

THE USE OF THE BLACKBOARD ALONG WITH INTRANETS AS A KNOWLEDGE MANAGEMENT SYSTEM: CASE STUDY THE COLLEGE OF BUSINESS ADMINISTRATION, PRINCE SATTAM BIN ABDULAZIZ UNIVERSITY

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ABSTRACT

This study tries to show how higher education institutes can use the Blackboard and Intranets as a knowledge management system for knowledge discovery, capturing, sharing and application. It evaluate such objectives in three perspectives: educator-student perspective and educator-educator perspective, student-student perspective.
Keywords: Knowledge Management Systems, Intranet, Blackboard, Web2. Applications, Higher Education

INTRODUCTION

The use of the existing e-learning systems and tools in education is not enough for achieving a quality education. Even with the use of very good learning management systems like Moodle and Blackboard and the use of very sophisticated e-learning tools like web publishing tools such as blogs and WordPress , conferencing tools like videos, video conferencing, and communication tools like e-mail and instant messaging, we still need an information system that provides the educator and the management with a system that provides tools for creating and sharing knowledge as well as a multidimensional analytic capabilities that is needed to do all sorts of ad hoc analysis and decision making regarding student, educator and management performance (B. K Baradwaj, S. Pal, 2011, Sangeeta Namdev Dhamdhere. 2015, I. Becerra-Fernandez and R. Sabherwal. 2015, J. Blackwell and P. Gamble. 2002).

As higher education becomes a multi-purpose enterprise, there is a growing need for knowledge management systems to be implemented in higher education institutes. These systems should augment the e-learning tools in providing a knowledge management system (KMS); an information system that combines groupware, tools, intranets, extranets and internet to support communications within the institute supporting the sharing of documents and knowledge to the different teams and individuals within the institute (Walid Qassim Qwaider. (2011). ,J. Blackwell and P. Gamble. 2002),I. Becerra-Fernandez and R. Sabherwal. 2015). Such a system could lead to knowledge discovery, creation and sharing. This knowledge management system should also have learning analytical capabilities to assist the educator and management in taking the right decisions (L. Ali and al. 2013).

THE ROLE OF KM IN HIGHER EDUCATION

Academic environment is a treasure of knowledge and KM in higher education are the strategic management activities that support educators in using the institute's knowledge resource to effectively teach and research. These knowledge management practices can help capture, discover, share and apply knowledge in schools through the use of information and communication technologies. Therefore KM makes available for use satisfactory communication channels for educators to debate about important school topics and problems whithin the academic body, the students and the administration. The feedback from such a debate could be used to develop further strategies and plans to ameliorate school policy and improve teaching effectiveness. (I. BecerraFernandez and R. Sabherwal. 2015). These are some of the goals of a knowledge management in higher education(I. Becerra-Fernandez and R. Sabherwal. 2015):

- KM is a knowledge platform that provides educators with a discussion forum where they can debate ideas concerning their teaching and research work and a place to post their course materials and tools for students to learn.
- KM allows experienced educators to transfer their knowledge to new educators and foster a knowledge sharing culture in the university.
- KM allows teachers and management to use data mining techniques to discover knowledge about student performance, strengths and weaknesses as well as career guidance.

One of the problems with such management information systems is its high cost. Not all higher education institutes are capable of purchasing such a system. One option is to for these institutes to develop systems that

provide some of the knowledge management system capabilities. The objective of this studies is to give a brief introduction to how such development can take place in a university environment and among educators. But before we embark, let us briefly define what knowledge is and what knowledge management systems are.

WHAT IS KNOWLEDGE AND WHAT IS KNOWLEDGE MANAGEMENT?

Knowledge is the information, skills, and understanding that one have gained through learning, observation or experience. Knowledge is a form of capital which gives organizations a competing advantage as knowledge is power affecting the performance and perhaps the survival of any organization. Knowledge management is described as the tools, techniques, and strategies to retain, analyze, organize, and share this knowledge (Jehad Al-Sadi. 2012). Knowledge management associates three fundamental resources of any organization namely people, processes and technologies. The knowledge management processes includes but is not limited to knowledge discovery, knowledge capturing, knowledge sharing, and knowledge application (I. Becerra-Fernandez and R. Sabherwal. 2015) . The tools used in knowledge management include those for sharing messages and files, e.g. email, web publishing, wiki technology, file sharing, etc., conferencing tools: e.g. video/audio conferencing, chat, forums, etc., and systems like data warehousing, data mining, text mining, and web mining as well as online analytical processing systems (OLAP) etc....

