Leveraging E-learning System for Effective Teaching of Knowledge Management

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Abstract

Knowledge management education is quickly gaining momentum worldwide. Due to the fuzzy and inter-disciplinary nature of the discipline, academic institutions are adopting different approaches for educating knowledge professionals. Because of the variations in the subject scope and coverage, there is a need for using innovative and creative learning strategies for teaching KM courses. This paper reviews the approaches adopted by the Division of Information Studies, Nanyang Technological University, Singapore, for teaching various modules in its Master’s in Knowledge Management programme. Classes, which are delivered through face-to-face classroom lectures provide instant feedback and an opportunity to the students to socialize, is complemented with e-learning tools to provide the flexibility in content creation and delivery and collaboration between lecturer and students. The fusion of these two approaches combines their strengths, thus making learning an interesting, meaningful and engaging experience. NTU e-learning system, edveNTUre, which is powered by Black Board system, provides an array of powerful features that have tremendously improved the level of communication, collaboration and interaction between students and lecturers. The paper explains the ways these e-learning tools are used for educating students in the knowledge management programme. The paper also highlights that socialization and collaborative learning strategies has encouraged emergence of knowledge communities among KM graduates.

1. Introduction

Knowledge management (KM) is a systematic process of leveraging the intellectual capital and knowledge assets for organizational success. It helps build the capacity of the organization to develop, organize, retain and utilize human and knowledge resources which contribute directly to its survival and profitability. Some KM practices, such as
knowledge organization, knowledge sharing, communities of practice, and organizational memory, help minimize knowledge losses and transform an organization into a ‘learning organization’. In the current business environment that is very dynamic, volatile and complex, proper knowledge management initiatives can provide an organization with the edge over its competitors.

The emergence of the knowledge-based economy and the popularity of e-business initiatives have further highlighted the need for effective exploitation of knowledge and making knowledge management an essential area of activity in organizations. To ensure the success of knowledge management initiatives, among other things, it is necessary that skills and competencies for knowledge management work should be properly defined and appropriate strategies are deployed for the education and training of knowledge professionals (Chaudhry, 2005). The term knowledge management is defined in many ways; however, it is certain that it traverses various disciplines such as philosophy, psychology, sociology, information & computer science, and many others (Ruth, Theobald & Frizzell, 1999). As a result, KM programmes are hosted by schools in different domains such as schools of business, information systems, computer science, library and information science (LIS), organizational behavior (OB), and information and communication technology (ICT), with considerable variation in the subject scope and treatment.

2. Innovative Teaching and Learning Approaches

The inter-disciplinary nature of the knowledge management discipline desires collaboration in teaching through partnerships and alliances among different schools. In recent years, a large body of literature has emerged discussing the innovative pedagogical approaches to effective teaching and learning. The tremendous developments in information and communication technologies (ICT), exponential growth in digital content, and the popularity and easy accessibility of the Internet and wireless technologies, have revolutionized the whole spectrum of learning approaches. Kumar (2004) argues that online teaching and learning would become more effective through incorporating multimodality in content delivery which involves presentation of information in different modes of representation (eg. visual, textual, audio). Multimodal presentations are known to stimulate and utilize the whole human brain (Thomas, Kellogg & Erickson, 2001), allowing more opportunities for erudition, creativity and the generation of ideas.

With the popularity and acceptance of e-learning, there is a gradual change from lecturer-centered to student-centered learning approaches (Stansfield, McLellan & Connolly, 2004). With the lecturer’s role becoming that of a facilitator in the learning process, students actively participate and contribute to their own learning (Lee & Tan, 2004). As a result, students view things differently, more critically and creatively (Pan, 1999). DeRienzo (2000) claims that in online learning, interaction is the key factor and that passive lecturing is deadly. She argues that the role of the lecturer is transforming from a broadcaster of knowledge to that of a mentor.
The characteristics and attributes of online learning make it an ideal learning mode that can either complement or replace traditional learning modes in meeting challenges posed by the digital age. An important issue that surrounds online learning is that of technological infrastructure, knowledge and expertise. However, online learning requires students to have proper technological infrastructure and access to the Internet, which may incur substantial initial financial costs. On top of that, students are expected to have a certain set of technological knowledge and skills, that not all of them are necessarily equipped with (Dzakiria, 2005). Therefore, a balanced approach, using various learning methods and tools is more appropriate in the current circumstances. This paper reviews the approach used for teaching KM by the Division of Information Studies of the School of Communication and Information, Nanyang Technological University, Singapore. It also examines the innovative use of various features of an e-learning system deployed by the University. The paper concludes that socialization facilitated by collaborative teaching and group discussions on the e-learning system encouraged KM graduate to form knowledge communities for sharing knowledge.

