STRUCTURED SYSTEM DESIGN FOR BLENDED TECHNOLOGY IN CLASSROOM

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Abstract: - Course planning in universities involves balancing multiple objectives. Through years of experiences in face-to-face teaching, faculty members have generated a great deal of knowledge and skill, which is often categorized by automatic routines and tacit knowledge. The advent of web and the growing of multimedia technology in education industry are transforming the context. This paper proposed a structured design for blended technology in classroom which comprehensively represents the scenario pf face-to-face and delivery methods in higher education. It requires the use of new tools as well as the creation and transformation of artifacts. It also poses new problems that require new kinds of support and collaboration since the faculty members may lack the technical ability to create their own blended course classes.

Key-Words: - Structured System Design, Blended Approach, Face-to-face, Multimedia Learning System (MMLS), New Piece of Chalk, Conceptual of Bubbles

1 Introduction

Bates [2] study best practice institution found that technology integration was promoted by strong plans for the use of instructional technology combining "extensive investment in technological infrastructure" as well as adequate support and training for faculty members. Further more, in his models, investment in infrastructure and training resulted in pervasive technology use throughout the institution. Professional development at these institutions emphasised teaching and learning supported and facilitated but not determined, by technology.

Course planning in universities involves balancing multiple objectives. Through years of experience in face-to-face teaching, faculty members have generated a great deal of knowledge and skill, which is often categorised by automatic routines and tacit knowledge. The advent of web and the growing of multimedia technology in education industry is transforming this context. It requires new course design procedures to represent and teach content in new context. It requires the use of new tools as well as the creation and transformation of artefacts. It also poses new problems that require new kinds of support and collaboration since the faculty members may lack the technical ability to create their own blended course classes.

The activity of designing blended course is situated within a larger web of institutional, individual, and technological contexts that may be different from those required to design and teach face-to-face courses. There are many of research has been done on the integration part of both online and traditional face-to-face education. More specially, asynchronous student-to-student and student-to-teacher interaction have been noted as the most important forms of interaction when build in online component to a course [8]. Another study also revealed that interaction is critical in when maintaining student's level of satisfaction [3]. Thus, the creating of blended learning strategies can provide an opportunity which utilises the best of multiple environments [10] and when designed appropriately can help improve interaction and student satisfaction.

2 The Activity System

This study will describe the multiple activity system involved in helping the educators develops and teaches their courses. These included the students, educators and the development of technology provided by the university.

2.1 Multimedia Learning System

Underlying the concept of "a virtual teacher within a virtual classroom", Multimedia Learning System (MMLS) [4] was developed to address to the needs of the entire educational enterprise. It is an intelligent management system, which serves as a platform for the

delivery of multimedia rich contents to its learners. MMLS is in-house system for the lecturer to be used as distributed their notes, announcement, assessment, and lots of feature, which will help the lecturer besides their 'traditional' classroom. The MMLS system has been provided by the centre of university for all lecturers to upload their notes where the main purpose is the student can download the notes from their home if compared to the Intranet provided by each faculty. This MMLS has been developed in-house which has the approach of using the e-learning focus to develop the course. Later this MMLS can be used to integrate with the students with more functionality provided by MMLS. It has been upgraded towards more convenient of the lecturer purpose to design their blended-approach courses. MMLS homepage as can be seen in Figure 1 below
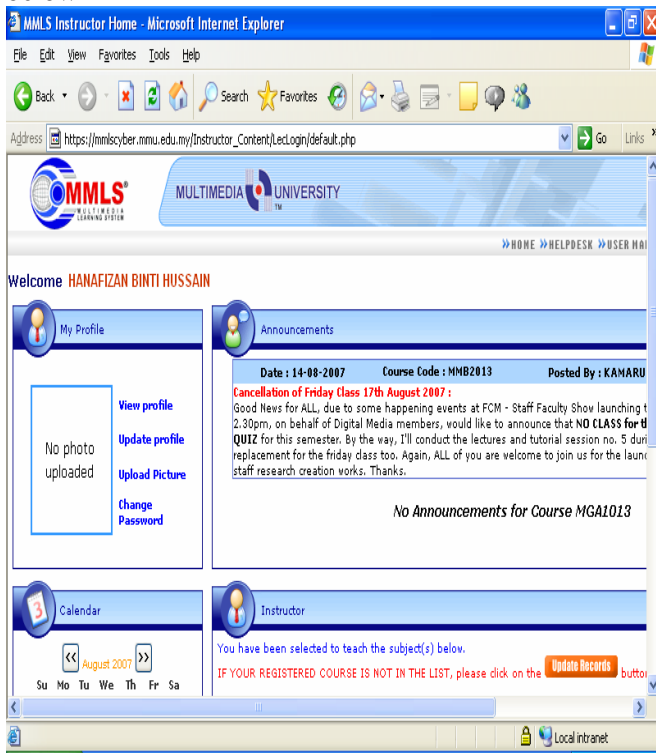

