

Development and Implementation of an LMS:

Universiti Utara Malaysia's Experience

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Abstract

The implementation of e-learning in the teaching and learning at UUM started in 2000 with the selection and development of an integrated system that encompasses both academic and administrative components of higher education. Developed jointly by a local IT company and UUM, the system comprises of twelve modules that provides UUM's academic community with arrays of innovative strategies and activities to enhance the conventional face-to-face instruction. Currently, the system is being used as a supplementary component to instruction. Besides serving as central depository for learning materials, the system provides capabilities for synchronous or asynchronous threaded discussion forum, online assessment and tracking of students' access to the modules. As a result, the e-learning system has become a major component in UUM Community Portal in supporting the university community's needs based on academic, research and administrative requirements. To date, a total of 1900 academic staff have undergone the training and 75% have been using the system in their courses since 2002. Feedbacks from both academic staff and students have shown that the system has merits for teaching and learning; however, major issues that have been frequently raised concern the infra and info structure as well as pedagogical aspects. Despite all the obstacles, the

university policy of incremental implementation has been the major push factor in the integration of the system in the teaching and learning process. In order to support these services, a good strategic planning for the university's vision and mission has to be developed and at the same time, a well-organized e-learning management needs to be implemented in the organization.

Keywords: e-Learning, Learning Management, e-Administration, ICT Management, Knowledge Management

Introduction

Universiti Utara Malaysia's initial initiative to embark on an e-learning portal began in 2001. The initiative was one of the university's IT Initiatives. Acting as the training center, the University Teaching and Learning Centre (UTLC) was put in charge to provide an electronic learning management system (LMS) to assist academic staff in designing, preparing and delivering quality instructional materials for courses offered by the university that are accessible via the WWW. Together with the Computer Centre and the E-University Unit, the center started off with the formation of the university's E-Learning Committee, which is a sub-unit of the E-University Committee. The latter oversees all IT initiatives in the university. The main objectives of the committee then were to identify the e-learning policies and to acquire a learning management system (LMS) suitable for UUM's needs.

For the period of 1 January to 31 March 2002, the committee prepared the specifications and features of the LMS followed by surveys of numerous LMS in the market then which included Blackboard, Harvest Road, ERPS (Aldrich Group), CA, and many others. In May 2002 the university began developing Learning Care with a local company.

Learning Care is an additional module to already existing modules in the GroupWeb community portal system which provides e-mail, calendar, to-do list, notice board, web management system, discussion rooms facilities, etc.

The main components in the Learning Care are **Administration, My Desktop, My Portfolio and Resources**. Administration component is for the administrator to manage the overall running of the system. My Desktop lists all the portfolios created as well as the portfolios subscribed to. Lecturer's interface is slightly different from student's interface. My Portfolio lists all the portfolios that the owner (lecturers) created for their courses. This is where the owners manage their portfolios. Resources which list all the existing portfolios created in the system is also where the subscribers can search and subscribe to the portfolios.

