ONLINE TEACHING AND LEARNING AIDS: IN THE LENS OF COURSE CONTENT DEVELOPMENT IN FACULTY OF INFORMATION MANAGEMENT UNIVERSITI TEKNOLOGI MARA

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ABSTRACT

The use of technology gives big impact towards the transformation of education itself. Learning Management System (LMS) is now needed to direct the resource allocation and investment decisions concerning to the development and the adoption of new and emerging information technologies due to support the students learning process in the university. This study proposes an online teaching and learning aids as a tool in publishing course content development. The ADDIE model is used as a basic model for content management system in this study. A set of questionnaire was utilised as an instrument to investigate the level of creativity, innovation and skills of students through the learning outcome and to propose a new model in fulfilling the learning outcome requirements. Stratified Random Sampling was used as the sampling design, whereby 213 respondents were chosen among students from four different branches that offer Electronic Publication (IMD214) course under the Faculty of Information Management, that are located in Johor, Kelantan, Kedah and Sarawak. The findings of this study revealed that new mechanism needs to be practised in teaching and learning environment nowadays in order to support the 11th Malaysia Development Plan that consists of three areas namely Dynamic Graduate, High Quality Education and Accessibility. The model, therefore, can be viewed as a map which would guide other universities appropriately in enhancing their LMS for their own education purpose.

KEYWORDS: *ADDIE Model, course content development, E-learning, Electronic Publication, Learning Management System (LMS).*

INTRODUCTION

The revolution of technology in this era affords a great prospect for lectures to utilise it successfully. Awkwardly, the issue that should be considered is how students, particularly those who are in Y Generation adapt and practice it. In recent years, there have been major advances in the field of education and educational technology as many new tools and terms

have been introduced. Technology based education (TBL), Computer based training (CBT), Distance learning (DL), and Web based learning (WBL) are some of the keywords that are commonly used by researchers in the academic trail.

In the perspective of Malaysia, conferring to Farahiza (2010), the implementation of technology in teaching and learning activity has attracted a great deal of interest from the practitioners in the Higher Education Institution (HEI). Many higher education institutions have started to adopt and implement information and communication technology (ICT) solutions for example electronic learning as a source for flexible teaching and learning process either in the classroom or outside the classroom. This technology is referred as technology-enhanced learning (TEL).

In Raja Maznah's studies (2004), she mentioned that most public universities in Malaysia have some form of strategic plan for implementing pure electronic university. This plan includes conducting the teaching and learning program via online or web based mode to replace the traditional classroom learning. According to her, it is shown that universities in Malaysia are ready for the online delivery learning which supports distance education. Based on the analysis of SWOT project conducted by her in 2004, it was found that most HEIs have sufficient e-learning infrastructure unfortunately, they lack of a strategic plan for implementing online learning. Furthermore, most HEIs are focusing more to provide an ICT infrastructure to support online learning compared to firm plan for using ICT as a tool for teaching and learning, course development, course structure and assessment.

In this context, UiTM itself is not left behind in the drafting stage of UiTM Malaysia Plan for the strategic direction in line with the government and the Ministry of Education Malaysia, (Eleventh Malaysia plan *2016-2020*: Anchoring Growth On People, 2015). Besides, UiTM is also playing the role of strategic planning and execution to enable UiTM in generating greater strides to put UiTM on the world map. Thus, some transformation needs to be do here by UiTM in order to make sure that those plans are achieved successfully. Thus, the aim of this research is to propose an online platform for students to publish their course content electronically.

PROBLEM STATEMENT

In recent times, the government of Malaysia has developed the Malaysia Plan that comprises the government scheme for a period of 5 years as a drive towards a high-income country by 2020. One of the pillars that consists in the 11th Malaysia Development Plan is

focusing on the education areas; Dynamic Graduate, High Quality Education and Accessibility. The country's vision is to produce comprehensive, entrepreneurial and balanced graduates that have knowledge and skills (science), ethics and morality (moral) which will meet the needs Malaysia's economic growth and competitive at the international level. One of the ongoing components in the operation of the higher education system is technology allows innovation to deliver hence, adjusting education to all students, (Eleventh Malaysia plan *2016-2020*: Anchoring Growth on People, 2015).