Fig. 1. MMLS Page for Instructor of the Specific Courses

2.1 Blended Approach

The use of technology in the classroom is growing to become an integral part in the education system, especially in Malaysia, with a strong initiative by the government to integrate technology into the classroom [6]. Much research on student learning environments has been carried out within the education perspective, with emphasis on pedagogy and big-budget, University-wide software such as WebCT and BlackBoard. The policy models for increased technology integration laid out by Bates [2], Spodark [9] and Miller et al. [7] emphasize that integration is encouraged by infrastructure investment, institutional initiatives (e.g. professional development), the development of a campus culture that emphasize leadership, and a critical mass of users and faculty participation.

These three factors are based on the three types of blended environment which are blended IT environment, blended teaching and learning environment and blended content environment as shown in Figure 2 below.
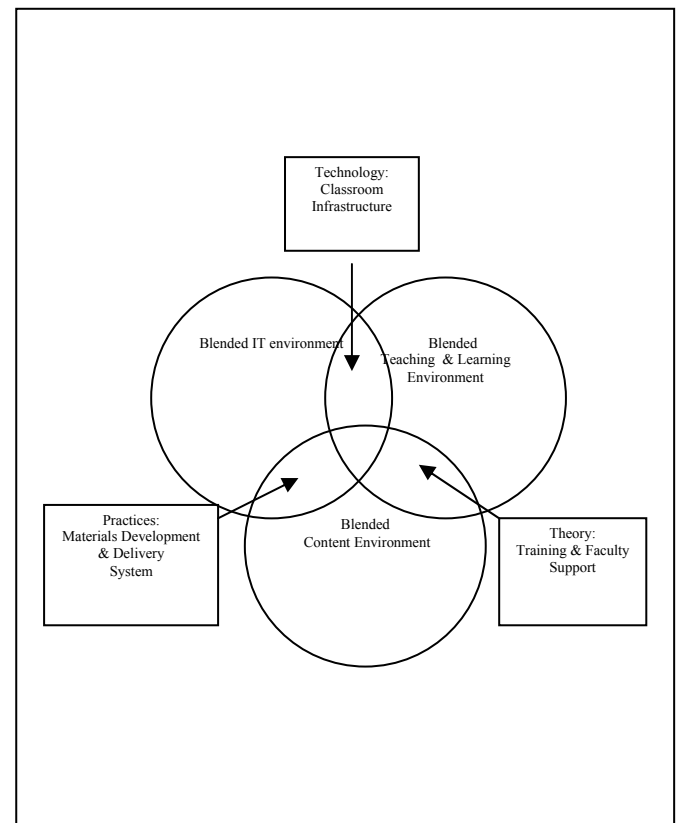

Fig. 2 Diagram of Conceptual Design for Research Study

Figure 2 represents the conceptual design of the research and the specific phases of research that will be conducted. As the figure illustrates, blended in IT environment can be categorized of using technology platforms from a variety of sources. Meanwhile for blended teaching and learning environment is the usage of instructional technology and pedagogical methods strategies that reflect on teaching and learning situations. Blended content environment is used towards the development of content to accommodate a variety of learning styles, teaching approach and available technology tools.

3 Paradigm of 'New Piece of Chalk'

With the powerful resources available through the currently installed base technology including the Internet and the many converging technologies it supports in a variety flexible, wireless applications where the society is already changing. Thus, the blended approach has to be in complying with the standard of technologies that available in the society and culture of the country. Around the globe, those with access to the Internet are using it at home, library, and at work for a variety pf social, economic, and educational purposes. Much of this use creates opportunities for learning that blur boundaries between formal and informal or natural learning opportunities and experiences.

3.1. Developing Workspace in Higher Education

Introduction of technology into the classroom will tend to support educators as facilitators. Technology also will be use to increase educators' sense of professionalism and achievement e-learning institution have been defined as learning institutions that have applied ICT to various aspects of education as in teaching and learning, staff training and management. To function effectively, the university will require maximum input resources, and well-designed supporting process.

i) An emphasis on students' thinking, language, and values across the curriculum
ii) The introduction of vertical integration, whereby students progress at their own pace, yet remain with their own age cohort
iii) Educators functioning more as "facilitators of learning" rather than " purveyors of knowledge"
iv) Learning being to a larger extent self-directed
v) A high level of parent and community involvement and support.

