Design and Development of Learning Management System at Universiti Putra Malaysia: A Case Study of e-SPRINT

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ABSTRACT

This paper reports the design and development of the e-SPRINT, Learning Management System, which has been derived from *Sistem Pengurusan Rangkaian Integrasi Notakuliah dalam Talian – mod Elektronik*) and currently being implemented at Universiti Putra Malaysia (UPM). The e-SPRINTwas developed by utilizing PERL (Practical Extraction and Report Language) and was supported by standard database in Linux/UNIX environment operating system. The system is currently being used to supplement and complement part of the classroom-based teaching. This paper covers the architecture and features of the e-SPRINT system which consists of five main modules. Some general issues and challenges of such e-learning initiatives implementation will also be discussed.

Categories and Subject descriptor:
H. INFORMATION SYSTEMS
H.4 INFORMATION SYSTEMS APPLICATIONS
General Terms: Design, Management
Keywords: Internet, Learning Management System

1. INTRODUCTION

E-learning is an educational process that leverages on the opportunities of digital technologies for delivering contents, assessing learners' competences and for enhancing interaction among learners and between tutors and learners.

Internet has the ability to provide educators the opportunities for networking with colleagues, learning about developments in any fields of interest, finding new resources and establishing a sense of community among educators [1].

The objective of this research is to establish a learning management system (LMS) that acts as a one-stop teaching and learning resource centre for students and lecturers.

2. DEVELOPMENT OF E-SPRINT

Listed below are some of the findings done in UPM teaching and learning environment that motivates the development of e-SPRINT [2];
- Difficulties in monitoring students academic performance.
- Time taken to evaluate students academic performance.

- Difficulties in setting time for students to meet their lecturers due to the lecturer's hectic schedule.
- A need for a systematic database to store lecture notes and a platform for knowledge sharing among students and lecturers.

UPM has developed and implemented its own e-learning platform the e-SPRINT, since year 2000. The development of e-SPRINT was prompted by the need for a uniform and reliable system of implementing online courses for UPM. The e-SPRINT was then further developed and implemented. It is developed using PERL and supported by standard flat files in Linux/UNIX environment. Lecturers and students are currently using this system for their online courses.

3. BASIC FEATURES OF E-SPRINT

The five main modules of e-SPRINT (Fig. 1) are developed to address the problems stated earlier. Listed below are some of the guidance characteristic in developing the modules and feature of e-SPRINT:
- Full implementation in Bahasa Melayu (national language)
- Easy contents maintenance for lecturers.
- To cultivate the culture of digitized lecture notes management.
- Easy access points for students.
- Secured document.
- An easy to use application.
- Direct upload facilities for various file formats.
- Required minimal ICT related skills.
- Interacive system

The features highlighted above are addressed in the development of the 5 main modules namely the News, Lecture Notes, Tutorials, Forums and Students. These modules provides the basic features in developing of learning management system [3].

News – Official communication channel meant for instructors/lecturer to post notices and messages pertaining to courses taught.

Lecture Notes – A module for lecturers to post and edit lecture notes. Lecturers can also include brief information about the

course such as course outline, list of lecture topics, schedules, references and further readings, methods of assessment and contact information.

Tutorials – A module for putting tutorial materials online.

Forum – A tool to allow two-way communication between lecturers and students as well as among students themselves.

Student – A module for lectures to post lists of students, continuous assessment marks, and tutorial/laboratory groupings.

Figure 1: Screen capture of the e-SPRINT, a home grown learning management system.

4. ISSUES AND CHALLENGES

Previous studies have identified best practices associated with the e-learning implementation [4-6]. They uncovered three factors that contribute to readiness of organizations to embrace e-learning: people, place and resources. Within these three areas there are a number of variables. For example in the people variable there is commitment and skill, for place there is stability and infrastructure, under the resources category we identified funds and knowledge.

People - Commitment and skill are critical factors of readiness of an organization to embrace e-learning:

- *Commitment.* One way to measure commitment is by considering whether key decision-makers in the organization are serious about investigating the use of e-learning.
- *Skill.* Project manager, instructional developers, software programmers, multimedia experts, graphics experts, and others, including information systems experts are required in developing the e-learning program. Experienced people have had opportunities to develop their skills, so experience with e-learning is a very desirable quality to seek.

Place - The two factors under place that are critical indicators of readiness of an organization to embrace to e-learning were flexibility and infrastructure.

- *Flexibility.* In order to meet change effectively, diverse groups mainly academician, student as well

administrator must work together effectively. Training project leaders must foster team spirit.
- *Infrastructure.* E-learning does not necessarily require a huge infrastructure. Some successful programs are simple add-ons to the enterprise-wide intranet.

Resources - the key variables selected by the team as critical indicators of readiness of an organization to embrace e-learning are funds and knowledge.

- *Funds.* The initial costs of developing e-learning are higher than most equivalent leader-led interventions. Faced with high costs might be tempted to cut corners. In the long run, however, a well-designed e-learning package shrinks high costs associated with travel, accommodation, and instructors.
- *Knowledge.* When deciding whether the organization is ready for e-learning, assessment is needed whether there is sufficient knowledge about the range of e-learning options, knowledge about the impact that using e-learning will have on the organization and the people who work there.

5 CONCLUSION

This paper presents an overview of the development and the features of e-SPRINT. Based on the feedback received in the implementation study of the e-SPRINT, an approach has to be adapted to enhance the computer and lab facilities. Awareness should also be greatly enhanced and provide on the application of e-SPRINT for students.

It is hoped that this will provide a way in managing e-learning initiative in UPM. Its GUI-based, user-friendly and intuitive features make e-SPRINT easy to use and is comparable to, if not better than, other commercially available online lecture systems.

In implementing the e-learning system, three major factors that contribute to readiness of organizations to embrace e-learning: people, place and resources must be carefully considered.

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