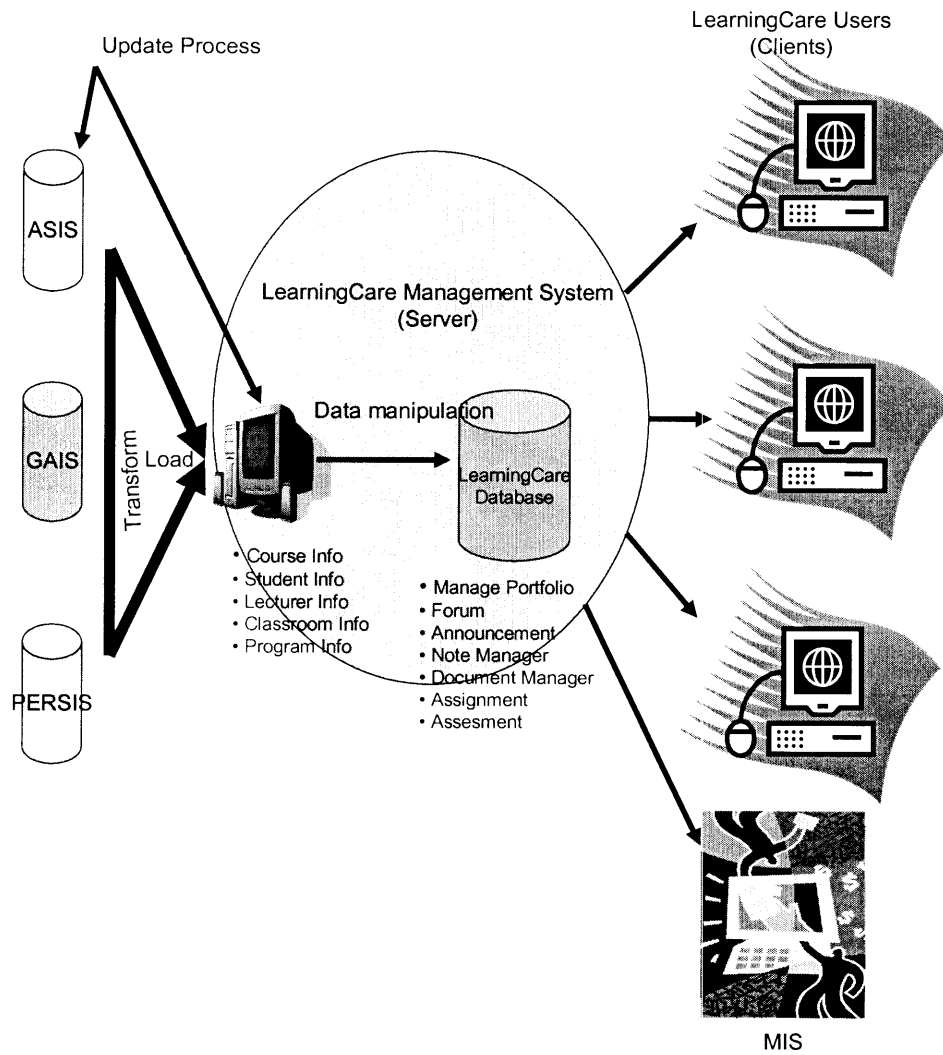
When a lecturer creates a course in Learning Care, a portfolio is created. Each portfolio represents a course. A lecturer can have as many portfolios as he/she would like. In the portfolio are features in modular form: **Portfolio Info, Announcement, Notes, Documents, Forum, Links, References, News, Assignment, Quizzes, Questionnaires, Multimedia Gallery, Learning Track, Grade Manager and User Manager**. These modules have specific functions and provide different information for the users. Portfolio owners manage these modules to suit their courses and students' needs. Items housed in the Notes module could be viewed and printed by the students while items in the Documents module could be downloaded. Threaded discussion rooms could be created allowing synchronous and asynchronous on-line discussions. These were intended for large classes which has limited opportunities for interactive discussions. Announcements and News modules provided news and announcements to students. Quiz module provides on-line assessment for the lecturers to assess their students.

Infrastructure and Hardware

At the initial stage, the system began operation with the GroupWeb portal on a Pentium III Server with 1 GHz processor, 1 GB Memory and a 72 GB hard disc. Due to increasing use by the lecturers and students, the system was upgraded in June 2003. It included the installation of 1 unit server for 'Locking', 1 unit server for 'LVS', 4 units of server for 'Web' and 1 unit of server for Learning Care storage. Overall, the upgrade included 1 server to 7 servers, 1 GB to 7GB memory, 72 GB to 300 GB storage and Hyper-SCSI (Open Source Solution) for bigger and cost effective storage.

Currently, the system runs on the campus integrated LAN with 5920 data points and a database of 150 MB size. The network capacity which supports the system is 2Mbps via internet network, 10 Mbps via satellite and 1 GB via intranet. The total storage for each user is 30 MB.

