Putting Knowledge Management into OASIS for Improving Learning Process in School

Mohamad Haitan Rachman [a] and Asha Wadya [b]

[a] *Faculty of Information Technology, Multimedia University, Cyberjaya 631000, Malaysia*
E-mail: haitan.rachman@mmu.edu.my

[b] *Syifa Budi Foundation and Al-Azhar Syifa Budi Jakarta Islamic School, Jakarta 12730, Indonesia*
Tel.:021-71793333, Fax: 021-71791429
E-mail: asha@syifabudi.net

ABSTRACT

The quality of learning process in a traditional classroom is dependent on the activity level of students and teacher that are involved, also on more complex factors, such as different background of students, keeping up-to-date with new knowledge or information, experiences, and tasks. Knowledge management can be applied to handle learning process in a traditional classroom and improve the knowledge communication and sharing processes. This paper proposes a model of knowledge management system (KMS) that is merged into OASIS, to enhance knowledge communication and sharing process in a traditional classroom.

Keywords
Knowledge Management, Learning Process, Information Management

1.0 INTRODUCTION

The quality of learning process in a traditional classroom is dependent on the activity level of students and teacher that are involved, also on more complex factors, such as different background of students, keeping up-to-date with new knowledge or information, experiences, and tasks.

Knowledge management can be applied to handle learning process in a traditional classroom and improve the knowledge communication and sharing processes. Knowledge management (KM) is the collection processes that support the creation, dissemination and utilization of knowledge between individuals and groups. A well-structured knowledge repository can improve the flexible knowledge acquisition, sharing and application.

In this paper, we propose a model of knowledge management system (KMS) that is merged into school administration information system, such as OASIS (Online Administration School Information System), to enhance knowledge communication and sharing process in a traditional classroom.

2.0 LEARNING PROCESS

The educational system can be depicted as the relationship between the student and the teacher (Andoh et al., 2001). The teacher chooses the learning methods that employ book and other traditional learning means and courseware as new learning means. There is direct interaction between the student and the teacher. The student uses books and other traditional learning means in one-way interaction, and courseware as new learning means in two-way interaction. The teacher performs evaluation of interaction between the student and the courseware. In this sense, the teacher and the courseware are *teaching units*, and the student is the *learning unit*.

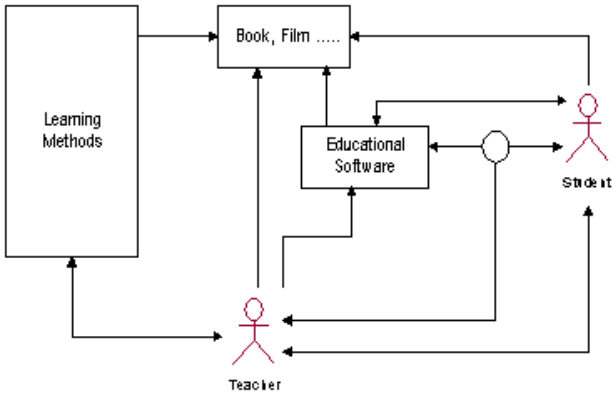

Figure 1: The Educational System

Two commonly used instructional models and principles are objectivist and constructivist (Moallem, 2001). Objectivists believe that knowledge and truth exist outside the mind of the individual and are, therefore, objective. Learners may be told about the world and be expected to replicate its content and structure in their thinking. Constructivists, on the other hand, believe that knowledge and truth are constructed by the learner and do not exist outside of his mind. Therefore, according to constructivists, learners construct their own knowledge by actively participating in the learning process.

Learning is a process of active engagement with experience. It is what people do when they want to make sense of the world. It may involve an increase in skills, knowledge, understanding, values and the capacity to reflect. Effective learning leads to change, development and a desire to learn more (Online). There are four learning styles:

- *Activists* – learning by doing.

- *Reflectors* – learning by watching other people do.
- *Theorists* – understating the theory and having a clear grasp of the concept before doing.
- *Pragmatists* – having some practical tips and techniques from someone with experience before doing.

And Knowledge Management (KM) can be applied to enhance the learning process in traditional classroom. Some schools have computerized their administration. So for implementing KM clearly and convincingly, KM should be merged into that administration system. And this paper proposes how to merge KM into administration system.

3.0 KNOWLEDGE MANAGEMENT

Knowledge is defined as a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It often embeds not only in documents or repositories but also in organizational routines, processes, practices and norms (Davenport and Prusak, 1998). And it has two types of knowledge, explicit knowledge and tacit knowledge. *Explicit knowledge* can be expressed in words and numbers and shared in the form of data, scientific formulae, specifications, manuals and the like. This kind of knowledge can be readily transmitted between individuals formally and systematically. *Tacit knowledge* is highly personal and hard to formalize, making it difficult to communicate or share with others. It is deeply rooted in an individual's actions and experiences (Nonaka and Konno, 2000).

