Teaching Case

Making the Switch from Learningzone to UUM Online Learning

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Introduction: Universiti Utara Malaysia's Learning Management System

A Learning Management System (LMS) was developed for UUM lecturers and students as a complement to the existing conventional teaching and learning methods. UUM Online Learning was the third LMS used by Universiti Utara Malaysia (UUM) to perform all teaching and learning activities through web applicatons. The first LMS introduced in UUM was the Learning Care which was a third party software that incurred high maintenance costs. Consequently, it was instantly replaced by an inhouse developed LMS, known as Learningzone, in July 2009. The transition time from the Learning Care to Learningzone took approximately TWO (2) semesters from July 2009 until Januari 2010 before the Learning Care was fully replaced.

The Learningzone enabled teaching and learning materials to be uploaded and shared among students and other lecturers. It also provided the mechanism of interactive chats in forums, quizzes, surveys, assignments submissions and students grading. Refer to Figure 1 for a snapshot of the Learningzone system main page.

Figure 1: Snapshot of the Learningzone

UUM had a center called UUM Information Technology (UUMIT), which was responsible in developing and maintaining all IT related systems in the campus including the Learningzone and UUM Online Learning.

UUM Information Technology (UUMIT)

UUM Information Technology (UUMIT), previously known as UUM Computer Centre was located in the UUM main campus, Sintok. It was established in 1988 to provide ICT services and management to the University. UUMIT was headed by a Director, Mr. Kamarudin Abdullah with nearly 150 UUMIT employees across several divisions. Figure 2 shows the organization chart of UUMIT.
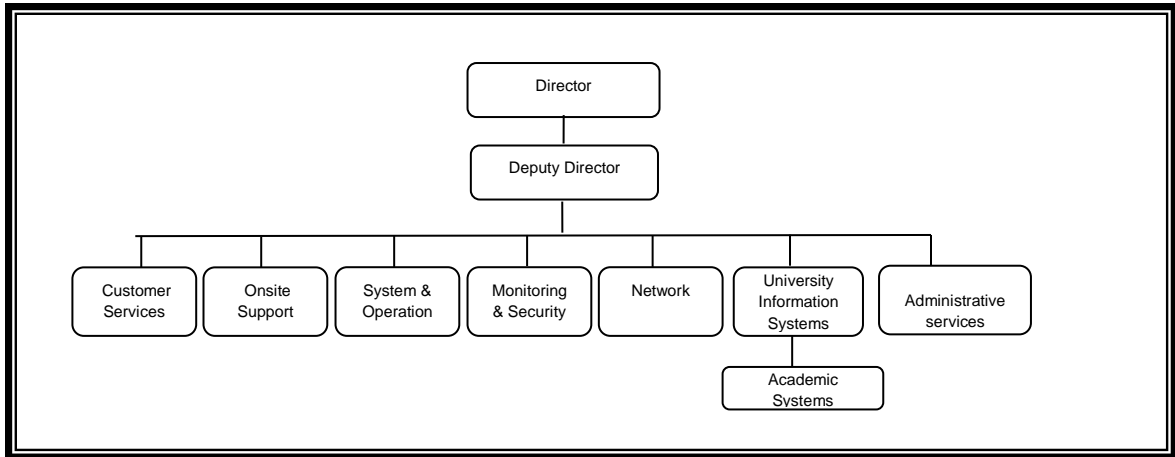
Figure 2 : UUMIT Organization Chart

The main role of UUMIT was to provide safe and secure core computing and network services in UUM. This was in accordance to its mission; "to provide complete and latest Information and Communication Technology (ICT) facilities and infrastructures readily available for use and fully functional to drive teaching and learning as well as research and management".

UUMIT was responsible for all ICT services in UUM including inhouse development of various application systems such as Administrative Systems, Academic Systems, Email and Calendering, Mobile Software and Hardware and Web Publishing. Other services offered by UUMIT were Network and Connectivity as well as Storage and Back Ups.

Since its establishment, UUMIT had accomplished a number of ICT related projects. Among such projects were the upgrading of the Online TV and CCTV and the establishment of IPV6 in UUM. At that point of time, UUM was the first local university that managed to installed the IPV6. In terms of security issues, UUMIT had obtained the ISO27001:2007 Information Security Management System (ISMS) certificate by implementing a Single Sign On (SSO) facility to enable users to access the services in a more secure manner. It had also achieved 100% internet coverage of 4GBps bandwith as stipulated in the UUM strategic plan (2011-2015). Other achievements included the Student Lounge in the student residential area, Mobile apps, pilot Outcome Based Education (OBE) project, BETTA system and E-dashboard.

