The E-University: From E-Training to E-Learning

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ABSTRACT

E-learning is an information and communication technology enabled mode of knowledge delivery. It has its root in corporate training. In the corporate world, information and communication technology (ICT) is widely used not only in business operations and management, but also in training. The corporate sector found that using ICT for training is viable, beneficial, and can be expanded out to the traditional institutions of higher learning. E-university was borne as the result of the partnership between the corporate and traditional university. The corporate provides the capital, as well as its technical know-how in carrying out the business; whereas the traditional university supplements it with the knowledge contents in the particular field. The hardware needed for an e-university is the computers and the network infrastructures. The hardware must work together with the software, which include LMS, LCMS and others. The e-learning industry is divided into three sectors: content, technology and service. Each sector contributes in its own way for the success of e-learning industry. E-learning is a business venture; therefore it is natural that ROI will be an important consideration for e-learning providers. E-university came to life with some fundamental issues: (i) the recognition of its programs, (ii) privacy and security, (iii) the position of academic staff, and (iv) the cultural changes that follow the E-university adoption. Some suggestions for the successful implementation of the E-university are put forward as a conclusion.

1.0 INTRODUCTION

The information and communication technology (ICT) has a far-reaching influence on our society. It has changed our ways of life, our ways of working, our ways of thinking as well as our ways of learning. In the field of communication ICT has connected many people around the globe. They can exchange information almost instantaneously and can reach any corners of the world within seconds. In the field of entertainment ICT has made music available anytime and anywhere. Songs can be stored in MP3 format and MP3 player can be as small as a thumb. ICT has revolutionized education too. Computers enable teachers to teach better by using multimedia courseware and learning can be customized to the learners' need. New mode of learning has emerged with the advent of ICT. In the field of higher education, traditionally, it is only available at the "brick-and-mortar" university, whereas, today it can exist in different forms, like the "brick-and-click" university and the "click-and-click" university. The "brick-and-mortar" form is the traditional form of university where physical campus and physical buildings exist. The "brick-and-click" form is the blended form, where physically the campus and buildings still exist but to a lesser extend. The number of academic staff may be reduced because new mode of teaching and learning are implemented.

This new mode of learning is called electronic-learning (E-learning). Finally the "click-and-click" form is the newest form of university that evolved from the extensive use of E-learning. In this form, the physical campus of the university may not exist. It is sometimes called a virtual university. Teaching and learning are mainly carried out in the cyberspace through Internet.

2.0 DEFINITION OF E-LEARNING

According to definition of E-learning practitioners, E-learning as the use of ICT for learning beyond the boundaries of the physical classroom[1]. Different people have different views about e-learning, like, Lance Dublin put it as "The use of technologies – Internet, intranet, WANs, satellite, CD-ROM, wireless – to provide and manage data, information, knowledge and learning to improve the performance of organizations and employees[1]. J. Rosenberg termed E-learning as the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. Elliott Masie defined E-learning as learning in the digital age where technology is used to improve the learning. From the above definitions, E-learning can be defined in two ways; the broader view and the narrow view[1]. The broader view of e-learning is any teaching and learning process facilitated by any ICTs, such as CD-ROM, multimedia courseware, e-books, Internet, intranet and so on. It encompasses the processes of teaching and learning, as well as the management process of teaching and learning[1]. In the narrow view of it, E-learning is concerns with the teaching and learning mainly by using Internet technology where online teaching and learning are done.

3.0 THE ROOTS OF E-LEARNING

With the advent of Internet and other ICT technologies, the society is experiencing a total change, initially with the onset of e-economy and later with the coming of k-economy. This brings great implications to the society[1]. It affects the ways of life of the people and more on the working life of adults. Products and knowledge are having shorter life span. New products keep on rolling out from the factory and they carry more new features. The knowledge of the workers is no longer static and it is more dynamic, it changes within months. Workers

need to keep up with the new knowledge and employers are sourcing out the more efficient and effective way of dissimilating new knowledge to the workers so that they remain competitive in the marketplace. A new way of conducting training in the corporate world has emerged. Using the latest technology in an innovative way has leveraged it[2]. E-learning has emerged because it enable to conduct training in a cost-effective manner as well as its content can be updated quickly as need by the present market conditions.

4.0 THE BIRTH OF E-UNIVERSITY

The success story of E-learning (E-training) in the corporate world has triggered entrepreneurs to venture into the education industry[14]. A few reasons drive the entrepreneurs to do so, firstly, education industry has a big market and return on investment (ROI) is fast and good. Secondly, governments are no longer able to provide free or subsidized higher education to their subjects without getting helps from private sectors, because the population is increasing exponentially in most parts of the world and the cost of higher education is escalating, moreover people demand better higher education without concerning about the cost[3]. Another driving force for E-learning is that in most parts of the world, education is democratized. More and more people are aware of the importance of higher education. Some adults may miss the opportunities going to university and now they can do it by enrolling in any institution of higher learning that conducts courses or degrees in a flexible way. E-learning facilitates all these, because it can be available any where and any time at your convenience.