Knowledge management (KM) is a necessary and integral part of an effective and successful support organization. Knowledge management (KM) is the set of human, process and tool interventions to support the *creation*, *assimilation*, *dissemination* and *application* of knowledge (Kotnour et al. 1997). *Knowledge creation* is the improvement of and/or increasing the certainty of a piece of knowledge and occurs during a learning experience. *Knowledge assimilation* is the collection, storage, and refinement of the created knowledge with existing knowledge. *Knowledge dissemination* is the retrieval and distribution of the knowledge to use in another learning experience. *Knowledge application* is the use of past knowledge to help solving the current problem. Knowledge is created in a learning experience, such as problem-solving experience, project or task.

3.1 OASIS

Data administration and management is playing important role in teaching-learning activities. Also it is used to help management board in managing school. Management board uses this data to analyze teaching-learning activities.

OASIS (Online Administration School Information System) is a school administration and management system. It consists of six main modules: academic, personnel, finance, facilities, report, and administration.

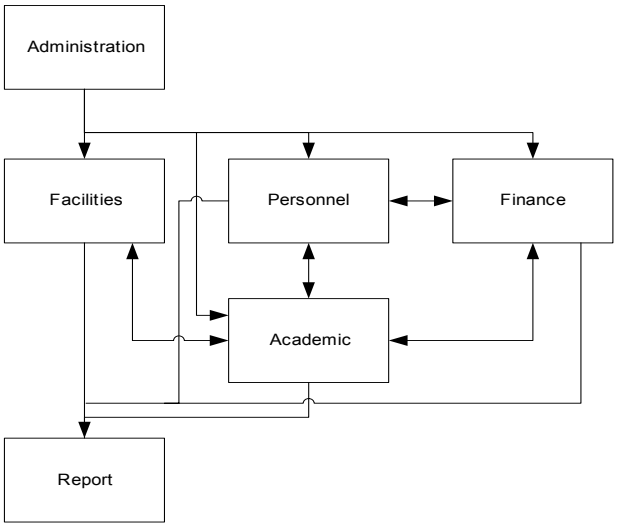

Figure 2: OASIS Architecture

Academic module consists of features related to teaching-learning activities i.e. students data, subject, assignments, grades, schedules, etc. Students' data consist of records of their data as written on registration form. Subjects are information of subjects taken by students in one academic year, consists of outline, objectives, and syllabus. This feature is related with others such as grades-feature that explains studies evaluation for students.

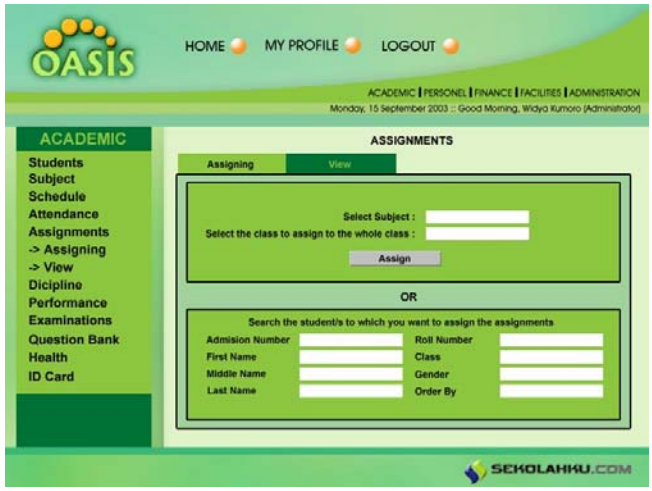

Figure 3: Academic Module

Teachers input students' exam results and combine with attendance, these data are used to complete reports feature which is accessible by parents. Within academic module, teachers also can inform assignments for students online, and it will be viewed on students and parents page so they can control any teaching-learning activities. Here, communication between school and parents is built.

Figure 4: Report Module

Personnel module consists of features related to human resources, i.e. employee data, payroll, appraisal, attendance, etc. It helps management board in evaluating employee performance.

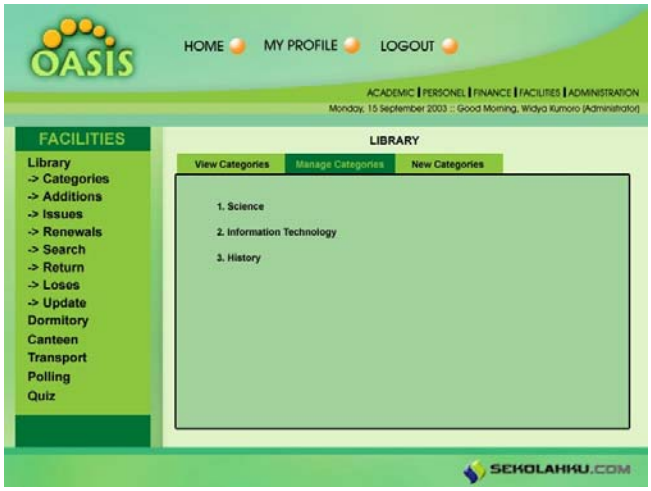

Figure 5: Facilities (Library) Module

Facilities module consists of all facilities at school, i.e. library. It helps librarian in managing books collection, membership, and books traffic. This feature allows user to browse collection available, including books information, books availability, and also summary or references (if any) about its contents.