Based on the study, there are five general ideas, which are useful to be followed. The first idea is all courses content is in one accessible method or location which can cuts down the request for the information for example in MMLS all the handout, announcement, assignment etc can be seen in one platform in one location. Secondly, the different learning styles can be addressed by using multimedia and other media that available in the classroom while communication can be various such as bulletin board, chatting room, short message system (SMS) and other media. Thirdly, an active learning should be increased by rewarding them and also provides them with the new interaction or communication possibility as the student is the technology savvy. The fourth idea is focusing on the learning communities that are fostered that are bound by the location and time. No longer are student relegated to meeting and talking with one only those who can stay after class. And lastly, students are enjoy using variety media to learn concept and theory since students are technology savvy and accused to use e-learning system.

Since the beginning of time, educators have shared stories and anecdotes with their students to excite and inspire them and to draw them into new learning experiences. These stories have captured ideas, people and places not found within the walls of the classroom. They have engaged educators and students in discussions, exploration and problem-solving activities. However, educators have come to understand the power of confronting complex real-world challenges.

3.2. Delivery Methods

Most of the features provide by MMLS are adoption of interoperability and accessibility for learning content and learner information across the distributed learning environments. It also provides information on various components in E-Learning framework and the interoperability needed between these components. Furthermore, MMLS has been working on specifications and guidelines for various standards in E-learning, such as IEEE Learning Technology Standards Committee (LTSC), IMS (Instructional Management System) Global Learning Consortium, AICC and Advance Distributed Learning (ADL). Some of the components provided by MMLS are course management by instructor, intelligent delivery system, SCORM compliant, Auto sequencing slides, Questions bank, Auto administration On-line self test Short notes, course outline, past year exam paper Lecturer Notes, References E-mail, Chat, Discussion board On-line forum by course for asynchronous interactions, Report on students progress in table and chart format Platform independent for Operating System and Database (ODBC concept). It also developed fully using open source technology and component for extensive student monitoring and tracking.

4 Structured System Design

The problem faced by any universities 'is how to structure itself so that it's central academic activity is facilitated, not undermined by technological development' [5]. Even though universities appears to be more comfortable with traditional forms of teaching and learning, it appears that a shift toward a blended approach is taking place by universities are trying several different forms of educational

technology to find the right fit. Students must often do not want to lose the unique attributes of face-to-face teaching but they do wish for the benefits of educational technology such as edutainment learning.

Most of the software available on the shelf is only the 'ready-made' content. If the content need to be change to suit the environment (specially to cater the government mission) the software have to re-do again which can take years to build it. This Structured System Design framework has the advantages of merging technologies between educational and entertainment which is suitable for educators and easier handling in 'one-page' they can manipulate the course as required by the educational environment. Educators should not spend an excessive amount of time learning to use the technology.

4.1. Conceptual of Bubbles in Blended Approach
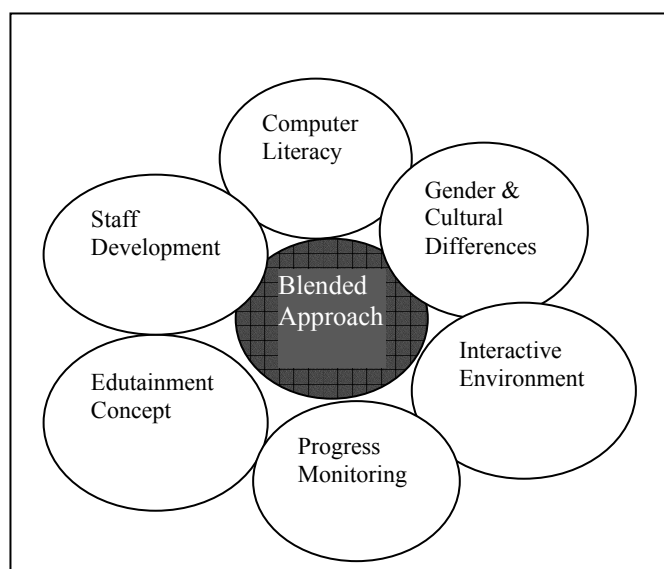Based on the concept of bubbles floating around each other has drawn the activity from MMLS.

