Blending Synchronous and Asynchronous Learning Approaches for Teaching Knowledge Management Courses

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ABSTRACT

Knowledge management (KM) has been one of the core operations of most companies and organizations since the early 1990s. As a consequence, KM education is experiencing exponential growth around the globe. In recent years, development in info-communication technologies (ICTs), increase in digital content, and the escalating use of the Internet and wireless capabilities have reformed the way learning is carried out. Many academic institutions are trying to fully exploit the potential of online learning tools and offer a variety of innovative pedagogical approaches that utilize information technologies in order to make the learning process more effective, interesting, meaningful, and engaging for students. However, face-to-face communication in a traditional classroom setting has its own advantages as it provides immediate feedback and answers to students' queries. This in turn, brings about increased student motivation, involvement, information and knowledge sharing, and development. The blend of these two approaches enhances their benefits and at the same time minimizes their limitations. This paper reviews the approaches adopted by the Division of Information Studies, Nanyang Technological University, Singapore, for teaching various modules in its Master's of Science in Knowledge Management (KM) program. This paper also explains the various ways in which the NTU online learning system, edveNTUre, is used for collaboration and content delivery for teaching the KM program, which helped improve the level of communication, collaboration, and interaction between students and lecturers.

1. INTRODUCTION

The global knowledge-based economy and growth of technologies have made it inevitable for online learning environments to spawn, in order to keep up with the demand for updated information and new knowledge, within the constraints of time and distance. Online learning, with its open access and independent learning environment (Stansfield, McLellan & Connolly, 2004), transcends physical and geographical boundaries to allow students to exchange ideas and share experiences cross-culturally. These characteristics of online learning make it an ideal learning mode that can effectively complement the traditional learning mode in meeting challenges posed by the digital age.

2. ISSUES CONCERNING ONLINE LEARNING

With the popularity and acceptance of online learning as a valid and effective learning method, there is a gradual change from lecturer-centered to student-centered learning approaches (Stansfield, McLellan & Connolly, 2004). As a result, the lecturer's role is becoming more of a facilitator in the learning process, while students actively participate and contribute to their own learning (Lee & Tan, 2004). It encourages students to view things differently, more critically and creatively (Pan, 1999). DeRienzo (2000) claims that in online learning, interaction is the key factor. She argues that the role of the lecturer is transforming from a broadcaster of knowledge to that of a mentor.

Kumar (2004) claims that online teaching and learning would become more effective through incorporating multimodality in content delivery which involves dissemination of knowledge in different modes of representation (eg. visual, textual, audio). Multimodal presentations are believed to stimulate and fully utilize all the abilities of human brain (Thomas, Kellogg & Erickson, 2001), allowing more opportunities for erudition, creativity and the generation of ideas.

In the traditional classroom, the synchronous or face-to-face social interaction with immediate feedback to learning queries by the teacher, facilitate student learning (McInnerney & Roberts, 2004) and help to allay doubts that may arise in the course of learning. This immediate feedback to questions helps students to quickly evaluate and guide their learning (Galusha, 1997). However, in the online learning environment, the lack of face-to-face interactions with their teachers can be exasperating for students and even hinder their learning process (Dzakiria, 2005). In addition, teachers may not be able to assess the learning situation immediately through students' facial expressions or signs of doubt (Stansfield, McLellan & Connolly, 2004). Nonetheless, the lack of face-to-face interaction with the teacher and other students are not necessarily barriers to learning. Students have indicated that asynchronous communication, such as emails and listservs, provide sufficient opportunities for collaboration with other students and feedback from the teacher (Daugherty & Funke, 1998).

Therefore, a balanced approach, using various learning methods and tools, and incorporating both synchronous (real-time) and asynchronous (delayed time) learning approaches, is more appropriate in overcoming barriers to online learning.

3. EDUCATING KNOWLEDGE MANAGEMENT PROFESSIONALS

The emergence of the knowledge-based economy and the popularity of e-business initiatives have made KM an essential area of activity in organizations. KM is a systematic process of taking advantage of the intellectual capital and knowledge assets for organizational success. In the current complex, dynamic, and volatile business environment, proper knowledge management can provide a competitive edge to an organization over its competitors.

Other than providing a competitive edge over rivals, good KM practices also allow information and knowledge sharing to take place. Many studies have claimed that information and knowledge sharing plays an important role in the learning and development of individuals (Rafaeli & Ravid, 2003). However, Majid and Yuen (2006) found that a barrier to information and knowledge sharing includes limited socializing opportunities. Hence, proper KM practices that utilize online capabilities would effectively improve the sharing of information and knowledge amongst people who frequently complain of a lack of time or social opportunities to do so. In the Division of Information Studies, School of Communication and Information, Nanyang Technological University, Singapore, various approaches are used to teach KM, which includes the innovative use of various features of an online learning system deployed by the University.