3. Nanyang Technological University (NTU)

Nanyang Technological University is considered a prestigious and leading academic institution in Asia, known for providing high quality education through extensively using information technology and adopting innovative pedagogical approaches. In a recent ranking by the Times Higher Education Supplement of the 200 best universities in the world, NTU was ranked at the 50th place globally and 7th in Asia. The university has a strong engineering school ranked among the best in the Commonwealth, a prestigious business school, an internationally acclaimed National Institute of Education, and one of the best Schools of Communication and Information in Asia. Recently several new schools such as the School of Biological Sciences, the School of Humanities and Social Sciences, the School of Physical and Mathematical Sciences and the School of Art, Design and Media, have been established.

Nanyang Technological University is widely using the information technology for instruction and delivering course contents. All lecture theaters are equipped with the state-of-the-art technology such as latest computers, projectors, VCR/ DVD players, wireless communication hubs and other gadgets. The campus is equipped with the broadband high-speed telecommunication capabilities and all classroom computers are linked with the campus network as well as the Internet. Although NTU is considering offering selected academic modules online, it currently prefers and adopts a multimodal approach for teaching and learning. As the physical size of Singapore is very small, students are expected to attend most of their classes via a face-to-face format. However, digital contents are heavily used in all courses and the NTU electronic learning system plays a central role in instant communication between the instructor and students, student-to-student and other concerned parties.
3.1. The edveNTUre System

In a short span of 4-5 years, NTU has witnessed quantum growth in the adoption of e-learning and over 90% of the courses are heavily using it (Lee & Tan, 2004). The edveNTUre is the university learning management system which was established in 2000 to encourage students to explore new frontiers for acquiring knowledge. The edveNTUre (the letter ‘e’ stands for electronic; ‘ed’ for education, with the name of the university ‘NTU’ embedded in it) is powered by the Blackboard e-education system. The Blackboard system was preferred as it was used by over 3,300 institutions worldwide. It was also expected that a large user-base would ensure the system to continue evolving, and provide new tools and enhanced features. Several enhancements helped customized the e-learning system into edveNTUre to meet peculiar needs of NTU teaching community.

The use of edveNTUre system has resulted in a paradigm shift in teaching and learning at NTU which was difficult to be achieved in traditional classroom settings. The KM program provides online access to resources through innovative means of content creation and knowledge discovery. The e-learning platform has allowed dynamic content to be delivered digitally through the University wired and wireless networks to all students anytime, anywhere on a variety of devices (Lee & Tan, 2004). It complements the traditional lectures through several e-learning tools including discussion forums for collaborative knowledge sharing, personalized learning, dynamic content delivery and other automated teaching tools. Another advantage is that students can learn at their own pace and if they miss a session, still they can access the lecture slides and other related materials.

4. Knowledge Management Education at NTU

Appreciating the importance of knowledge management in the new economy, the Division of Information Studies introduced a specialization in Knowledge Management in 2000, as part of its Master of Science in Information Studies programme. However, it become apparent quickly that students need more comprehensive and in-depth knowledge to effectively undertake their responsibilities as knowledge professionals. In 2002, in collaboration with the Civil Service College of the Prime Minister’s Office of Singapore, a Master of Science degree in Knowledge Management was launched. The KM program provides a balanced coverage of management, technology and information related topics, considered essential for preparing well-rounded knowledge professionals. NTU was among the pioneer to offer this degree in the Asia Pacific region.