Fig. 3 Conceptual of Bubbles in Blended Approach

Figure 3 illustrates the developing the activity for students engaged in blended approach in form of six bubbles as have described in the diagram for blended approach:
i) Computer Literacy -Using students experience in computer literacy where the student should be encouraged to ask for support if needed
ii) Gender and Cultural Differences - Student expectation of their experience has gaps. Induction and preparation of culture shock, differences in teaching and learning and support in making transition can assist them

iii) Interactive Environment - Integrating student in-group exercise and explicit guideline on expectations of lecturer and students
iv) Progress Monitoring - Student should be integrated academically and socially to enhance student experience.
v) Using Edutainment Concept - Study skills for entertainment that will be used to educate the student
vi) Staff Development New 'piece of chalk'
and 'pen and paper' and can be considered as
digital tool to be used

These bubbles is gather around of blended approach which give the impact of choosing one bubble can make different role of lecturer in delivery the course. For example if looking at the gender and cultural differences can make the lecturer think of the possibilities using the e-learning in different models which focused more on gender and cultural issue.

4.2. Phases in Structured System Design for Blended Approach
Phenomena as described by Adam [1], "The history of educational reform has shown that 'innovative' technologies that use a different medium from paper have done little benefit learning." Adam [1] further stresses that "The content of instruction, not the means of its conveyance is what influences performance results". Moreover, this has been advantage in using the structured system for educators in transforming the formal or informal learning, which will make the students engaged in their learning process and style.

The landscape of universities in Malaysia is rapidly reconfigured as new media technologies are combining or supplemental the conventional teaching practices. Based on the five phases above, the structured system design can be seen as five dimension of combination of theory, technology and practices.

The use of this technology in higher education puts high demands on the technology due to the complex nature of communication, and the maintenance that the content and goals of the teaching and tutoring must decide the choice of technology. It must also be considered whether different technological methods should be used exclusively or combined with one another or with teaching in the same room. The methods demand both pedagogical and didactical knowledge in order to ensure quality in the various areas where technology is applied, and furthermore, a basic understanding of technical possibilities and limitation of the technology.

Structured System Design			
Phase 1: All in one interface			
E-learning designed and practices are aligned with society's needs as embodied in core and advanced learning standard, and balanced with opportunities for students to pursue his or her own strengths, interests, and personal learning goals.			
Phase 2: Use media as concept for edutainment			
Creating the media for entertainment such as using sms or chat room for discussion beside the bulletin board discussion. Use one or two per time since it will make complicated if too much medium use at per time.			
Phase 3: Active learning for technology savvy			
Students post their reflection on their learning process and style. Evaluate their action and others who were involved in technology (their parents, background study, nationality, social-culture, etc)			
Phase 4: Develop learning community			
Adequacies and inadequacies of their theoretical knowledge with regard to their performance during critical incident in developing the learning community. Enlightenment they may have gained from reflecting on the learning logs of their peers and the reflections of peers on their own learning logs.			
Phase 5: presenting the content of the course as e-learning system			
Identify	Describe	Attribute	Learning
Students identify an incident from their workspace, which they consider as being significant	Students describe this incident in terms of what happened, when, where and how the system is without revealing the content	Students identify the special attributes or aspects of this incident that sets it a part from all others in their experience	Students reflect on what happened to them in term of the learning gain for them.

Fig. 4 Phases in Structured System Design

The educational system is constantly being challenged to offer better education to more people, at the same time as technological development continually opens up new possibilities and methods of teaching and leaning. As a professional practitioner, educator is likely to become a role model or standard for the students. The educator should also be a subject developer. By this one means that the educator should, through continual work, bring new knowledge to the subject through his/her own experience and research and development work.

It may be that one can connect a decentralized class up to a class at the higher institutions. There may be cooperation between different universities in order to get bigger reservoir of expertise or other adapted teaching set-ups. With such methods it will be possible to meet society's requirements for a much better way of leaning than we have been able to provide previously.

5 Conclusion

Most educators are convinced that appropriate uses of ICTs technologies can help revolutionise education with needed reforms. However, many also caution that this would not be happened without systematic changes. If our educational systems are going to be transformed to better serve the learners, we are going to have to overhaul the traditions of our learning cultures. Intergenerational communities of learners can provide the human and material resources that learners need on an individual and group basis to meet their learning goals and comply with core and advanced learning standards.

In general, the findings showed that the students have positive attitudes towards MMLS even though there are few comments which can enhance the MMLS as well as the 'blended' strategy in using e-learning for higher educations. Within the technological framework, MMLS is designed as an intelligent, interactive, self-paced, instructor-led, web-based teaching and learning tools. To its user friendliness, it is platform and database independence, auto-administration, intelligent learner tracking, instructor-led course management and fully web based. Phases in the Structured System Design for blended approach in this context allow the adaptation of the capabilities in E-Learning environment. Thus the new piece of chalk for the educators in higher education can be more focused on their skills and knowledge.

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