Data Architecture For LearningCare System



Evaluation and Improvement

Since the initial development, the system has undergone numerous changes and improvement in all aspects. The current interface design has changed significantly from the initial stage. More additional features were suggested by the lecturers as more began to use. Additional functionalities were improved and changed to the system. In Jun 2004, Learning Care was integrated with the undergraduate and graduate Students Information Systems to improve provision of information on teaching and learning in portfolios. Since then, the portfolio owners no longer needed to key in the users themselves. The list of users (students) who registered in the courses was uploaded to the respective portfolios in the system. The move has facilitated the portfolio owners immensely.

Training and Policy

Training for the lecturers began in May 2002 when the first few courses were chosen to use the system. Since then, many groups of lecturers were trained. Refer to Table 2 for complete statistics. As more lecturers were trained, the system was extensively used and thus the capacity of the system could no longer support the users. Hence an upgrade was made in June 2003.

At the initial stage of implementation, the E-learning Committee set a few general policies regarding the implementation. These include the followings:

- ↓One system for the whole university

- ↓Annual evaluation/review
- ↓Complements conventional instruction with 30:70 blend
- ↓Lecturers to develop materials
- ↓E-learning Committee (UTLC, Computer Centre) and E-university Committee responsible

The implementation of Learning Care was to complement the conventional face-to-face instruction with 30:70-per cent blend between the two modes. This blended method was intended to enrich the courses with IT experience among the lecturers and the students. Lecturers could upload files of various format to the LMS and students could access them from anywhere at anytime.

The implementation would not have been very successful without strong commitment from the university's top management. To ensure the success of the initiative, the university identified the implementation of e-learning in administration and learning as one of the university's twelve strategic targets in its strategic plan. This move has created awareness among the lecturers regarding the implementation of Learning Care in their instruction. The incremental target set forth in the strategic plan has helped the consistent increase in the implementation. In addition, the provision of IT infrastructure was given a priority to support the system.

Current Implementation Status

Since the first groups of courses began using Learning Care, there has been stable increase in the number of courses. However, the 2004 implementation ran short of target. Only 75% of the courses managed to create portfolios, 10% short of the target.

Table 1: Utilisation of Learning Care by courses

Faculty	No. of courses in faculty	No. of courses with portfolio	% courses with portfolio
Co-Curriculum Centre	183	158	86
Economics	43	30	70
Comm. & Modern Languages	71	46	65
International Studies	45	32	71
Public management and Laws	62	47	76
Tourism, Hospitality and Environment	31	21	68
Accountancy	37	26	70
Business Administration	35	25	71
Social and Human Development	45	28	62
Technology Management	39	30	77
Quantitive Sciences	34	26	76
Cognitive Sciences and Education	53	38	72
Information Technology	66	56	85
Finance and Banking	36	25	69
TOTAL	780	588	75%

Table 2 : Utilisation of Learning Care by lecturer

Faculty	No. of lecturer	No. of lecturer trained	No. of lecturer use	% of lecturer trained	% of lecturer use
Economics	88	72	71	82	81
Comm. & Modern Languages	127	110	88	87	69
International Studies	45	36	25	80	56
Public management and Laws	80	71	52	89	65
Tourism, Hospitality and Environment	36	27	21	75	58
Accountancy	134	125	115	93	86
Business Administration	95	87	55	92	58
Social and Human Development	72	68	61	94	85
Technology Management	55	46	43	84	78
Quantitative Sciences	83	76	67	92	81
Cognitive Sciences and Education	82	73	61	89	74
Information Technology	116	103	93	89	80
Finance and Banking	71	64	56	90	79
TOTAL	1084	958	808	88%	75%

Table 3: Utilisation of Learning Care by course level

Level	No. of courses	No. of courses use	% of courses use
Co-Curriculum	183	158	86
1000	92	71	77
2000	146	108	74
3000	292	197	67
4000	4	3	75
5000	45	36	80
6000	14	13	93
7000	4	2	50
TOTAL	780	588	75%

Problems and Issues

When the E-learning Committee started out in 2002, only general policies regarding the use of the LMS were determined. Specific policies were not determined. However, as use of the LMS began to widen amongst the lecturers, various issues and problems have arisen and the existing policies could not address them. Specific issues require specific policies; the absence of such policies has created inconsistencies in the use amongst the lecturers. Many issues were not resolved and addressed.