In order to provide core competencies to all students and at the same time offer adequate flexibility for acquiring specialized skills according to their interests and work situations, a three-tier programme was designed. As students in this programme come from diversified disciplines and backgrounds, three core courses, namely, Foundation of Knowledge Management; Knowledge Management Tools; and the Professional Seminar, was introduced to expose them to basic concepts, issues and the complexities of knowledge management profession. At the second-tier level, courses known as Electives ‘A’ courses were structured to allow students choose two out of four courses to focus in
the areas of human capital, knowledge tools and knowledge resources. These second tier courses provide basic competencies and prepare students for more advanced courses in the intended areas of specialization. At the third-tier level, courses known as Electives ‘B’ courses provide the opportunity for students to students their chosen areas of interest. Moreover, students can either opt for the coursework only option where they take 11 courses (3 core, 2 Elective ‘A’ and 6 Elective ‘B’ courses) or a combination of coursework and dissertation (3 core, 2 Elective ‘A’, 4 Elective ‘B’ courses and a short dissertation). Currently, the programme is offered on a part-time basis and classes are held in the evening.

5. Multimodal Approach to Teaching KM

A multimodal approach, comprising face-to-face instruction and the use of e-learning tools for content delivery and collaboration, has been adopted for teaching the KM courses. The objective is to fully benefit from the strengths of these methods. Therefore, an augmented learning model where lecturers are not replaced but rather supported by e-learning features has been adopted. In the traditional classroom, the synchronous or face-to-face social interaction with and immediate feedback to learning queries by the teacher, facilitate student learning (McInerney & Roberts, 2004) and help to allay doubts that may arise in the course of learning. Chrisudason (1999) argues that in an e-learning environment it is often difficult to adequately guide, direct and stimulate discussion and learning. It lacks spontaneity of live lecturers that is instrumental in student’s motivation, involvement and development. Harasim et al. (1996) also noted that social communications is an essential component of educational activity. According to Galusha (1997), one of the main barriers to online distance education is the feeling of alienation and isolation. Endorsing this viewpoint, Jones (2005) stressed that developing a sense of community among students is one of the critical factors in the success of online learning. The feeling of isolation and alienation may lead students to lose their focus in learning and eventually drop out of online programme (Quinsee & Hurst, 2005).

Where face-to-face instruction has its own advantages, online learning and collaboration tools can bring students and lecturers together to discuss ideas and share opinions throughout the whole course duration on a 24/7 basis, thus making learning process more interesting, effective and unique. It is obvious that using a combination of approaches such as class lectures and online learning tools can supplement each other’s strengths and at the same time help overcome their weaknesses. As described in the next section, the combined approaches facilitated enhanced knowledge sharing through socialization and collaboration.

5.1. Face-to-Face Instruction Facilitated Socialization

Considering the nature of the KM programme, which itself advocates the effective use of human capital in organizations, the face-to-face interaction with students was helpful for richness and effectiveness. It provides an avenue for students to socialize as well as share their ideas and experiences, followed by active participation in online group discussions. Moreover, the classroom learning is considered more feasible in the Singapore situation
where students live in close geographical proximity. As all classes are held in the evening, even working students can easily visit the campus for attending classes.

In addition to IT-supported lectures, ample emphasis is given to other interactive learning activities such as small group discussions, students’ presentations, case study analyses, group projects, hands-on sessions, etc. The physical presence of students allows them to network and develop various interest groups. Our experience shows that longer tea-breaks of half an hour have immensely contributed in informal interaction among the students and developing alliances. Many students have used this opportunity to launch joint ventures or seek business from their fellow students, working in other public and business organizations. We experienced that this approach was helpful in providing an opportunity of enhanced peer learning.

5.2. Online System Facilitated Collaborative Learning

Besides taking full advantage of classroom learning, all KM courses extensively use information technology, particularly the edveNTUre e-learning system, for delivering course content and as a collaboration tool. At the time of programme enrollment, students are given an ID and password which can be used for multiple purposes: for using various library services including online databases and e-journals, accessing computer labs and other facilities; logging-in to the edveNTUre system from the computer labs as well as from remote locations.