The corporate is the one who knows how to leverage training by using ICT. The difference between training and learning lies in the fact that the former is passive, whereas the later is proactive[1]. Everybody makes his or her own learning. It's a commitment we make to employers and ourselves to remain capable of consistent peak performance through a process of lifelong learning. If you don't make it yourself, if you don't have a role to play in the process, if you just sit back and consume what's pushed to you, it isn't learning, it's training. The raw content of learning and training might be the same; everything else, as you'll see, is different. The corporate has the capital and the know-how and the traditional university has the academic personnel to provide contents for the course[4]. This started the "click-and-brick" university, it blended technology into a traditional institution. Slowly it has emerged into the "click-and-click" university or the virtual university. It is also called corporate university.

5.0 THE GLOBAL E-LEARNING MARKET

According to Cisco Systems, over 70 million people did their learning online in 2000, and the E-learning market was worth $2.3 billion. By the end of 2006, it is set to be worth almost $29 billion[2]. E-learning has been recognized as a global phenomenon. According to an observer from Wall Street, he said that where there is a change, there is an opportunity. The change here means a change toward lifelong education; therefore the demand for E-learning is obvious[13].

6.0 E-LEARNING INITIATIVES IN MALAYSIA

Just like e-commerce, no one likes to be left behind by the tide of change. A lot of companies would like to make a presence in the Web. Likewise in E-learning, many Malaysian universities would like to make a presence in the scene. University Tun Abdul Razak (UNITAR) was the first virtual university in Malaysia. It was established on September, 1998. It uses a Virtual Online Instructional Support System (VOISS). It uses blended mode of delivery, which includes Internet, courseware on CD, tutorial meetings, e-mail, online forum and online seminars. The Open University Malaysia (OUM) was the second university in Malaysia that uses e-learning extensively. Its in-house online system is called MyLMS. Its mode of delivery includes video-on-demand (VOD), virtual classroom, face-to-face meeting and digital library. Another university that offers a few degrees through E-learning is the Multimedia University (MMU). It has an Internet-based Programmes Development Unit (IBDU) which runs a few courses through this means. There are still rooms for future development in this area.
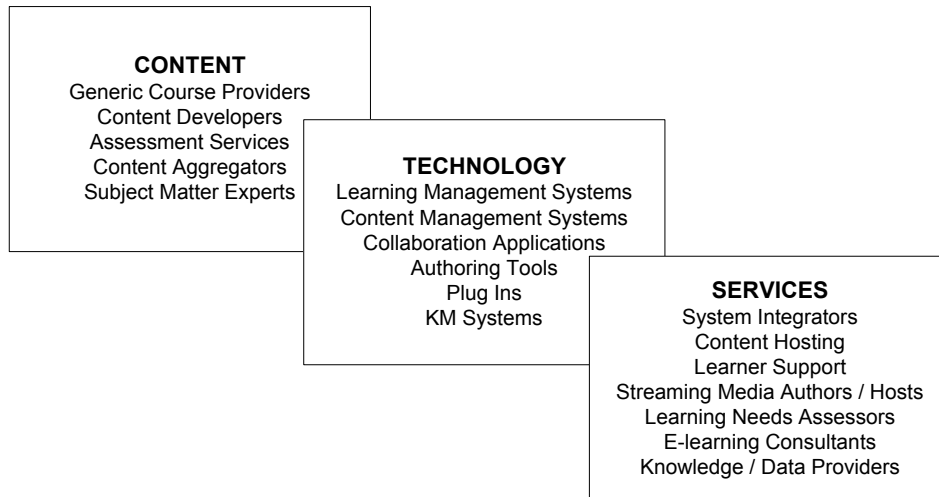
7.0 THE E-UNIVERSITY FRAMEWORK

Basically there are three modes of university today; the traditional brick-and-mortar university; the brick-and-click university and the click-and-click university[2]. These three modes of university are categorized according to the degree of E-learning implementation. Click-and-click university uses e-learning extensively and it differs a lot from the traditional university. It may not have a physical campus like the traditional university; academic staff reduced to the minimum[4]. There is still immense debate about the effectiveness of the click-and-click university. Therefore the choice is the brick-and-click model where it has best of the both worlds. It still maintains the traditional university culture as well as it encompasses the use of technology in teaching and learning delivery[2]. It uses technology to leverage the learning process. For the purpose of discussion on this paper, E-university means university that promotes E-learning. In this context, it means the brick-and-click university and the click-and-click university.

The Three E-Learning Industry Sectors

E-learning industry consists of three main sectors: (i) content, (ii) technology, and (iii) services[2]. Figure 1 depicts the key players in the three sectors. The content sector provides services like outlining course contents, providing course contents and prepare assessment and examination. The traditional university is good at this sector. The corporate world has long involvement in E-learning; therefore it has the expertise on both the sectors of technology and services. The technology sector will provide both the hardware and software for the e-university. There are two main software components in an e-university: the Learning Management System (LMS) and the Learning Content Management System (LCMS). Service sector provides services like system integration, content hosting, learner support and others. Virtual university or e-university needs a large initial capital. Normally, the corporate and the traditional university will form a partnership in setting up an e-university.