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4. ONLINE LEARNING AT NANYANG TECHNOLOGICAL UNIVERSITY (NTU)

Nanyang Technological University is considered as one of the most prestigious and leading academic institutions in Asia, known for providing high quality education by using innovative pedagogical approaches. The university has a strong engineering college 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.

The faculty at NTU extensively uses IT for instruction and delivering course content. All lecture theaters are equipped with state-of-the-art technology such as the latest computers, projectors, visualizers, VCR/ DVD players, wireless communication hubs and other gadgets. The campus is equipped with broadband high-speed telecommunication capabilities and all classroom computers are linked to the campus network as well as the Internet. Although currently NTU offers only selected academic modules online, it is considering using online modules extensively in the near future. As the physical size of Singapore is very small, students are expected to physically attend most of their classes. However, digital content is significantly used in all courses and the NTU online learning system plays a central role in instant communication between the instructor and students, student-to-student and other concerned parties.

4.1. The *edveNTUre* System

edveNTUre is the university online learning management system which was established in 2000 and within a short span of about 6 years, over 95% of all courses taught in NTU makes use of it. 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 (Lee & Tan, 2004). It was also expected that a large user-base would ensure that the system continues evolving, and providing new tools and enhanced features. Several enhancements helped customize the Blackboard system into *edveNTUre* to meet specific needs of the NTU teaching community.

The use of *edveNTUre* has resulted in a paradigm shift in teaching and learning at NTU which was difficult to achieve by only using traditional classroom approaches. The e-learning platform has allowed dynamic content to be delivered digitally through the University through both wired and wireless networks to all students anytime and anywhere on a variety of devices (Lee & Tan, 2004). It complements traditional lectures through several online learning tools including discussion forums for collaborative knowledge sharing, personalized learning, dynamic content delivery and other automated teaching tools. The University is celebrating an e-learning week in October 2006 where all lectures and tutorial sessions will be conducted by using different online tools such as streaming of recorded lectures, virtual classes, online discussion board, short video presentations, and weblogs. This exercise is part of the University's initiative on "Pandemic Flu Response Planning for Business Continuity", to test the capabilities of the e-learning system to continue the teaching and learning process during a natural disaster or health epidemic.

5. KNOWLEDGE MANAGEMENT PROGRAM AT NTU

Recognizing 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 MSc. in Information Studies programme. Soon it was realized that a more comprehensive and in-depth treatment is needed to prepare such professionals who can appreciate the complexities of this fast emerging discipline and be ready to provide leadership for implementing knowledge management initiatives in their organizations. In 2002, in collaboration with the Civil Service College, an MSc. degree in Knowledge Management was launched. NTU was among the pioneer to offer this degree in the Asia Pacific region.

The MSc. (KM) program provides a balanced coverage of management, technology, and information related topics, which are considered essential for preparing well-rounded knowledge professionals. In order to provide core competencies to all students and at the same time offer adequate flexibility for acquiring specialized skills, a three-tier programme was designed. As students in this programme come from diverse disciplines and backgrounds, three core courses, namely, *Foundation of Knowledge Management*; *Knowledge Management Tools*; and the *Professional Seminar*, were introduced to expose students to basic concepts, issues and the complexities of knowledge management.

At the second-tier level, Elective 'A' courses were structured to allow students to choose two out of four courses to focus on in the areas of human capital, knowledge tools, organizational behavior, 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, Elective 'B' courses provide an opportunity for students to select courses in their areas of interest. Moreover, students can either opt for the coursework only option where they take 11 modules (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. However, from August 2007 this programme will also be available on a full-time basis, and as a result, overseas students will also be allowed to join this programme.

6. SYNCHRONOUS AND ASYNCHRONOUS APPROACHES FOR TEACHING KM

It is evident that where face-to-face instruction has its own merits, online learning and collaboration tools can bring students and lecturers together to discuss ideas and share opinions on a 24/7 basis, thus making the learning process more pragmatic, interesting, 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 a result, a dual approach comprising face-to-face instruction and the extensive use of online learning tools for content delivery and collaboration, has been adopted in NTU. As described in the next section, the combined approaches facilitated NTU's enhanced knowledge sharing through socialization and collaboration.

6.1. Face-to-Face Instruction to Facilitate Socialization

Considering the nature of the KM programme, which itself advocates the effective use of human capital and 'rich' communication channels in organizations, the face-to-face interaction between students and lecturers, and among fellow students was considered desirable. It provides an avenue for students to socialize as well as share their ideas and experiences, followed by active participation in online discussion forums. Moreover, the traditional classroom learning approach is considered more feasible in the Singapore context where students live in close geographical proximity. As all classes are held in the evening, even working students can easily visit the campus to attend classes.