At the start of each semester, a separate folder is created for course offered. The course coordinator populates various areas in the folder. Relevant student information is automatically extracted from the student information system. On logging in the system, the edveNTUre shows the first screen with all the courses available to a staff or student, various announcements, and other options. Different areas in the course folder are described below.

a. Course Information: It provides some basic information to the students about the course such as the course description, course goals, course requirements, student assessment scheme and weightage, recommended readings, etc. (Figure 1). In addition, it also provides detailed lecture and tutorial schedule.
b. **Staff Information:** This section provides contact information about the course coordinator, and all lecturers and tutors. It often includes information about the names, email addresses, office telephone numbers and office locations of all the staff involved in teaching the course.

c. **Assignments:** In this section, information about topics of assignments, recommended format and style for written assignments, assessment criteria, due dates, etc. are provided for the students (Figure 2). Almost all KM courses require students to write assignments, prepare term reports and make presentations.

**Figure 1: Course related information**

**Figure 2: Description of student assignments**
Often students are expected to submit a hardcopy of their written assignments as well as upload a softcopy through the ‘digital dropbox’. Many course instructors also put the softcopies of student assignments in this area for consultation by other students (Figure 3).

d. **Course Documents:** This is the most heavily used area of the course folder. The edveNTure system allows instructors to create online course contents and to make them more interesting and engaging for the students. Most lecturers use PowerPoint slides with appropriate animations for their lectures. They are expected to put online their lecture slides and other materials at least 2-3 days before the actual lecture day (figure 4). It facilitates the students to go through these materials before coming for the class. Often students bring a print-out of these slides in the class for taking additional notes. As a result, students do not need to waste their class time in copying the slide text. Rather, they can focus on the lecture contents and participate in class discussions. In addition, often instructors use this area to either make available softcopies of additional readings or provide links to other electronic resources. The tracking feature of the system provides information about the use statistics of various course objects.
This area can also be used for video streaming. A good example is the core course on ‘Professional Seminar’, where leading experts from the information and knowledge industry are invited to deliver talks on the important professional issues. These talks are video-taped, digitized and made accessible to the students for further consultation.

In certain other courses, during the tutorial sessions, various topics are given to the students for the small group discussions. Each group picks, on a rotation basis, its leader to moderate the group discussion. Thereafter, all groups assemble and their leaders make brief presentations to whole class, followed by a question/answer session. These group leaders are also expected to prepare a summary of the points raised during the class discussion and make them available online to all students.

e. Collaboration Tools: Several collaboration tools are available for easy and instant communication between the instructor and students as well as among the students. Email addresses of the students registered for a particular course are available in the course folder for sending mass emails to all students, to a group of selected students, or to individual students. Another very powerful and heavily used feature of the edveNTUre is the discussion board. Here, the instructor creates separate ‘forums’ for each discussion topic and students express their opinions on that topic. Students can read opinions of other students or add a new thread of discussion. Even shy students, who often do not actively participate in class discussions, feel comfortable expressing their opinions in these online forums where they can elect to remain anonymous. Threaded discussions can be reviewed and archived for future reference – an accumulation and documentation of real life scenarios, lessons learnt, lessons shared, and best practices of doing things. Often instructors become facilitators in such interactions so that students would not go astray in their discussions.
Staff and students can also join various online interest groups created by different societies and professional associations, and participate in their discussions and other interactive activities.