As an IT department of a Higher Learning Institute, the core service of UUMIT was to provide an excellent teaching and learning environment. Therefore, UUMIT had always focused its efforts on the development and maintenance of academic related systems such as the UUM Online Learning, Outcome Based Evaluation (OBE), and Course Evaluation System (e-CEVAS). The three LMS introduced by UUMIT to facilitate teaching and learning in UUM were Learning Care, Learningzone and UUM Online Learning.

Switching from Learningzone to UUM Online Learning

Organizations operated in a rapidly changing business and technical environment. In order to stay competitive and sustain their operations, organizations should give high priority on the implementation and usage computer based information system. Therefore, decisions had to be made regarding the usefulness of the current systems in the organizations. If the current systems were no longer meet the organizations' requirements, they need to be upgraded or replaced.

Directives from Management

In early January 2014, Mr. Kamarudin Abdullah also known as Mr. Kamak, the newly appointed director of the Universiti Utara Malaysia (UUM) computer center (UUMIT), had just received a phone call from the director of University Teaching and Learning Center (UTLC), Assoc. Prof. Dr. Ahmad Jelani Rahim. Dr. Ahmad Jelani explained to Mr. Kamak that one of the UTLC strategies was to adhere to the Malaysian Government's Education Blueprint in enhancing the e-learning infrastructure in UUM. He requested Mr. Kamak to assess whether the existing Learning Management System (LMS) was adequate to achieve the government's education objectives. Otherwise, UUMIT must take necessary actions to ensure that the LMS was able to achieve the government's education objectives. Dr. Ahmad Jelani gave UUMIT a strict deadline by the next semester, September 2014, to make sure that the LMS is up to the par.

Following the phone call, Mr. Kamak contacted the Head of Academic System unit of UUMIT, Ms Nor Asiah who was responsible of managing the LMS in UUM.

"Ring! Ring! Ring! Ring!"

Ms. Nor Asiah: "Hello, Nor Asiah speaking."

Mr. Kamak: "Hello, Nor Asiah. This is Mr Kamak. I need to talk to you about our LMS."

Ms. Nor Asiah: "Yes, Boss. Is there anything particular that you need to talk about our LMS?"

Mr. Kamak: "Yes, I just got a phone call from the Director of UTLC. He relayed an urgent message for us to assess the current LMS in order to determine whether the system meets the government's education objectives or not. If not, we have to come up with solutions to make sure that the LMS is adequate to meet the government's objectives. I need a full report on this and I need it as soon as possible."

Ms. Nor Asiah: "Okay Boss! But can you give me a few days to come up with the report? I need to call up my staffs for a meeting and prepare the report for you."

Mr.Kamak: "Sure, you have a week!."

Ms. Nor Asiah: "If that is the case, we will try our best to provide the report to you, Boss!"

Mr. Kamak: "Oh, yes! Before I forget, the report must also consist of the review on the performance of the existing LMS, and…… on the sustainability of LMS and the need for improvement."

Ms. Nor Asiah: "Noted, Boss."

Mr. Kamak: "Thank you Nor Asiah."

Ms. Nor Asiah: "You are welcome."

Without wasting any more time, Ms. Nor Asiah quickly gathered her team and started to plan for action. With her pleasant personality, dedication and commitment to her work, Ms. Nor Asiah had earned the respect of her colleagues to lead the Academic System Unit. Following the directives given by Mr Kamak, Ms Nor Asiah then sorted a few strategies to make sure all the tasks assigned to her will be done effectively and efficiently. One of the strategies identified by her team was to gather users' complaints recorded at the UUMIT Help Desk unit. It was crucial to gather all the complaints received in order to get a clear picture on the possible shortcomings of the Learningzone. One of the complaints recorded was from a lecturer who expressed his frustration on using the quiz functionality of the Learningzone.

UUMIT staff: "Hello, UUMIT Help Desk, this is Sheera speaking."

Dr. Danial: "Hello….. This is Dr. Danial from School of Quantitative Sciences."

UUMIT staff: "Yes Dr. Danial, How can I help you?"

Dr. Danial: "I am sooooooo….. frustrated with the Learningzone!!!!!!"

UUMIT staff started to panic and quickly asked Dr. Danial.

UUMIT staff: "What seems to be the problem Dr. Danial?"

