Avoiding Pitfalls in Online Materials

Normashida Mansor [1], Ahmad Fadzil Mohamad Hani [2]

[1] *IT/IS Program, Universiti Teknologi PETRONAS, Malaysia*, http://www.utp.edu.my
Tel: + 6 05 367 8249, Fax: + 6 05 367 8252, normams@petronas.com

[2]*Director of Academic Studies, Universiti Teknologi PETRONAS, Malaysia*, http://www.utp.edu.my
Tel: + 6 05 367 8249, Fax: + 6 05 367 8252, fadzmo@petronas.com.my

Abstract: World Wide Web (WWW) and online learning materials have been identified to make it possible for institute of higher learning (IHL) to revolutionize teaching and learning to supplement face-to-face teaching and learning.

Universiti Teknologi PETRONAS (UTP) saw these opportunities and has embarked on a university wide project namely Online Support for Learning (OSL). The main objective of this project is to develop online teaching and learning materials and to provide other support capable not only to provide a one-way delivery of knowledge and information but also for the instruction of students and lecturers for a more collaborative and interactive discussion.

An operating model was developed as a framework for the programs to follow in producing online learning materials. This will promote the sharing of resources and maximize learning opportunity through increased access. In addition, an effective learning environment can be sustained which applies leading-edge educational tools and approaches combined optimally with traditional learning methods.

This paper narrowed to five major areas of concern: the service offerings, human resources, technical architecture and infrastructure, what computing tools will be needed and the physical environment to support the project with the establishment of a OSL Center.

Keywords: online materials, World Wide Web, student-centered

1. Introduction

The World Wide Web (WWW/Web) and online learning materials have been identified to revolutionize teaching and learning which have enticed faculty with promises of access, inter-activity, ease of use and a potential to supplement face-to-face teaching and learning. Universiti Teknologi PETRONAS saw these opportunities and has embarked on a university-wide project namely Online Support for Learning (OSL) to promote the application of technologies in teaching and learning. For many, the question is not "should I use these technologies in my teaching?" but "how do we get started?"

Fundamentally this paper addresses these issues by using an operating model as a framework for the technology and engineering programs at UTP to follow in producing online learning materials via the Web. The paper will further discuss on five major areas of concern in answering the question.

2. Operating Model

In deciding and promoting how the Web can be used as a campus-wide strategy to support student-centred learning, the considerably more important questions of when and why technologies are used [1] and driven by the needs and objectives of the organisation as a whole. Fundamental questions of seeking to align the underlying technology infrastructure, processes and people involvement was addressed by Mansor & M Hani with the purpose of measuring how well UTP have aligned the elements of people, process and technology in developing the operational capabilities to make online learning possible [2].

UTP aims to sustain an effective learning environment, which applies leading-edge educational tools and approaches combined optimally with traditional learning methods. In creating the effective environment, an operating model

was developed to include changes required in people, processes and the integration of these components [2]. Figure 1 shows the operating model.

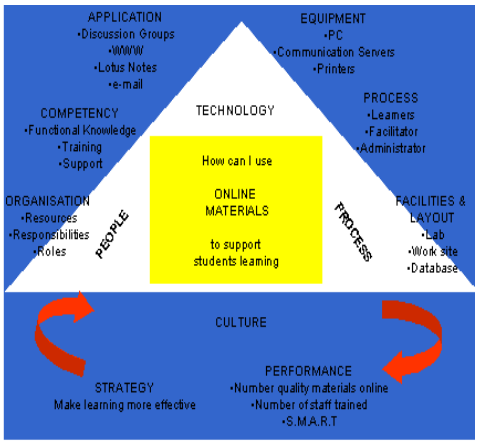

Fig. 1. OSL Operating Model

3. Areas of concern

a. Using the developed model, UTP aims to provide student-centred learning, which will promote the sharing of resources and maximize learning opportunity through increased access [3]. In creating an effective learning environment that applies leading-edge educational tools and approaches combined optimally with traditional learning methods, there are areas of concern need to be addressed.

a. Service Offerings

Polyson et. al. listed the following features that can be found in most good Web learning sites [4]:

- Online Syllabus
- Assignments
- Announcements
- Personal Homepages
- Interactivity
- Testing
- Course management
- Content

We group the features into two main categories:
1. Inform: one way delivery of information which includes personal homepages, announcements, online syllabus, online course content, assignments and past examinations
2. Interact: where collaborative and interactive engagement made possible such as email, discussion board, assessment, problem solving and special interest group, course management.