We experienced that quality of discussions improved with enhanced use of Group Discussion facility of the system. It also encouraged students to share knowledge beyond classroom. In addition to online discussions, students started small groups that eventually turned into small knowledge communities. Three examples deserve special mention here. One group of students worked collectively and prepared a guide for implementation of knowledge management in different types of organizations. This guide is now available on the website of the Information and Knowledge Management Society. This group remained active in knowledge sharing after they graduated. This small knowledge community undertook a case study of knowledge management in the national insurance company called NTUC Incomeshield. They are now planning to conduct another KM case study at the National Library Board of Singapore. They also set up a small alumni group of NTU KM graduates. The students have also expressed interest to have access to group discussion archives after the expiry of particular semester.

f. Safe Assignments: It is a recently introduced but very valuable anti-plagiarism tool. Earlier, many lecturers have been experiencing and complaining about the widespread problem of student plagiarism. In most situations they were unable to effectively control this problem due to the lack of time and difficulties in identifying the source documents. With the installation of this tool, it is much easier, faster and less time consuming to get a complete report about the level of copying/matching, sources used, and the copied text (figure 5).

![Figure 5: Summary report generated by the anti-plagiarism software](image-url)
g. Other Useful Features: Certain other useful features available through the edveNTUre include online announcements such as information about the availability of course materials, changes in class schedule, due dates for student assignments and other course related matters. Another useful feature of the edveNTUre system is the ‘my filing cabinet’, with an individual storage allocation of 500MB, which can be used for storing and maintaining personal files, e-resources and other reference materials by the lecturers and students.

6. New E-learning Initiatives at NTU

New features are being introduced to ‘humanize’ edveNTUre by making the e-learning more interesting, interactive and engaging for the students. Here, the goal is to add more human elements for effective “high tech – high touch” delivery of online contents (Lee, Tan & Goh, 2005). Some of the recent e-learning initiatives introduced by the NTU are:

a. Distance Education: NTU is seriously considering implementing distance education in certain academic programmes. Recently, a highly interactive and state-of-the-art distance learning facility, called the Smart Classroom, has been established. Currently, this facility has been successfully used for a distance learning programme with the Massachusetts Institute of Technology (MIT). The School of Communication & Information is also exploring with the University of Mauritius and other universities in the Asia-Pacific region for offering selected modules of the KM programme by using its distance education facilities.

b. PresseNTUr: Through this initiative, lecturers can add in a video presentation, synchronized with their slides. It enables lecturers to quickly and easily create their teaching contents either by using a talking head or their own face through using a digital camera. Pace of the presentation can be changed by the students according to their learning speed. Another advantage of this system is the live delivery of presentations onto PDAs, which students can view on the campus or anywhere through the Internet.

c. Breeze: This Macromedia content creation tool allows converting PowerPoint slides into a low bandwidth format of the Macromedia Flash animation. It also allows voice narration to be synchronized with the PowerPoint slide delivery.

d. Reusable Learning Objects

The Centre for Educational Development in collaboration with the School of Communication and Information is in the process of implementing a taxonomy system aimed at building a better course management system. This system will enable staff to deposit learning objects in a repository organized to facilitate use and reuse for constructing lessons, presentations, and other documents. This system is expected to improve the use, reuse, and profuse of learning objects.
7. Conclusion

The availability of powerful e-learning tools has revolutionized the whole process of teaching and learning. Many academic institutions are quickly embracing this platform which allows dynamic content creation and delivery thus making learning more interesting, effective, meaningful and engaging. However, as all technologies have their own strengths and weaknesses, e-learning cannot entirely replace the need for a lecturer imparting knowledge in a face-to-face mode. Therefore, it is desirable that academic institutions, deploying e-learning initiatives, should come up with a strategy that suits their particular environment. Similarly, the success of the e-learning initiatives would also depend on the technical competence, preparedness and motivation of the academic staff and students. Lecturers need to learn creative and innovate ways of developing contents which might need learning new skills, thus resulting in increased workload. Students also need to be more disciplined, organized, responsible and willing to share their ideas and opinions by using available collaboration tools. A major change in mindset is needed where all players are ready and motivated to effectively play their roles. In this context, appropriate awareness strategies and training, both for the lecturers and students, can play a decisive role in the success of the new initiatives. The use of a combination of approaches in teaching KM courses through active physical and virtual discussions emphasizing socialization and collaboration will enhance learning and encourage knowledge sharing and forming knowledge communities.

References