In line with the Higher Order Thinking Skills (HOT) idea by Datuk Ahmad Senin, this concept aims to produce knowledgeable students who are critical and creative in their thinking and can compete at the international level. HOT skills refer to more than just the ability to read, write and count, but also to think and analyse a situation critically. Besides, in today's competitive world, students need to do more than just memorise or retell the facts. By executing the HOT skills, students will be taught on how to learn and reason, and apply what they think as solutions to problems in their work environment in the future.

Nevertheless, this Electronic Publishing course discusses the electronic publishing theory and skills in the print communication industry. Students are required to employ design principles using electronic publishing software to produce various publications for information dissemination. One of the outcomes for students is expected to organize the production of electronic publications. Those plans will be magnificently achieved if there is an integrated platform developed and utilized to store all these assessments. Unfortunately, based on the observation and experience, there is no platform or podium offered for them to upload all of their electronic publications as stated in the course work therefore, this will be the issue and the reason why this study is conducted.

OBJECTIVES

1. To enhance the creativity, critical thinking, communication and collaboration of students in Electronic Publishing (IMD 214) course content.
2. To propose an integrated platform for students to publish their electronic publications as stated in the course work.

LITERATURE REVIEW

Information Communication and Technology (ICT)

The exponential growth of information has made it imperative for learning to happen quickly. Meeting this challenge requires new thinking on how we acquire knowledge and skills as well as how we develop learning resources that can keep up with the knowledge economy.

The traditional context of learning is experiencing a radical change. People change careers and relocate several times throughout their lives. The concept of traditional education does not fit well with the new world of lifelong learning, in which the roles of instructor, students, and curriculum are changing. Teaching and learning are no longer restricted within traditional classrooms (McAllister and McAllister, 1996; Marold, Larsen, and Moreno, 2000).

The advent of Information Communication and Technology (ICT) and the Internet has greatly influenced the way knowledge is transmitted. Thus, the development of e-learning embarks here. Furthermore, parallel with the increasing use of networked computers and the achievement of telecommunication technology, the Internet has been widely recognised as a medium for network-enabled transfer of skills, information, and knowledge in various areas (Carswell, 1997). The evolution of information and communication technologies and the rising of computer knowledge of the students make possible appearance of these new educational forms.

E-Learning

In Malaysia's view, the utilization of ICT resources is essential, as well as the involvement of providing regulatory institutions in optimizing the potential of e-learning within a knowledge–based economy. The most significant aspect to learners' involvement in e-learning is the notion of e-readiness, that is, their ability to make use of e-learning resources and multimedia technologies to improve the quality of learning. Kuldip Kaur and Zoraini Wati Abas (2009) found that regulatory bodies and policy makers have a role to play in the development of e-learning in Malaysia as they are the principals in the staging of e-learning initiatives in a country. Malaysia has implemented the e-learning system since the year of 1997. The e-learning system has been used among the public libraries, the government agencies and also by the higher learning institutions (Abtar Kaur, 2006). The IT agenda was initially driven by technological and scientific forces and innovations as well as the supply and demand of marketing forces and entrepreneurship (Bajunid, 2002). Currently, there are about 11 public universities, 4 university colleges, 18 private universities, and over 600 private colleges in this country. With the increasing demand from higher education, many institutions in Malaysia have planned and utilised e-learning. One of the higher institutions in Malaysia that has used the e-learning system widely started from the year 2001 is Open University Malaysia (OUM) and it responds with a good feedback. The concept of e-learning as seen by the Ministry of Education (MOE), includes systems that enable information gathering, management, access and communication in various forms (Hassan, 2002).