There are two areas of OASIS used to aid in designing and developing knowledge management system for improving the learning process in traditional classroom. They are subjects / curriculum in academic module and library in facilities module.

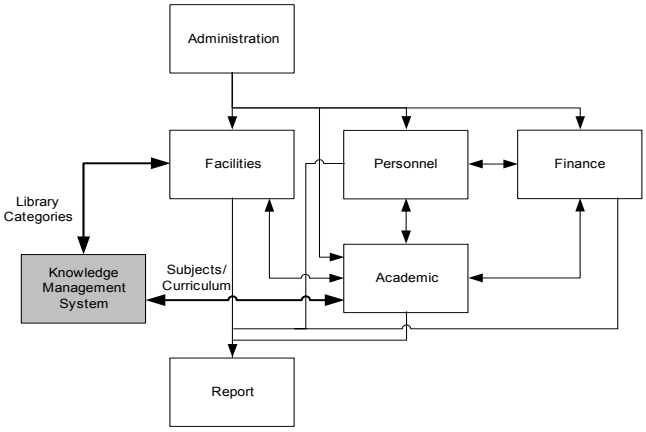

Figure 6: OASIS and KMS

We describe knowledge management merged into AOSIS through subjects in academic module. This approach will enhance students' focus of their subjects.

3.2 Knowledge Management System into OASIS

The model of knowledge management system (KMS) consists of three components: (1) Control, (2) Knowledge Repository, and (3) Communication.

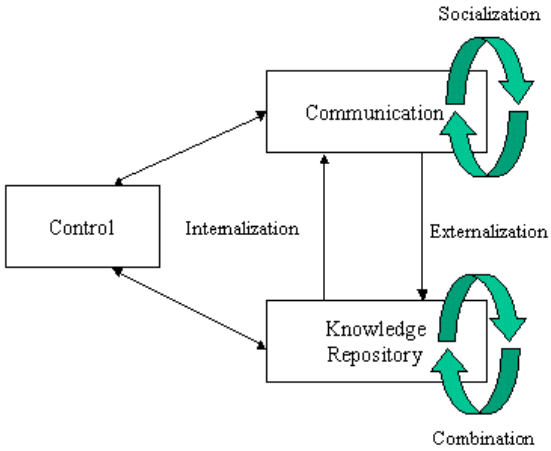

Figure 7: Components of KMS

Communication may be a one-to-one, one-to-many, or a many-to-many interactions. The chat-rooms, consultation, and discussion forums can be used to communicate among teachers and students. *Knowledge repository* contains the structured and documented learning knowledge. It can reside on papers, course material, and links to web sites. *Control* provides students and teacher (knowledge provider or seeker) with the appropriate resources of knowledge. The interactions of these components are used to handle the four knowledge transformation processes in a traditional classroom, *socialization*, *externalization*, *internalization* and *combination*.

Communication component is used to communicate knowledge sharing among students and teacher. They can use the chat-rooms to support internalization and socialization. A teacher can describe the course material as knowledge, and students can ask some topics that are not

understood well. Or a teacher can provide an open discussion forum, and students can involve in that forum directly. A teacher can analyze the feedbacks and questions from students, and he/she can compile and store into knowledge repository. Or a teacher can ask some students to perform compilation and storage activities. This process is one of externalization processes that can be supported by KMS in a traditional classroom. Teacher and students can add the knowledge repository through searching Internet web sites, and they can make a summary paper to be stored into knowledge repository. This is a combination processes.

From model of knowledge management system, we can capture processes and entities, and create a logical data diagram. Figure 8 shows a logical data structure that can be used to represent the model of knowledge management system (KMS).

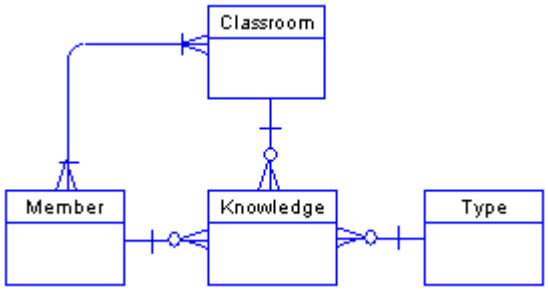

Figure 8: Logical Diagram

The main entities consist of member, knowledge, classroom and type of knowledge. Member entity handles information of student and teacher profile. This entity is used to control the learning process when knowledge management system is applied to support a traditional classroom. Knowledge can consist of some types of knowledge, such course material, Internet web sites, papers, results of discussion forums and consultation. This logical diagram can support more than one classroom. Students and teacher can list the classrooms that they select.