Dr. Danial: "Wait!!! Let me finish!!!..... This morning I had administered an Online Quiz for my students in the Lab. However the timer for the quiz was blocking the questions and my students were not able to see the questions. I ended up replacing the online quiz with manual paper based quiz. If this continues, hmmmmmmm….It's better to discontinue using the Learningzone!!!!"

UUMIT staff: "We are so sorry to hear this Dr. Danial, We will proceed to rectify this issue as soon as we can. Thank you for informing us."

The above conversation was an example of the few complaints received by the UUMIT Help Desk unit. Even though the complaints were small in number, to improve the quality of the LMS, the team decided to use a survey to quickly gather information on the ease of use of the Learningzone. The team also found some technical problems regarding the use of the current open source software of LMS that need to be adhered urgently. The team concluded that the Learningzone need to be upgraded in order to achieve the government's education objectives.

The need to switch

After a week time given by Mr. Kamak, Ms Nor Asiah had presented the report of their finding as requested earlier by Mr. Kamak. Based on the findings gathered by Ms. Nor Asiah and her team, Mr. Kamak had requested Ms. Nor Asiah and her team to get a new solution for the current Learningzone at the soonest. He was concerned with the fact that the Learningzone was still using the Moodle 1.9 version. This old version of Moodle was no longer supported by Moodle. There will be no new patches release for the 1.9 version. Ms. Nor Asiah was aware of the problems that they might be facing such as lack of support from Moodle if they did not switch the Learningzone to a better version of LMS. Being the person responsible for the Learningzone, Ms. Nor Asiah realized that there were limited activities and resources that can be implemented in the Learningzone which did not really support the online teaching and learning. Moreover, the interface of the Learningzone was not user friendly especially for lecturers in terms of uploading files and creating Question Banks for Quizzes.

Ms. Nor Asiah and her team, Mr Soleh and 3 other UUMIT staffs, put their full effort in finding a new solution for the Learningzone. The task needed to be done fast. The issue here was how to come up with a new solution in a situation where there were limited budget allocated for software upgrades in UUM. Eventually, after initiating a series of fruitful discussions, the team decided to maintain the use of Moodle. Therefore, the free version of the Moodle Open Source Software was used for the time being. This was at least until they can come out with a better and cost effective solution for another LMS. However, the upgrading of the current version (version 1.9) to the latest free version of Moodle, version 2.7, was inevitable because they must make sure to keep abreast with the advancements of technology. This was vital so that they will not be left behind when there was no support for the older versions. There was quite a lot of work to be done to migrate to the new LMS due to the fact that the database structure of the new LMS was quite different from the Learningzone. Nevertheless, Ms. Nor Asiah had faith in her team to make the changes achievable.

Apart from being continuously supported with new patches released, Moodle 2.7 had similar features as the previous version but better in terms of its functions. The user interface of the new

LMS was also easier to use as compared to the older version of the Learningzone. Now, Ms. Nor Asiah and her team were certain to upgrade to a new version of LMS using Moodle version 2.7. Ms. Nor Asiah then presented the idea to Mr. Kamak for approval to carry on with the development of the new LMS. Mr. Kamak suggested that the UUM new LMS should be renamed to a catchier name, hence, it was named UUM Online Learning.

Development of UUM Online Learning

As with any information system development task, the development of the new LMS went through the usual system analysis and design steps. One of the most essential steps prior to any development was to gather user requirements for the new system. A requirement is a statement of what the system must do or what characteristics it must have.

Requirement Gathering

Ms. Nor Asiah had to work closely with the owner of LMS, which was the University Teaching and Learning Centre (UTLC). UTLC was responsible for the E-learning adoption in UUM. Ms. Nor Asiah was well aware of the importance of working closely with the owner of the system in getting the right requirements. In order to facilitate the process of determining the functionalities that need to be implemented in the UUM Online Learning, UTLC had appointed two (2) E-Learning Champions (ELCs) from each of the twenty (20) schools in UUM. Besides providing the user requirements, the ELCs also helped to specify the inputs on the LMS user interface.

Ms Nor Asiah was aware that user interface is important because it acts as a platform which allows users interaction with a system. Thus, getting the right requirements for the user interface design of UUM Online Learning was crucial. In order to meet the users' requirements, Ms. Nor Asiah and her team must ensure that the user interface adhered to the user interface design principles such as the screen layout, content awareness, user experience, aesthetic, consistency as well as minimizing the users' effort in using the system. Considering the time limitation that they had, both the user interface and system requirements were gathered simultaneously.