In this paper, we will focus on how higher education institutes with no or limited access to knowledge management systems could use the blackboard as well as Web technologies for achieving knowledge discovery, knowledge sharing, and knowledge capturing and knowledge application. For example in the university where I am teaching there is no knowledge management system and not even a learning collaborative system. There is only a Virtual Learning Environment (the blackboard) that is available for both faculty members and students to manage the course tools and provide collaborations between students and educators. There are also educator's intranets for internal collaboration between the educators and a university web site that provides information about the services offered by the university and access to regulations, forms, and files that the user can use online or download to his computer. The question is how can we augment this Virtual Learning Environment with Web based tools , applications, and mashups to be able to achieve knowledge discovery, sharing, capturing and application; in other words how can we develop a custom knowledge management system with little or no cost to the University?

ORGANIZATION OF THE PAPER

The rest of the paper is organized as follows. Section 3 reviews and discusses some existing research work related to knowledge management in higher education. Section 4 describes the knowledge management process and how it relates to students, educators, and management. Section 5 describes a case study of using the blackboard and the Intranets as a knowledge management system at the College of Business Administration, at Al-Kharj (CBAK), Saudi Arabia. Section 6 describes the use of the blackboard in CBAK as part of the Knowledge Management System. Finally section 7 describes the use of the Intranets as a second part of the Knowledge Management System. Section 8 concludes the paper and presents future directions.

RELATED WORK

Knowledge management and knowledge management systems in higher education have been widely studied in the literature (B. K Baradwaj, S. Pal, 2011, Sangeeta Namdev Dhamdhare. 2015, I. Becerra-Fernandez and R. Sabherwal. 2015, J. Blackwell and P. Gamble. 2002). In (B. K Baradwaj, S. Pal. 2011), The author offer a data mining model for higher education system in the University. This model uses decision trees classification algorithm to evaluate student's performance. The model extracts knowledge to predict students' performance in final examination and help in identifying at an earlier stage the students in need of a special attention before the drop out of the school. This finding allows the educator to suggest the right advising/counseling.

This paper in (Farzana Shafique. 2015) proposes to customize the Library Knowledge Management Center (LKMC) proposed by Parker Nitse and Flowers. The purpose is to adapt this center to the needs of the needs of the universities in Saudi Arabia. It then discusses different components of the LKMC model and describe the importance of this model to the Saudi education sector.

In (Raman, Murali;Ryan, Terry;Olfman. 2005), the authors examine the use of a wiki to facilitate knowledge management in an academic setting. The authors describe how they used wiki in a knowledge management class to support collaborative activities. The findings suggest that wiki can support knowledge sharing and creation in an academic environment.

The paper in (Walid Qassim Qwaider. 2011) discusses how to integrate e-Learning systems an Knowledge Management Systems technology to improve the capture, organization and delivery of training courses and

corporate knowledge. The author proposes a model for the phases of knowledge management that includes concepts and technology from e-Learning. He then uses the model to illustrate real world scenarios that add increasing amounts of knowledge management to an e-Learning environment.

KNOWLEDGE MANAGEMENT PROCESSES

We start by defining knowledge discovering, capturing, sharing, and application in higher education and how vital it is to the success of the teaching process. We will evaluate such objectives in only three perspectives: educator-student perspective, educator-educator perspective and student-student perspective. We will not touch the remaining three perspectives namely the student-administration perspective, the administration-administration perspective and the educator-administration perspective. The knowledge management processes that is of interest to this study are knowledge discovery, knowledge capturing, knowledge sharing, and knowledge application. In the next section, we will explain each one of these processes and how it relates to the educator-student perspective, educator-educator perspective and student-student perspective.

KNOWLEDGE DISCOVERY

In knowledge discover, one develops new tacit or explicit knowledge from data or information. This new knowledge could also be the result of synthesizing (combining) prior knowledge. The knowledge discovery component of the knowledge management system will explore the opportunities for knowledge discovery in educational data. It will use the data collected from the VLE, E-mail and any other e-learning and e-assessment systems to predict future student performance and learn the underlying structure of student knowledge from these datasets. It will also explore the nature of educational data and what factors are important in determining student knowledge. Examples of educator-student interaction that can lead to knowledge discovery are:

- Educators should supervise student to detect student behaviors that can lead to student dropping or failing the course.
- Educators perform data mining in student test scores in order to identify students' strengths and weaknesses. He then uses for this knowledge to effectively design his instruction tools. Examples of educator-educator interaction that can lead to knowledge discovery are:
- Educators meeting for time to time (e.g. in department and College Board meetings) to assess the overall performance of the students and the amendments that might need to be made to the courses and curriculum.
- Educators assessing the values of the key performance indicators in different subjects and different programs.
- Educators working collectively in research with the opportunity to learn from each other and to help each other.

Examples of student-student interaction that can lead to knowledge discovery are:

- Students participating in discussion boards by posting their views in the discussion forms.
- Students viewing other students answers to essay questions
- Students participating in Wikis and blogs related to the courses they are enrolled in.

