum and offer specific things as the excellence of their curriculum. With that, the teacher will work hard to give characteristics/colors to his/her syllabus and action plan and not only receive or use the national syllabus or syllabus of other schools. The teachers have to analyze the curriculum because they have to formulate their excellences of their learning.

3.2 KM Builds Cultural Analysis and Works With Data

According to the Principal of Senior High School, the administration submitted by the teachers will become the school database. The database contains syllabi, RPP, assignments, and questions for formative and summative assignments and projects. The data that has been submitted can be used as data to make sure that teachers work with full planning. The information also becomes essential to analyze the suitability of the material.

Moreover, the Principal of the Elementary School said that the data installed can be compared with the administration of the previous year's document. The curriculum section has data to ascertain whether there is material development every year. The school can identify if the teacher worked on the basis of data or just repeated the previous year's material, without analysis, without creation, and without development.

The materials that have been submitted are part of a compilation conducted by the supervising school for teachers. According to the Education Section Head, school supervision will push teachers to provide curriculum documents before the teacher enters the class. When the control, the supervisors can observe if the activities in the classroom refer to the plan. The last step is the final interviews for crosschecks and feedback on the teacher's performance in the class

3.3 Data is Easily Accessed and Developed by Schools

Imagine if the teacher made a little creativity every year. After a few years, the school will produce many creativities following the number of teachers. Moreover, creativity will increase each semester significantly; the teachers support the development of creative assistance. With this database, schools, or Human Resources Department (HRD) can get to know the teacher's strengths and weaknesses more closely. Schools can also develop creative directions. More than that, creativity in school can be recorded and can be analyzed.

The teacher also has a record of innovations and creations that he developed, and with that, he can make their track record. When he builds tracks, trends, and focus, he naturally does KM and works based on the existing data.

3.4 A Culture of Sharing is Created and Helps Bring About Best Practices

KM is encouraged by the culture of sharing in the school environment. The KM process that supports all teachers who can use subjects will work together. They work together to integrate certain topics starting from high school. They also incorporate the material among themselves. For example, if the 8th-grade Mathematics lesson is taught by three teachers in different parallel classes, then the three will work together so that standards and processes can be mutually agreed upon.

The KM process at this school also allows teachers to share. Schools are building systems to encourage the sharing of best practices every month. At the monthly meeting, the teachers have a group meeting (Based on subjects), and within that group, one or two people will share the best practices that they prepare or do. After that, they will make a meeting in big group (plenary) and the representative of groups (one or two people) who shares their best practices in the small groups, will share their best practices in the big groups. With that, teachers share

and learn from each other about the methods in their classrooms.

The advantage of this program is that teachers who are assigned the task of sharing best practices will prepare themselves to share his/her excellences. Also, in the sharing session, there is a questions and answers session that will enrich every teacher.

3.5 The New Educational Trends can be Quickly Shared

At the regular teacher meeting, besides discussing best practices, the school can also encourage one or two teachers to learn about the new trends in education and share it with the others. With that, every teacher can get information about the latest trends that become the current issues in education. This process helps teachers to be able to respond to the changing times and want to explore the trends that exist in the world of education.

3.6 KM creates autonomy in schools

The KM process, which encourages monthly best practices, makes schools aware that several methods must be made in an integrated and sustainable manner. Because of this, the school decided to entrust internal speakers with some programs that usually bring in speakers from outside. For example, a yearly retreat and recollection program no longer presents expert facilitators from outside. The teachers themselves are prepared to be speakers. The aim is that the programs carried out can be sustainable and integral.

In addition to the recollection and retreat programs, schools also create their outbound programs. Schools stipulate that routine teacher training programs are carried out by teachers in the institution (internal speaker). With that, the material can better answer the needs of teachers and base on the context.

3.7 Some Challenges

The research also finds some challenges regarding the implementation of KM. First, It takes time, resources, and energy. The school is assisted by a provider who makes a simple Learning Management System (LMS) for accommodating or developing the database. Based on the KM initiative, the school also needs some special tools. The LMS process at this school is collaborating with a third party to develop the LMS and even the database. It takes time, resources, and energy. Also, the internet needs to be strengthened, and every unit needs a good computer. Also, there is a need to develop a network system. This process can be considered a particular burden because it requires special time, unique expertise, even specialized staff.

Second, the challenge to convince teachers to change their environment. Some teachers must be resigned. When the program starts, teachers need to be convinced that this is for their development. Teachers who will develop the curriculum, administration, and innovation feel that there are some additional works. Therefore, some teachers even need to be convinced. Programs to change the mindset of teachers are implemented to encourage teachers to realize the importance of this program. There is a risk that some teachers are difficult to follow the process. As a result, there are even teachers who have not been extended their contracts. There is a teacher who was dismissed. This program was included in Key Performance Indicator (KPI) to ensure that the program could run well.

Third, the challenge to convince teachers to share and learn with each other. Another problem is that teachers need to be convinced to share and learn from others. When the program was delivered, the teachers had questions about the copyright of their work. The school had stressed that their names were mentioned as the owner of the program but the material they made, could be shared and could be the basis for school development. A particular approach program needs to be created to convince teachers of the beauty of sharing. The teacher also needs to be convinced of the importance of learning from others.