In addition to IT-supported lectures, ample emphasis is given on other interactive learning activities such as small group discussions, student presentations, case study analyses, group projects, hands-on sessions, and so on. The physical presence of students allows them to network and develop various interest groups. A study conducted at NTU to understand knowledge sharing patterns of graduate students in the School of Communication and Information also showed that other than e-mail, respondents preferred sharing their knowledge with their peers through face-to-face interactions (Majid & Yuen, 2006). The NTU experience also shows that longer tea breaks of half an hour have immensely contributed to increased informal interaction among students and developing alliances. It has been observed that this approach was helpful in providing an opportunity for students to carry out peer-to-peer learning.

6.2. Online System to Facilitate Collaborative Learning

In addition to taking full advantage of classroom learning, all KM courses extensively use IT, particularly the *edveNTUre* e-learning system, for delivering course content as well as a collaboration tool. At the start of a new semester, a new folder is created for each course offered during that semester. The course coordinator populates various areas in the folder such as course information, course documents, staff information, assignments, announcements, and tests and quizzes. Some important and frequently used areas in the course folder are described below:

a. **Course Information:** This section provides some basic information about

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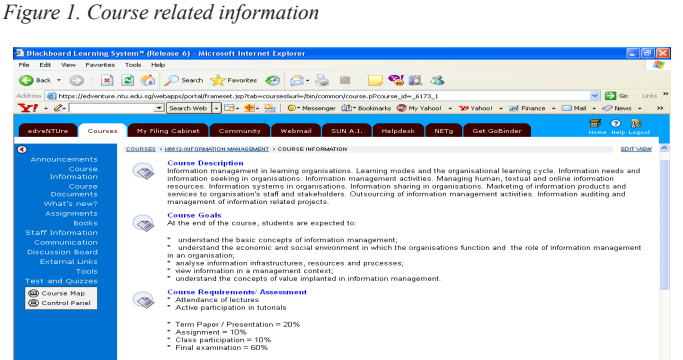
Figure 1. Course related information



the course such as the course description, course goals, course requirements, student assessment scheme, and recommended readings (Figure 1). In addition, it also provides details about the lecture and tutorial schedule.

b. **Staff Information:** This link provides contact information about the course coordinator, and all lecturers and tutors associated with that particular course. 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 assignment topics, recommended format and style for written assignments, assessment criteria, due dates, and so on are provided to the students (Figure 2). Almost all KM courses require students to submit written assignments, prepare individual or group term reports, and make presentations.

Often students are expected to submit a hardcopy of their written assignments for receiving the lecturer's feedback and grades as well as upload a softcopy through the *digital dropbox*. Many course instructors also upload the softcopies of student assignments and term reports in this area for reference by other students (Figure 3).

d. **Course Documents:** This is one of the most heavily used areas of the course folder. Most lecturers use PowerPoint slides with appropriate animations and they are expected to upload their lecture slides and other materials at least 2-3 days before the actual lecture day (Figure 4). It allows students to go through these materials before coming for class and bring a printout of these slides to class for taking additional notes. With the presence of wireless broadband Internet connection, students can also easily access the slides on their laptops in class and type in additional information discussed by the lecturer. In addition, instructors often 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 providing access to other course materials. For example, in certain courses, various topics are given to the students during tutorial sessions for 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 the whole class, followed by a question-and-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:** The edveNTUre system provides several collaboration tools that are available for easy and instant communication between the instructor and students as well as among the students. E-mail addresses of the