The formal knowledge management system that can be merged into OASIS is named *SWADAYA*. Figure 9 and figure 10 depict interface models of SWADAYA.

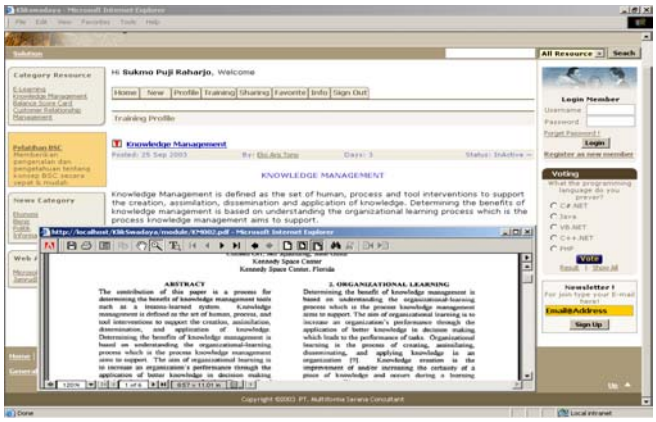

Figure 9: e-Learning Module

Here are the some features of SWADAYA:

- **Knowledge Category Management.** The feature is a facility to arrange knowledge categories according to the curriculum or library.
- **Document Management**. The feature allows teachers and students to file their document into the system as new documents.
- **Collaboration Management**. The feature will provide discussion and consultation forums among teachers and students.
- **E-Learning Management**. The feature provides the administrator and teachers to manage the education modules; and students to learn them according to their subjects.

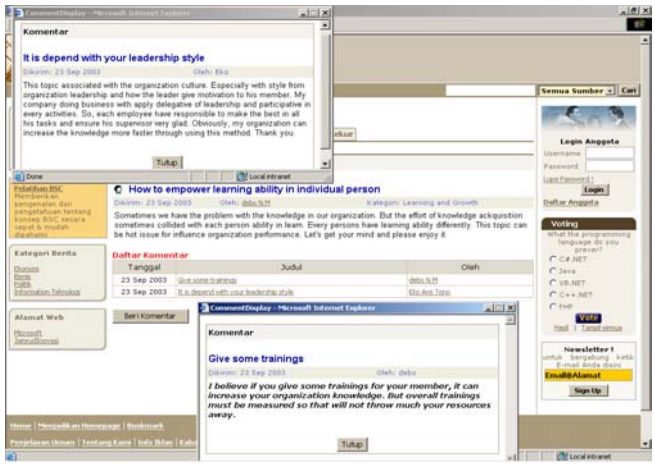

Figure 10: Collaboration Module

4.0. CONCLUSIONS AND FUTURE WORK

Knowledge management has been practiced and reported, but it is barely introduced and practiced in education courses. Knowledge management in a traditional classroom can emphasize involvement of students and teacher in knowledge sharing and communication that enhance the learning process in a traditional classroom. And also they can improve their creativities, because they get the ideas or information that are related to their studies from anywhere using the Internet resources.

We presented how to merge knowledge management system, SWADAYA, into the school administration system, OASIS. Also it can be enhanced with intelligent agents to improve the routine tasks in a traditional classroom, such as keeping up-to-date new knowledge or information.

5.0 REFERENCE

Andoh, C.B., Asirvatham, David and Rachman, M.H. (2001). *Intelligent Agents for e-Education*. Malaysian Science and technology Congress, Penang, Malaysia.

Davenport, Thomas and Prusak, Laurence (1998). *Working Knowledge How Organizations Manage What They Know*. Boston: Harvard Business School Press.

Kotnour, T., Orr, C., Spaulding, J. and Guidi, J. (1997). *Determining the Benefit of Knowledge Management Activities*. International Conference on Systems, Man, Cybernetics. 94-99. Orlando, Florida.

Moallem, Mahnaz (2001). *Applying Constructivist and Objectivist Learning Theories in the Design of A Web-Based Course: Implications for Practice*. *Educational Technology & Society*. 4(3): 113 – 125.

Nonaka, Ikujiro and Konno, Noboru (2000). *The Concept of 'Ba': Building a Foundation for Knowledge Creation*. *California management Review*. 40(3).

Online. http://www.campaign-for-learning.org.uk/aboutlearning/aboutlearning.htm