KNOWLEDGE CAPTURING

Knowledge capture is the process of converting tacit knowledge which resides in the brains of people, artifacts or organizational entities to explicit knowledge so that it can be documented, verbalized and shared. Knowledge captured might be within entities external to the organization including consultants, competitors, students, suppliers, and prior employers of the organization (I. Becerra-Fernandez and R. Sabherwal. 2015). Examples of educator-student interaction that can lead to knowledge capturing are:

- Students attending the educator lectures
- Students visiting the educator during office hours and acquiring about the matters he/she does not understand in the lecture.
- Student surfing the educator web site...
- Educator reading the student research work and attending the student's project presentations.

Examples of educator-educator interaction that can lead to knowledge capturing are:

- Educators working in research groups.
- Educators teaching multiple sections of the same course getting them insight into different assessment methods.
- Educators evaluating each other and providing each other with feedback on the shortcomings of their teaching methods and how to remedy those shortcomings.
- Educators collaborating on assessing the students as well as in the marking of the exams to gain insight into different assessment and marking strategies.

Examples of student-student interaction that can lead to knowledge capture are:

- Students posting their work to a discussion board so other students can see it.
- Students reading other students essays.
- Students writing field trip reports and attaching them as uploaded files in their blogs.
- Students writing their personal manuals on how to use a software and making them available to others.

KNOWLEDGE SHARING

Knowledge sharing is the process through which tacit or explicit knowledge is exchanged among individuals.

Examples of educator-student interaction that can lead to knowledge sharing are:

- While supervising students, the educator could learn from student's work leading to a sharing of knowledge between them.
- Students interacting with the lecture tools including lecture notes, assessments, training, wikis, discussion forums...etc. that leads to student learning.
- Educators and students forming communities of practice on lesson study for sharing pedagogical knowledge.

Examples of educator-educator interaction that can lead to knowledge sharing are:

- Educators attending department and College Board meetings
- strengthening the new teacher's knowledge through knowledge exchange in teaching and administrative work.
- Educators having common research work.
- Educators should collectively make student exams.

Examples of the student-student interaction that can lead to knowledge sharing are:

- Students posting their work to a discussion board so other students can see it.
- Students publishing their thesis and PHD reports on the college intranets.
- Students discussing and collaborating with other students via blogs and wikis.

KNOWLEDGE APPLICATION

Knowledge application is the process of using the knowledge that others have without the need to acquire or gain that knowledge. Knowledge application is usually divided into routines involving the utilization of knowledge embedded in procedures, processes, rules, and norms and directions which is the process through which individuals that have the knowledge direct the actions of other individuals without transferring to them the knowledge involved in the direction (I. Becerra-Fernandez and R. Sabherwal. 2015). Example of educator-student interaction that can lead to knowledge application:

- Educators instructing students to use a particular software to find a solution to his linear programming problem without having to explain how linear programming is actually done.
- Educators instructing his master students to publish in a particular area.
- Educators providing students with best practices on getting your paper accepted in different journals.
- Educators learning through the use of the VLE.

Examples of educator-educator interaction that can lead to knowledge application are:

- Educators attending department and College Board meetings
- Educators teaching different sections of the same course
- Educators should have common research work.
- Educators should evaluate each other.
- Educators should collaborate in assessing students.
- Educators should collectively make student exams.

Examples of the student-student interaction that can lead to knowledge Application are:

- Senior students directing freshman and juniors by posting to them the use good study habits and best practices with different course and different teachers.
- Students providing other students with proper habits used in research paper writing and best practices on getting your paper accepted in different journals.

CASE STUDY AT CBAK

The College of Business Administration at Al-Kharj (CBAK), Saudi Arabia is part of Prince Sattam Bin Abdulaziz University. It has six departments with educators from different disciplines. It has educators who are

specialized in Finance, Accounting, Marketing, Administration, Human Resources, Information Technology, Computer Science, and Management Information Systems.

The tools that we use here at CBAK is the blackboard, Intranets and the Internet (Fig. 1). Blackboard which is a Virtual Learning Environment that offers some tools that are known to be used as part of a knowledge management system like wikis, blogs, discussion boards, e-mail, SMS, Journal, etc.. (Raman, Murali; Ryan, Terry; Olfman. 2005, I. Becerra-Fernandez and R. Sabherwal. 2015) as well as tools for outcomes rubrics, course analytics, assessment, communication and collaboration through real-time web conferencing and multimedia recording.

The Intranet provides an excellent way for educators to share their knowledge by providing a common knowledge database that helps improve the value of an educator expert's knowledge. It integrates this expert's knowledge with the knowledge of his colleagues. This is very valuable in multi-disciplinary environments where there is a variety of expertise and knowledge. The intranet is capable of providing the four important aspects of information: reach, depth, richness, and aggregation (I. Becerra-Fernandez and R. Sabherwal. 2015). If each department in a college has its own intranet, it would be much easier to achieve the four KM processes provided by the four KM systems namely sharing, capturing, discovery and application of knowledge.