Being an experienced system analyst, Ms Nor Asiah followed the guidelines on the requirement gathering techniques that started with investigating the current LMS. By conducting the

investigation, Ms. Nor Asiah and her team had the opportunity to understand the functionalities of the current system that might be useful for the new one. In addition, various problems and limitations of the current system were identified besides providing additional functionalities for the new system. Ms Nor Asiah's team utilized several requirement gathering techniques such as interviews, observation and surveys in order to achieve the right and complete users' requirements. In order to obtain comprehensive system requirements, the source must include all types of users for the UUM Online Learning. Therefore, apart from relying on the ELCs, Ms Nor Asiah decided to monitor the complaints made by the lecturers and students who were also the Learningzone's users. The complaints, usually made through phone calls or over the Help Desk counter in the UUMIT office, were very subjective especially those related to the access speed of the Learningzone. Since the complaints were too subjective and there were almost no direct feedback from the students regarding the Learningzone, Ms. Nor Asiah needed to strategize the process of getting information.

One of the strategies used by Ms Asiah and her team in determining the related problems of Learningzone usage was to review the students' online survey responses in July 2013. The team also detected the usage percentage of Learningzone by tracing the login and current hits. From the survey, it was revealed that most of the complaints were related to the access time. The access time referred to the time delay or latency between a request to an electronic system, and the access being completed or the time taken to return the requested data. The problem of delay had lead the UUMIT to upgrade its Wi-Fi system.

Based on the requirements gathered, Ms. Nor Asiah and her team needed to proceed with the development of the UUM Online Learning as quickly as possible. This was due to the urgency of the release target which was on the first semester that started on September 2014. In early 2015, the new LMS, UUM Online Learning, was launched. Most of the functions were similar to the Learningzone except on some additional functionalities. Among the added functionalities were back-up and restore functions of previous semesters teaching and learning materials, integration with other UUM systems such as Echo360, Turnitin and MyBox, and upload functions for learning objects in accordance to SCORM/AICC standards. Refer to Figure 3 for a snapshot of the UUM Online Learning System main page.

Figure 3: Snapshot of the UUM Online Learning

Did we get the requirements right?

Due to the urgency of the new LMS which needed to be operationalized by the first semester of the 2014/2015 session, the transition process was done in an ad-hoc manner. As the only development team, Ms. Nor Asiah and her colleagues managed to start the project in early September 2014 and had completed the project in December 2014 by putting their best effort to make sure the integration process of the new LMS was successful. Finally, they did it!

However, parts of the integration process, the student and course enrolment, were outsourced to a third party, Sybase.

UUMIT had taken the initiatives to introduce the new LMS, UUM Online Learning, to the lecturers. The team along with UTLC had chosen the lecturers from School of Computing (SOC) for the first exposure to UUM Online Learning before the second semester of the 2014/2015

session begins. The rationale for choosing the SOC lecturers was due to their proficiency in the use of Information Technology (IT) and computer based information systems. In ensuring that the UUM Online Learning will be used in teaching and learning, restrictions of other teaching and learning methods had been imposed to the lecture halls located at the SOC building, which was the DKG 4. The full pledge of the UUM Online Learning was completely done by the beginning of first semester of the 2015/2016 session.

Implementation

After the implementation of the UUM Online Learning, UUMIT had been receiving complaints regarding the new LMS form its users. In order for the users of the UUM Online learning to make complaints or ask for assistance, UUMIT had offered three alternative convenient mediums: Online complaints, Hotline and Walk-in.

Most of the complaints made by the users were only related to the hardware, nothing related to software. The complaints regarding the hardware usually happened during night times when there were 100 concurrent users especially when students stayed in their hostels. When such complaints were received, other than figuring the causes of the problems, the UUMIT personnel had to also look thoroughly on their hardware specifications.

Is the Changes Substantial Enough?

Apart from receiving complaints related to hardware, a new survey was carried out in 2016 among all stakeholders of the UUM Online Learning System that focused on user's acceptance of the new LMS. The purpose of the survey was to 1) get users' point of views of the new system and 2) study the factors that affect the acceptance of the UUM Online Learning among lecturers and students. The questionnaire instruments contained five sections namely; the perceived usefulness of the system, the behavioral intention to use, the perceive usage complexity, the perceived ease of use and the reasons not to use the system. The sampling strategy for the lecturers were based on stratified sampling which include professors, associate professors, senior lecturers, lecturers and visiting lecturers categorized according to UUM colleges. The samples of students were determined by their year of study, the program they enrolled in (IT and non IT students).