As the fundamental, the first stage for e-learning project for Higher Education Institution (HEI) is the acquisition of sufficient ICT infrastructure to enable them to offer excellent e-learning platforms to students. The government of Malaysia has realised and seen it as crucial since the past four years, and as a solution to it, Millions of Ringgit has been allocated to enhance the ICT infrastructure delivery and management systems. In fact, lecturers are provided with at least Pentium 4 Desktop if not a laptop with mobile computing capability. Followed by the second phase is about the integration of ICT in teaching and learning, Raja Maznah (2000b). It is found that there is some common elements observed to be the critical successful factors such as the institutions' strategic plans for ICT use in teaching and learning, the specialized centre that translates the plans into reality and coordinates the strategies for e-learning success, the right combination for human resources balancing the academic know how with technology savvy, sufficient infrastructure to enable e-learning platform and staff development plans and strategy to encourage the adoption of ICT in teaching and learning process.

Zhang and Nunamaker (2003) study in the perspective of academics and found that e-learning has supported significant improvement in interactivity, collaboration, and delivery of online education. The educational opportunities have been carried to many remote corners of the earth via the Internet. The new focus of distance learning is to build a cost-effective learning infrastructure that enables anytime, anywhere, self-paced, and interactive learning. The integration of e-learning into medical education can catalyse the shift towards applying adult learning theory, where educators will no longer serve mainly as the distributors of content, but will become more involved as facilitators of learning and assessors of competency, Ruiz, et al (2006). Academic institutions should continue to explore on how to create more appealing and effective online learning environments. One way to do this is to integrate appropriate pedagogical methods, to enhance system interactivity and personalization, and to better engage learners. (Zhang, 2004).

Learning Management Systems / E-Learning Platform

E-learning platforms (sometimes called learning management systems (LMS)) are applications used for the delivery of learning content and facilitation of learning process. They are developed for administration and teaching in tertiary education. This software enables the administrators and lecturers to treat enrolment data electronically, offer electronic access to course materials and carry out assessments. The activities managed by the LMS vary from instructor- led classroom training to educational seminars to Web-based online training. In addition to managing the administrative functions of online learning, some systems help create, reuse, locate, deliver, manage, and improve learning content. This

system is called Learning Content Management System (LCMS) (Rengarajan, 2001). The LCMS provides tools for authoring content as well as virtual spaces for learner interaction (such as discussion forums and live chat rooms). Rengarajan (2001) emphasizes the importance of integrating both LMS and LCMS because they share different levels of administrative interests in the same entities. Lack of smooth integration between the products results in a broken solution with administrative conflicts.

E-learning scenario exploits ontologies in three ways: describing the semantic (content) of the learning materials, defining the learning context and for restructuring the learning materials in the learning courses. These three dimensions enable easier search and navigation through the learning materials. Ontology-based technologies and intelligent agents are expected to assist semantic information processing on the future Semantic Web. With more semantic-aware computing technologies, eLearning is expected to be more intelligent in the new era of Educational Semantic Web (Anderson & Whitelock, 2004). E-Learning supports intelligent semantic e-learning by bringing semantic context awareness into multimedia learning information processing and learning practices and also bringing awareness of learner personality in support of personalized learning (Weihong Huang, David Webster, Dawn Wood & Tanko Ishaya, 2006). In the e-learning environment, educators provide the online resources for students and help them to save time. They can read books in electronic format such as *PDF* format.

Yet, in the education perspective, learning process will no longer be restricted to formal institutions such as school and university. By using this proposed aid, learners should take advantages of unlimited learning and sharing information successfully. In some years, lot of changes in teaching and learning process will occur as when it comes to technology oriented, it will go beyond the expectation. Normally, in the growth of technology applications in education, we are moving towards a Virtual Reality where the distance between the teacher and the taught is nil, (Saxena, 2011).

Creativity and Innovation

According to Partnership for 21st Century Skills (2011), education in creativity and innovation focuses on creative thinking, creative collaboration, and implementing innovations. Thinking creatively is taught by having students who use a wide range of idea creation techniques, create new and worthwhile ideas, and elaborate, refine, analyse, and evaluate their own ideas in order to improve and maximize creative efforts.