Figure 2. Description of student assignments

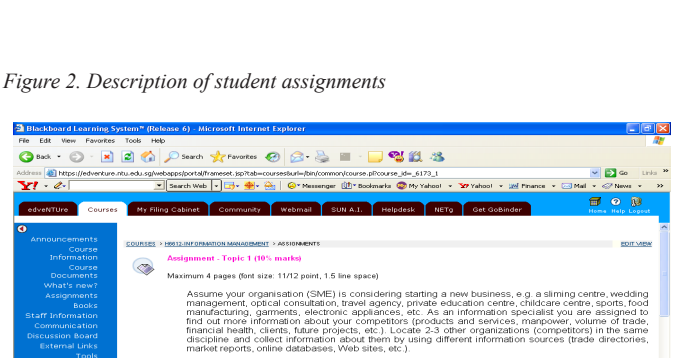


Figure 4. Lecture slides and discussion summaries

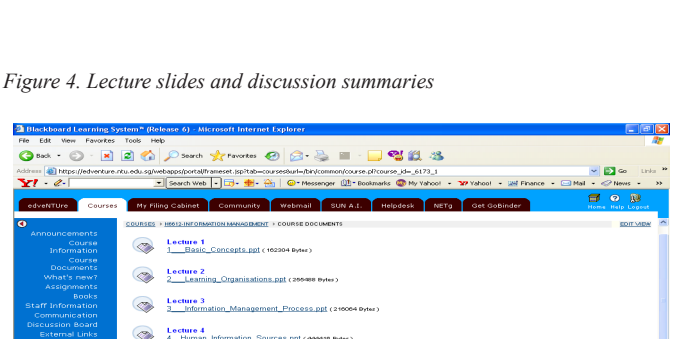


Figure 3. Softcopies of students' term reports and class presentations

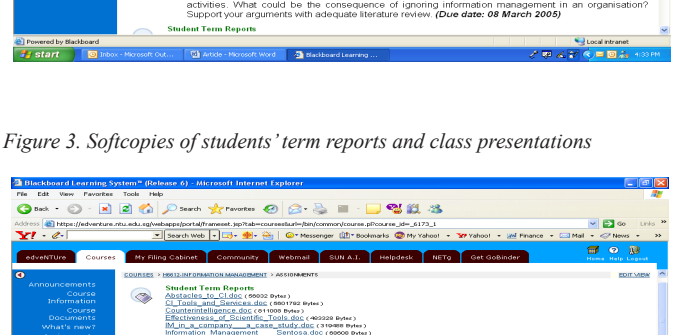
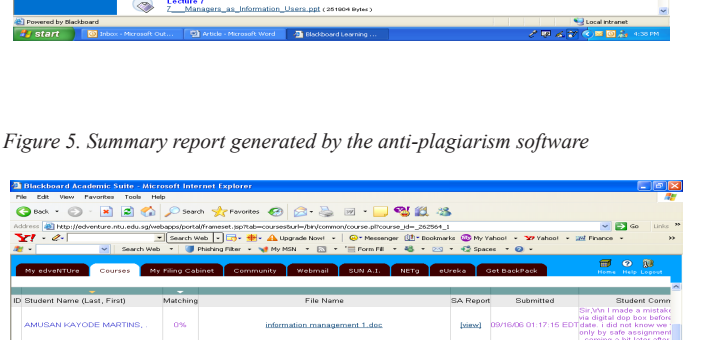


Figure 5. Summary report generated by the anti-plagiarism software



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students registered for a particular course are available in the course folder for sending mass or individual e-mails to students within a class. 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 choose to remain anonymous. Threaded discussions can be reviewed and archived for future reference – an accumulation and documentation of real life scenarios, lessons learnt and 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 university wide online interest groups created by different societies and professional associations, and participate in their discussions and other interactive activities.

f. **Safe Assignments:** 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 difficulty in identifying the source documents. With the installation of this anti-plagiarism tool, it is much easier, faster, and less time consuming to get a complete report about the level of copying, sources used, and the copied text (Figure 5). Now, many course instructors require students to submit a softcopy of their assignments, term reports, and other materials through the safe assignment option. Students, at the time of submitting their work, can also see a plagiarism report and, in many cases, try to remove the plagiarized text before the final submission.

g. **Other Useful Features:** Certain other useful features available through *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. Some other features available through *edveNTUre* are *Course Glossary*; *Digital Dropbox* where students can submit softcopies of their assignments and term reports, *Online tests and quizzes*, and external links to Web resources.

7. NEW E-LEARNING INITIATIVES AT NTU

In order to make online learning more interesting, interactive and engaging for students, certain new features are being introduced to 'humanize' the *edveNTUre*. The main objective is to add more human elements for effective "high tech – high touch" delivery of online contents (Lee, Tan & Goh, 2005). Some of the recent online learning initiatives introduced by the NTU are:

a. **Distance Education:** NTU is 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).

b. **PresseNTUr:** This tool 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. Through this technology, an instructor can synchronize his lecture with his PowerPoint slides or a video. Pace of the presentation can be changed by the students according to their learning speed. The recorded lecture can be delivered via PDAs as well as through Podcast.

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**.**

8. CONCLUSION

In recent years, advancements in online learning tools have encouraged many academic institutions to embrace this platform for dynamic content creation and delivery which is expected to make learning more interesting, effective, meaningful, and engaging. Although online learning has many notable advantages, it cannot entirely replace the need for a lecturer imparting knowledge in a face-to-face mode. Therefore, it is desirable that academic institutions, deploying online learning initiatives, should come up with a strategy that suits their local environment and teaching philosophy. Similarly, the success of the online 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 content 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 both parties 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 critical 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.

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