What did the lecturers say?

Twenty eight lecturers responded to the distributed questionnaire. Approximately 80% of the lecturers had more than two years' experience of using LMS. The overall acceptance of the new LMS among the lecturers seemed positive. All lecturers that participated in the survey were currently using the new LMS and they had no complaints regarding the usefulness of the UUM Online Learning. For the questions that asked whether they will always try to use the UUM Online Learning to perform their tasks, none of the lecturers gave a negative response.

Despite the positive responses regarding the perceived usefulness and behavioral intention on using the UUM Online Learning, when they were questioned on the user interface aspects of the system, the responses depicted a few variations. Figure 4 shows three pie charts of the lecturers' responses.
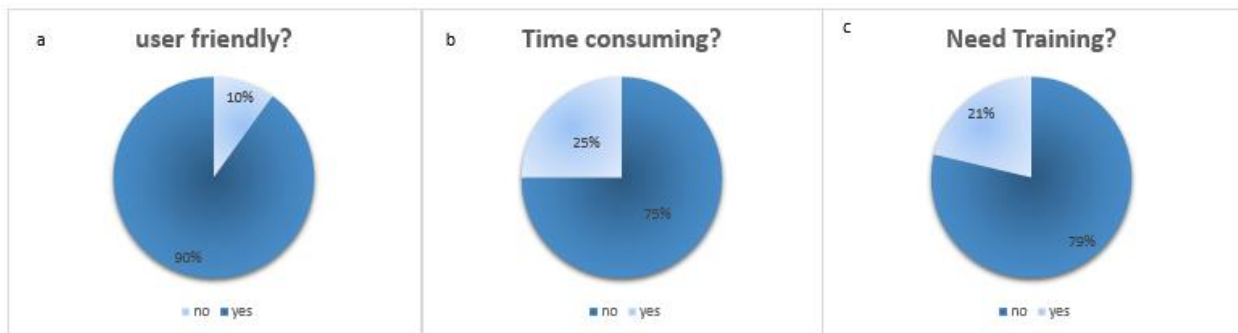

Figure 4: Pie charts depicting lecturer's response on user friendliness, time consuming and the need of training

In Figure 4a, when asked about the system's perceived ease of use, some (percentage???) respondents perceived that the system was not user friendly, whilst an average of 10% of the respondents answered negatively on this issue. As shown in Figure 4b, 25% of the lecturers expressed that the tasks performed using the UUM Online Learning took too much time and the integration of tasks was difficult. In addition, the LMS was vulnerable of breakdowns and loss of data.

In terms of training, as shown in Figure 4c, 21.4% of the lecturers mentioned that they needed more trainings related to the use of all the functionalities of the new LMS. Regarding to the usage problems, they argued that the accessibility factors such as facilities and network

performance were the main reasons that hindered them from fully utilizing the new LMS especially when administering concurrent online tasks such as quizzes.

What did the students say?

There were 251 students participated in the survey comprising of various programs offered in UUM. Twenty four percent of the students were enrolled in Information Technology program (IT students). The survey revealed differences of opinion among the IT and non-IT students. Figure 5 shows the bar graph of the students' opinions.

However, regarding the perceived usefulness of the UUM Online Learning, there was no significant difference between the non-IT and IT students where approximately only 3.7% of the students responded negatively to the usefulness of the UUM Online Learning. In terms of the intention to use, 9% of the non-IT students responded that they are reluctant to use the new LMS. As shown in Figure 5a, only 3% of both IT and non-IT students responded negatively as opposed to the lecturers' responses for the questions on perceived ease of use.

Figure 5: Bar graphs depicting student's opinion on user friendliness, time consuming and the need of training

In terms of perceived complexity of using the UUM Online Learning, there was a significant difference between IT and non-IT students whereby their responds were 3% and 19% respectively as shown in Figure 5b. This indicated that the IT student felt that the UUM Online Learning was taking too much of their time when performing many tasks, difficult for tasks integration and was vulnerable of breakdowns and loss of data. In terms of training (Figure 5c), 13% of both the IT and non-IT students agreed that they need training on the functionalities of the UUM Online Learning.

Conclusion

Even though the switch from the Learningzone to UUM Online Learning experienced various difficulties with user acceptance problems and complaints, the new UUM's LMS is currently fully operational and now used by all students and lecturers. The organization had improved its system on a timely manner to meet its changing business and technological requirements. As with any organization, coping with changes is the best policy.