However, from the teaching perspective, teaching students who work creatively with others involves teaching students that are able to develop, implement, and communicate new ideas with others effectively. Thus, it can be open and responsive to all perspectives, incorporating peer input and feedback into the work. To support this, Knoble and Wilber (2009) suggested that through the use of Web 2.0 tools such as blogs, photo sharing sites, and wikis, educators can provide opportunities for student users to complete complex tasks with virtual strangers. Additionally, site such as Fanfiction.com in which students share their creative endeavours with others and receive feedback and continue to revise based on authentic dialogue in the virtual environment (Knoble & Wilbur, 2009) is an excellent example of how technology can be used to promote and support 21st century skills among students.

Critical Thinking

Mohammad and Mohammad (2012) recommended that research as far back as the mid-1990s shows that the use of programs such as Logo in early childhood classrooms promotes critical thinking and problem-solving skills. What is interesting about this, is that Rusk, Resnik, Berg, and Pezalla-Granlund (2008) highlighted the attribute of the dramatic increased in the use of robotics in the educational environment to be the result of the opportunities for authentic decision making (design and computational) afforded when working on a robotic project. More recently, the focus on how technology can promote critical thinking and problem-solving in K12 students examines the types of activities students are completing when using technology. For example, Lowther et al. (2012) made the connection between students using technology for meaningful activities (e.g., problem-based and requiring processing or manipulation of information) and 21st century skills and found that in a large scale 1:1 laptop program, students were engaged in meaningful learning for over one-fourth of the time observed. Gallavan and Kottler (2012) also suggested that by allowing for divergent thinking activities, teachers are able to promote critical thinking.

Partnership for 21st Century Skills (2011) suggested that students learn to make judgments and decisions by learning how to analyse and evaluate evidence, arguments, claims, and beliefs; analyse and evaluate major alternative points of view; synthesize and make connections between information and arguments; interpret information and draw conclusions based on the best analysis; and reflect critically on learning experiences and processes. Finally, problem solving is developed by teaching students how to solve different sorts of non-familiar problems in conventional and innovative ways.

ADDIE MODEL

The ADDIE model is used as the basic model for content management system implementation in this study. ADDIE instructional model was first appeared in 1975 (Branson 1975). It was created by the Centre for Educational Technology at Florida State University. The ADDIE model developed by Dick and Cary in 1978 and Russell Watson revised in 1981, and was considered essential in the development of educational and training programs (Hannum, 2005). The E-content package is used for individual learning purpose. The development of E-content package consists of five phases based on Research Design Analysis, Design, Development, Implementation, and Evaluation of learning materials and activities. This model procedure is given below:

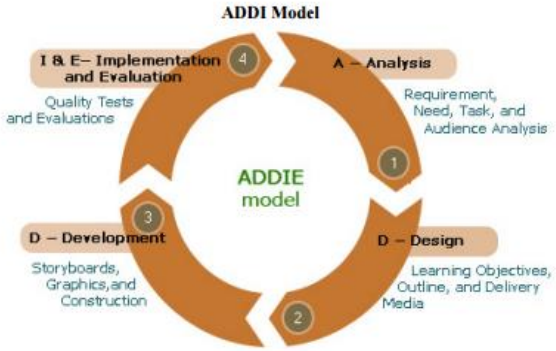

Figure 1: ADDIE Model

The E-content package stimulates each student individually or self-paced learning process. The E-content package gives enjoyable learning experiences for the students. They can clarify any doubt during the learning process through E-content package. Through the development of E-content, students will be able to exchange their knowledge with each other. Therefore, at the end of the learning process, the students will get the complete information about the lessons or the units. Students are active participants in the learning process. E-content package encourages cooperation and active learning thus promoting students' own-pace of learning.

METHODOLOGY

Quantitative method was selected as the methodology of this study. According to Sibanda Nokuthaba (2009), quantitative research focuses on gathering numerical data and generalizing it across groups of people. Stratified Random Sampling was chosen as the sampling design. This technique is suitable as the population is made up from four different branches of Faculty of Information Management located in UiTM Johor (85 students), UiTM Kedah (33 students), UiTM Kelantan (58 students), and UiTM Sarawak (37 students) that

offer Diploma in Information Management. All the 213 students from Semester Three (3) Diploma in Information Management Year 2017 that took Electronic Publishing (IMD214) were selected as the respondents in this study.