Fig. 1. A knowledge Management System consisting of the blackboard and the college intranets.

THE BLACKBOARD AS PART OF THE KMS

Blackboard is a Virtual Learning Environment (VLE) that allows online access to learning materials and activities. Some of the services that black board offers that relate to knowledge management are:

- Publishing the material related to a course.
- Communication between educators and students.
- Collaborating between students and educators using wikis, blogs, and discussion forums.
- Course work submission.
- Online assessments and training of students.

The benefit of the black board are as follows:

- Allows easy, anytime anywhere access to course tools including handouts, web links, assessment, training material, reading material etc..
- Allows an easy way to announce course information and deadlines to the members of a course.
- Allows the educator to monitoring and tracking student's access and progress.

We will now discuss the knowledge management tools offered by blackboard and how it can be used for knowledge capturing, sharing, discovery, and application.

THE DISCUSSION BOARD

The Discussion Board in blackboard is a place where instructors and students can have asynchronous conversations around a particular subject. The participants of a discussion board can post comments and reply to other posts. Educators could use discussion boards for content generation and student collaboration. Student can help each other through discussion boards allowing for knowledge discovery and knowledge sharing. The educator can monitor the participation of course members in a discussion and grade them for that if he wishes.

PODCASTS

Allow student to interact through text, images, videos and file attachment.

BLOGS

Students can use the blackboard to create and manage blogs. Blogs are a collection of posts that contain short, informal information with the freshest information at the top. Student especially those who are shy could use blogs to express themselves and share the knowledge material they collect. Blogs allow educators to gain insights into the activities that the student are engaged in.

WIKIS

Wikis are websites that allow students to collaborate by collectively modifying its content and structure. All students can view the content of a wiki, add to it and modify it. Usually the wiki is created by the instructor and any course member can add pages. Sometimes however, the instructor could decide to use the wiki as course material and restrict students to reading the wiki.

JOURNALS

Journals allow students to privately communicate with the instructor their concerns about the course. It allows them to post their personal opinions and ideas and analyze course-related material.

INTRANETS AS A PART OF THE KMS

The Intranets we are developed by the faculty members. Access to these private intranets is extended to authorized students, collaborating colleges and to other branches of the university to improve coordination of the teaching process. The intranets support such activities as the sharing of documents and knowledge to specific teams and individuals within the college. The objective is to encourage multidisciplinary interaction within both the faculty and student bodies. With such a system, the student will have access to material of different courses within his major that he is not enrolled in. In each course he studies, he is not limited to the course material but can access the material and tools of any other course in the college. This is important because in many instances, there is an overlap between the courses. Some tools the student needs to use in one course are well explained in another course. For example, when teaching an introductory management information system course, one of the covered subjects is databases. The student can be referred to the database course to know more about databases and database management systems. In this same course, the student is exposed to management as an integral part of an organization management information system. He could be referred to an introductory management course to know more about management principals. Another example is when you teach an e-commerce course, the student will need to refer to a basic web design course. This situation becomes an urgent one in final year projects or in thesis work when the student needs to use knowledge and techniques from other courses and sometimes from different disciplines to solve his problems.

Also the intranets will allow students to create an on-in-one learning and testing environment similar to Pearson Labs. This site provides students with a variety of resources, including:

- Audio and video material to view or listen to, whatever your learning style. This material is provided as a Peer to Peer networking by distributing files across machines and gathering and assembling pieces of them from many machines.
- Self-assessment tests that create a personalized study plan to guide the student on making the most efficient use of study time.
- A training environment where students can assess their knowledge of a subject or a tool.
- A collaborative environment where faculty members can share research ideas and methodologies.
- An environment where faculty members can develop online analytical processing tools to discover knowledge from the blackboard data.

TECHNOLOGY USED TO DEVELOP THE INTRANETS

To develop the intranets, we essentially use the following web2 technology tools:

- Apache web server: to publish the web site. This is an open source web server that you can download from the Internet.
- HTML: to develop the web pages and to use the many new features of HTML5 such as the canvas, web workers, and animation
- MySQL: to manage the database.
- PHP: to access the database from the server and process the data.
- Ajax: to allow client and server to exchange small pieces of data without requiring the page to be reloaded.

CONCLUSION

In this short study, we explained why KMS are important in higher education and tried to show using as case study the College of Business Administration at Al-Kharj, Saudi Arabia how the Blackboard and the college intranets could be used a knowledge management system to improve faculty and student performance. In the future, we will try to incorporate more tools to this KMS such as virtual environments where students can simulate concepts they learn such as business processes and routines and different system integration within an organization. The hope is to take advantage of the diversity of the faculty members and the multi-disciplinary nature of the college to improve the KMS.

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