Another issue which arises is the selection of courses to use the LMS. Since the introduction, the objective was to promote the use regardless of the size, nature and level of courses. All courses were encouraged to use the system to complement their instruction. However, as many portfolios were created and used over the years, some lecturers began to realize or question the necessity of their course to use the LMS. Some lecturers began to reduce the use as well as abandon the use. The question arises whether only courses of certain nature and features should use the LMS. Currently, discussion is under way to determine the courses which are suitable to use the LMS.

Among the modules provided in the system, only Forum and Quizzes have interactivity feature; others allow materials to be uploaded by the lecturers and downloaded or viewed by the users. Overall, the LMS is not very interactive in nature. This was intended so because the use of the LMS was only to complement the conventional instruction but not reduce or replace it. Even though a 30:70 blend was identified as one of the policies in the implementation, the teaching hours was never reduced. The use of the LMS was an additional hours to the instruction.

Since the beginning, there has not been any standard set for the content or materials for the system. Materials developed by the lecturers for the LMS do not conform to any standard such as SCORM etc. Furthermore, the materials developed do not follow any pedagogical guidelines or standard. The development was the choice of the lecturers based on the current instructional strategies. This is so because the conventional instruction is still maintained and the materials in the system are not intended for independent learning.

The issue on whether class hours can be reduced also arises. Since 30% of the instruction was intended to be conducted via the system (which did not materialize), the reduction of conventional instructional hours would allow lecturers to handle more tutorial sessions or even extra classes.

Problem also arises with regard to the IT infrastructure. The campus LAN occasionally does not support the increasing traffic. Students reported slow access even on campus. To date, materials developed by the lecturers for the LMS were limited to small size documents in various formats. However, bigger files in audio/video format are not supported at the moment.

To date, the training amongst the lecturers has been limited to using the system. Training to develop contents in format that is pedagogically sound and effective has not been conducted. The lecturers convert their existing materials into suitable digital format and place them in the LMS. This is due to lack of experts on on-line material development. Training for students has not been conducted on regular basis. However, concerned lecturers do provide briefings for their students early in the semester.

Future Undertaking

Based on the issues and problems that have arisen during the implementation, several tasks and undertakings have been identified by the E-learning Committee. These will be undertaken to improve the implementation of the next stage. These include:

- ✚ Upgrade infrastructure, hardware and features in Learning Care
- ✚ Materials to conform to SCORM standard
- ✚ Merits for SCORM-standard materials
- ✚ Add interactivity features
- ✚ Add pedagogical aspects in materials
- ✚ Training in material development

Suggestions for Institutions Planning to Implement LMS

The experience of initiating and implementing the project in the last 3 years has been very useful and we would like to share some suggestion to those institutions planning to embark on similar initiative. First and foremost, full commitment from the institution top leadership is very crucial. The initiative should be one of the priorities. Secondly, clear policies covering all aspects should be determined from the initial stage. Supports from the faculty and academic leadership and support are also crucial to ensure successful implementation. Training for both faculty and students should be conducted on regular basis as well as cyclical basis. Experts on the matter should be identified to plan, implement, evaluate and improve the system. Finally, sufficient IT support is also crucial to ensure smooth implementation.

In conclusion, the implementation of the LMS at Universiti Utara Malaysia is a success. What has been achieved is within the initial objectives set at the beginning. However, what has been implemented does not fully meet the e-learning definition. Lecturers and students alike are highly aware of the implementation; thus, the implementation of the second stage is hoped to be facilitated.