The university's first attempt at creating online courses is to identify interested lecturers from every program and get them to put materials online from the first category. Eight lecturers got interested and managed to create courses online namely Chemistry, Calculus, Information Systems Analysis, Office Automation, Information Technology and Society, Heat Transfer, Engineering Communication & Profession and Computer Graphics. One tried to create the environment from the second category i.e. interact and tested in the class that he taught. Others saw his achievement and in the process of integrating their courses with the collaborative and interactive components.

b. Human resources

In considering the Web as a teaching and learning environment, the question of "how do I get started?" came to the faculty's mind. Being a newly established university, human resource is somewhat an issue in UTP because experts in instructional design are scarce. Due to that fact, UTP is adopting different models of online learning materials development, which are:
i. Online materials developed by academic staff themselves using available applications;
ii. Online materials produced by academic staff through collaboration of staff and expert instructional designers, that are expected to be employed by the University;
iii. Materials put online by staff on Virtual Learning Environment and in the context of UTP; Lotus LearningSpace has been identified due to cost sharing with the other Petronas operating units.

c. Technical architecture and infrastructure

The most important issue to be addressed is the computing environment, in consideration of putting materials online. Connection speed and availability of access will have to be considered in knowing how students will be accessing to the materials. One of the major challenges that we faced is uploading materials for students' access. Academic staff and students belong to different domains that made it difficult to upload materials due to security reasons.

The university invested in two different servers to overcome the problem by connecting a development server at the staff domain while another server, "production server", connected to the student's domain. With the help from the university's IT department staff, a guided work process was developed to assist the academics to create materials and "served" to the development server while the IT staff will then upload the materials to production for students' access.

d. Computing tools needed

Student computer hardware and software requirements should be a prerequisite to designing online course materials [3]. Being a campus-based university, we provide students with laboratories for accessing the materials and we conform to using a single browser that makes it easier for the IT staff to configure the computer with appropriate software and maintenance.

e. Support

In developing online materials, the lecturers found that there are occurrences of technical problems and the pedagogical issues on posting materials on the Web. The difficulty that we faced is to get efforts coordinated between the lecturers and IT support staff. We considered ourselves lucky when one of the academic members who are capable in giving the technical support helped us out but he had his hands full with his own classes.

Due to that fact, we have suggested to the university's management for a online support for learning (OSL) center to be established to give total support for developing online materials. The management approved the establishment of the center and Figure 2 shows the center organization chart. We hoped that the center will support to get more materials developed online.

4. Conclusion

When the project first started in November 1998, we had to convince the university's top management, lecturers and IT support personnel the potential of WWW to made available course materials online to supplement traditional face-to-face teaching and learning. Lecturers became interested and we managed to post 10 courses from various subjects online using non-proprietary applications online by June 1999. By December 1999, the number grew to 14 courses.

Although we might want to set up materials online as soon as possible we are hopeful that with the framework and the established OSL center, the university will see results quickly and more courses will be developed online to supplement the face-to-face teaching and learning in UTP.

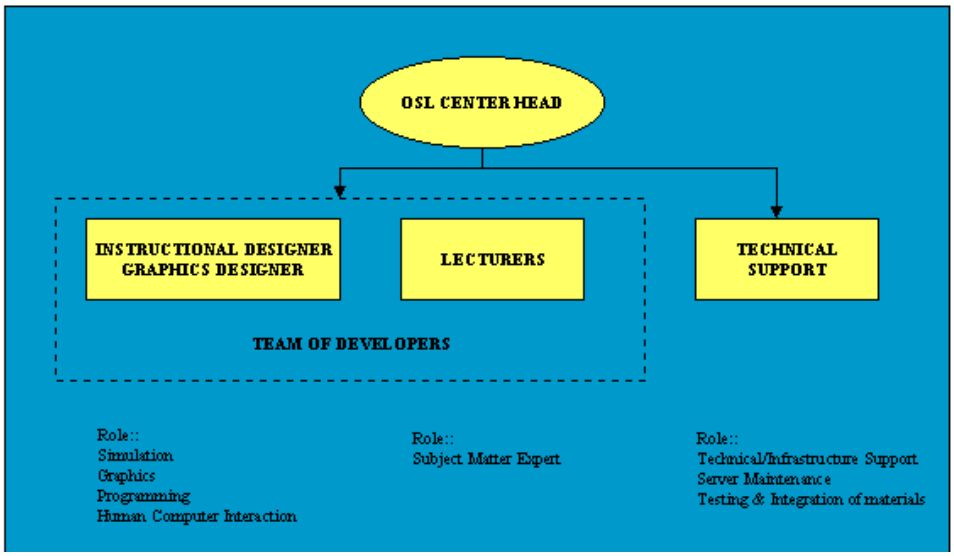

Fig. 2. OSL Center

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