Fourth, the challenge of building a culture of sharing and responding. Teachers also need to be convinced of a culture of mutual response, mutual criticism, and mutual sharpening of the program. This culture is relatively new because, previously, teachers were compartmentalized in their material. Even in one unit, teachers can be compartmentalized and rarely communicate. At present, not only are teachers asked to communicate with each other, they are also expected to be able to respond to each other, provide input, even criticize another teacher material

4. CONCLUSION

Knowledge Management (KM) improves some aspects of schools and uplifts the schools' qualities. There are some problems in primary and secondary education regarding the lack of creativity in learning, the limitation of sharing knowledge, the low culture of study together, and the low culture of sharing materials and best practices.

The study sees the process of developing a database (collecting all documents, especially, subject content) and the efforts to build a new culture in sharing ideas, best practices, and materials. It is the unique culture and mindset change for a foundation with four schools in North Jakarta.

The KM process pushes significant efforts to start to build the schools' database. It also changes the mindset form working in individual and compartmental basis to

the teamwork, shared knowledge, shared best practices, and shared creativity and new ideas.

There is a challenge in the process that the big efforts to make it sustains and changes the mindset to make it the new culture and new habits. It is only the beginning and needs more efforts.

REFERENCES

[1] G. O'Neill, "Programme Design (Resource from University of Dublin)," *UCD Teach. Learn. Resour.*, no. January, 2010.

[2] R. S. Rahmad, M. I. Rahmad Sukor, D. Syah, and E. Muslihah, "Understanding the implementation of knowledge management in high-performance schools in Malaysia," *SAGE Open*, vol. 4, no. 4, pp. 1–7, 2014.

[3] S. F. Eftekharzade and B. Mohammadi, "The presentation of a suitable model for creating knowledge management in educational institutes (higher education)," *Procedia - Soc. Behav. Sci.*, vol. 29, pp. 1001–1011, 2011.

[4] A. Lie, "Education policy and EFL curriculum in Indonesia: Between the commitment to competence and the quest for higher test scores," *TEFLIN J.*, vol. 18, no. 1, pp. 1–15, 2007.

[5] A. Khakpour, "Knowledge Management in Educational Organizations : Opportunities and Challenges," *7th Int. Knowl. Manag. Conf.*, no. February, 2015.

[6] C. K. Adi, "Tantangan Penyelenggaraan Pendidikan Katolik yang Unggul, Inovatif, Bermutu," in *Reforming Pedagogy*, 2016, pp. 1–6.

[7] A. Lie, *Pendidikan: antara kebijakan dan praksis*. Surabaya: Universitas Katolik Widya Mandala, 2015.

[8] K. Wijitra, C. Chalard, and S. Anan, "Development of a knowledge management model for the development of a quality public sector management system for the office of the primary educational service area," *Int. J. Educ. Adm. Policy Stud.*, vol. 7, no. 2, pp. 39–46, 2015.

[9] W. Omona, T. Van Der Weide, and J. Lubega, "Using ICT to enhance Knowledge Management in higher education: A conceptual framework and research agenda," *Int. J. Educ. Dev. Using Inf. Commun. Technol.*, vol. 6, no. 4, pp. 83–101, 2010.

[10] A. Bandur, "Decentralization and School-Based Management in Indonesia," *Asia Pacific J. Educ. Dev.*, vol. 1, no. 1, pp. 33–47, 2012.

[11] E. C. K. Cheng, "Knowledge Management for School Education," no. 1997, 2015.

[12] K. W. Chu, M. Wang, and A. H. K. Yuen, "Implementing knowledge management in school environment: Teachers' perception," *Knowl. Manag. E-Learning*, vol. 3, no. 2, pp. 139–152, 2011.

[13] M. Gerami, "Knowledge Management," *Int. J. Comput. Sci. Inf. Secur.*, vol. 7, no. 2, pp. 234–238, 2010.

[14] M. E. . Koenig, *Knowledge Management in Theory and Practice (2nd ed.)*, vol. 62, no. 10. 2011.

[15] A. R. I. Rahmad Shukor Abdul Samad, "School-Based_management_A_model_of_implementation_for_Malaysian_primary_schools.pdf." .

[16] H. Research, "Emerging and future trends in K-12 education," *Hanover Res.*, no. October, pp. 1–30, 2014.

[17] S. K. W. Chu, A. C. M. Kwan, and P. Warning, "Blogging for information management, learning, and social support during internship," *Educ. Technol. Soc.*, vol. 15, no. 2, pp. 168–178, 2012.

[18] R. K. Yin, *Case study research: Design and methods*, 4th ed. California: Sage, 2009.

[19] Prestiadi, D., Hardyanto, W., & Pramono, S. E. (2015). Implementasi Total Quality Management (TQM) dalam Mencapai Kepuasan Siswa. Educational Management, 4(2).

[20] Prestiadi, D., Zulkarnain, W., & Sumarsono, R. B. (2019, December). Visionary Leadership in Total Quality Management: Efforts to Improve the Quality of Education in the Industrial Revolution 4.0. In the 4th International Conference on Education and Management (COEMA 2019). Atlantis Press.

[21] Bhayangkara, A. N., Ahmadi, W. H., Firdaus, D. B., Prestiadi, D., & Sumarsono, R. B. (2020, November). The Role of Instructional Leadership Through Kurt Lewin Model in Improving the Teacher Capability. In 2nd Early Childhood and Primary Childhood Education (ECPE 2020) (pp. 307-317). Atlantis Press.

[22] Prestiadi, D. (2020). Effectiveness of e-learning implementation as a distance learning strategy during coronavirus disease (covid-19) pandemic. Proceeding Umsurabaya.