RESULTS

Reliability of instruments

Cronbach Alpha statistic is found to be 0.812, therefore the reliability of the questionnaire is acceptable.

Descriptive Statistics

		FREQUENCY	PERCENTAGE (%)
GENDERS			
	Male	42	21.6
	Female	152	78.4
AGE			
	20	168	86.6
	21	16	8.2
	22	7	3.6
	23	3	1.5
CGPA			
	3.50 - 4.00	20	10.3
	3.00 – 3.49	73	37.6
	2.50 – 2.99	83	42.8
	2.00 – 2.49	18	9.3
	< 2.00	2	1
CAMPUS			
	Johor	90	46.4
	Kelantan	22	11.3
	Kedah	44	22.7
	Sarawak	38	19.6

Table 1: Summary of Respondents' Characteristics

Table 1 summarises the respondents' characteristics. There are 42 male (21.6%) and 152 female (78.4%) Information Management students from the four surveyed UiTM branches. The respondents' age is around 20 to 23 years old, and 20 (10.3%) with 3.50 – 4.00 CGPA, 73 students (37.6%) 3.00 – 3.49, 83 students (42.8%) 2.50 – 2.99, 18 students (9.3%) 2.00 – 2.49 and 2 student (1%) with less than 2.00 CGPA.

Inferential statistics

	Correlation test between	r	p value	N
1.	My lecturers always encourage students to utilise e-learning and my publication quality improved.	0.656	< 0.001	194
2.	E-learning helps students to be responsible for their own learning.	0.774	<0.001	194
3.	Technology helps me in my learning environment.	0.683	0.001	194
4.	Learning Management System (LMS) is a tool that helps me in my learning process.	0.785	<0.001	194
5.	The Learning Management System (LMS) allows me to access materials at any time.	0.649	<0.001	194

Note: 〈= 0.01; r = corrélation coefficient; N= Total respondents

Table 2: Results of Pearson correlation tests

Tables 2-1 above indicates that there is a strong relationship between the lecturer encouragement to students to fully utilise the e-learning platform and their academic performance from the four surveyed UiTM branches. The encouragement from lecturer to utilise e-learning platform in their project publication has shown a positive impact to the students' performance as well as the quality of their work has also improved as the students need to publish it online and make it available for others. Overall, the students' academic achievement as well as the quality of LMS contents uploaded into the learning portal have reached the required standard to teach the students at under- graduate level of study.

Table 2-2 above shows there is a strong and positive relationship with e-learning helping students to be responsible for their own learning to facilitate the learning process of students. Normally, the students need to complete their publication based on the subject requirement and all the data and information need to be precise and checked with the supervisor first before they publish it into the LMS. Even though almost all of the course contents are the same but their quality need to scrutinised and standardised from all the branch campuses.

Table 2-3 above shows the appliance of technology helps in learning environment as the accessibility of the information is easier compared to conventional method of publication.

Since the academic staff gain their skill in the technology usage and application from their school days, as well as the extensiveness of ICT technology application either through the practice in the school or home throughout Malaysia. The Malaysian government has to be praise in this perspective because since the inception of ICT technology to the country in the late 1980s, the government's priority is to bridge the technological divide among Malaysians from all walks of life with the wide Wi-Fi coverage and the electricity supply, as well as installation and commissioning of digital technology to all level of education system.

Table 2-4 above shows that the students acknowledge that the LMS is a set of tools that helps them in learning. Most of the students use internet to access their content and learn from online materials. They also surf the internet by using the World Wide Web (WWW) or Local Area Network not only to excess the references or information but also using the intranet and net-working to study collaboratively among themselves. LMS platform suits them the most because the course contents have been uploaded earlier to facilitate the teaching and learning process.

Table 2-5 shows that all the four surveyed branches of the public university agreed that LMS allows them to access learning materials at anytime and anywhere. These four branches also committed in providing the e- learning facilities effectively to cater the need of expanding learners' population in various disciplines of studies as to heed the country's vision and mission of achieving developed country status by year 2020 and prosper advanced human capital.

DISCUSSION

The five contributing factors to the quality of online learning contents to support a regional, open and distance teaching and learning LMS in the Malaysian public university are academic staffs' demographic continuum, academic staffs' teaching and learners' learning culture, university's teaching and learning strategies, university's Learning Management System and technology appliance factor. Each of the above mentioned factors is equally important.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1443.214	56	25.772	8.739	.000
Within Groups	5574.523	194	28.735		

Total	7017.737	250			

Note: Value of F Prob. = 0.000 which is smaller than 〈 Level of 0.05

Table 3: Summary of one-way ANOVA. Significant different between students' demographic continuum from branches of the university and quality assured LMS contents

Table 3 above shows there is significant difference between the respondents' demographic continuum and the surveyed branches of the university. Normally, in a public university, most of the management of distance and e-learning programs is empower basis but LMS main frame server is centralised in the main campus. Usage is based on the discretions of the academic staff from the branch campuses of the university. The appointment of the academic staff is based on their academic qualifications and work experiences. Therefore, it showed significant different base on their demographic perspectives.

As the demographic continuum of the academic staff from all the branches of the university will not lead to a more significant background of its academic staff because overall, the university is a teaching university, all courses are based on the prepared lecture notes for the diploma and the degree students. Many young academic staff will try their level best to upload qualified courses contents for their own use of the digital LMS platform to facilitate their lecturing session in disseminating the knowledge, but the older academic staff preferred using chalk and talk classroom lecturing session of face to face rather than the digital technology platform which they may not well verse.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2194.665	56	39.190	6.689	.001
Within Groups	7696.172	194	39.671		
Total	9890.837	250			

Note: Value of F Prob. = 0.001 which is smaller than 〈 Level of 0.05

Table 4: Summary of one-way ANOVA. Significant different between academic staffs 'digital LMS teaching and learning culture of the university branches and quality assured LMS contents

Table 4 above shows there is a significant difference between the students' digital LMS learning culture and practices of the four surveyed branch campuses. The significant different of digital lecturing culture is due to perception, knowledge, attitudes and changes among the academic staff. The background of students from the four surveyed branches of the university are different. Therefore, their main agenda of writing and uploading best quality publications for the LMS platform does make differences. Sometimes, universities should have practiced 'people focused organization' because Kaur and Jujneja (2013) argue that when an organization extends its focus to encompass society and the environment, members of the organization can be inspired to share the dream of the organization. Learners will be proud of graduating from the various universities.

Changes of university culture are inevitable especially the sharing of LMS learning platform and the digital technology. One has to ask the willingness of organization to invest in a paradigm shift from knowledge hoarding to knowledge sharing. Organizations that succeed in knowledge management are likely to view knowledge as an asset and to develop organizational norms and values to support the creation and sharing of knowledge (Devenport et.al, 1998). But are the academic staff willing to change their mind-set towards a more significant approach in lecturing and dissemination of best quality contents and enrich the students' mind? That is part and parcel of the duty as an academician.

CONCLUSION

The outcome of this study shows that students have acknowledged the LMS as a set of tools that helps them in learning. Besides, LMS is a part of tools that has been used in delivering information to people actively. Some enhancement is already done with the support from technology so that the process of delivering the information and knowledge goes smoothly. This study proposed a new online-based platform for students to publish and share their assessment in a suitable storage, without any limitations. Hence, it tenures students to have a good record management skills and aware about the importance of record keeping, especially their assessment. Moreover, it also offers an opportunity for them to publish their assessment creatively and innovatively through online platform. Not only that, the utilisation of this online teaching and learning aid would be exclusively significant to the academicians to encourage more interaction among students in the class. In this context, the responsibility should not rely on one side, it requires all commitment and participation of a teamwork including organization and user themselves. If this situation is successfully implemented in Malaysia, there is no doubt that more international student will be interested to further their

study here. Thus, it is recommended that the government of Malaysia should contribute to make sure that this implementation is achieved as targeted and as highlighted in the latest 11th Malaysian Development Plan (RMKe11) which focussing on the education and technology infrastructure.

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