CONTENT
Generic Course Providers
Content Developers
Assessment Services
Content Aggregators
Subject Matter Experts

TECHNOLOGY
Learning Management Systems
Content Management Systems
Collaboration Applications
Authoring Tools
Plug Ins
KM Systems

SERVICES
System Integrators
Content Hosting
Learner Support
Streaming Media Authors / Hosts
Learning Needs Assessors
E-learning Consultants
Knowledge / Data Providers

Figure 1: E-learning industry sectors

THE ENGINES OF E-LEARNING (LMS and LCMS)

In the technology sector of e-learning industry, apart from hardware, there are two important software systems: the Learning Management System (LMS) and the Learning Contents Management System (LCMS) or just the Contents Management System (CMS)[3]. LMS is system that automates the administration of training events or learning events. The LMS registers users, tracks courses in a catalog, and records data from learners; it also provides reports to management. The database capabilities of the LMS extend to additional functions such as company management, online assessments, personalization and other resources.

The Learning Content Management System (LCMS) is an environment where developers can create, store, reuse, manage and deliver learning content from a central object repository, usually a database. The system usually has good search capabilities, allowing developers to quickly find the text or media needed to build training content[14]. These two systems fulfill the needs of the learners as well as the course/contents developers. Good software systems do not guarantee satisfaction from both parties. In order to have true e-learning experience the e-learning contents must come in timely. In this respect it needs a good IT infrastructure. Usability is another aspect that e-university provider has to considered. Hardware and software should work together in cognizance in order to achieve maximum learning for the learners. Figure 2 describes the integrations between the different software systems to form an e-university learning system[14].
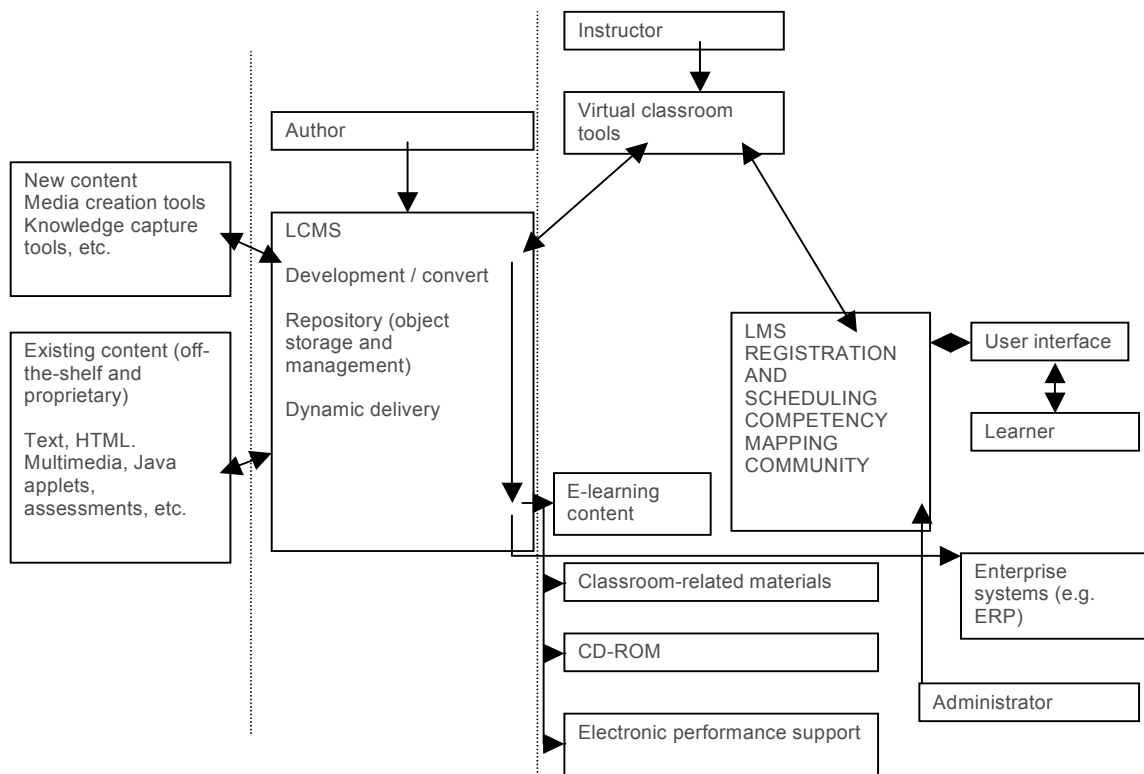
Figure 2: LMS and LCMS integration

BUSINESS MODEL

E-university has its root from the corporate. It started as a corporate training department and later a learning centre[3]. Therefore, it is natural that e-university formation involves the corporate world. Any new venture requires vast capital investment; there is no exception in the case of an e-university. Partnership between the traditional university with the corporate works well in this respect, because the traditional university can provide expertise on the knowledge contents for university courses, whereas the corporate world can provide initial capital and the management know-how in setting up an E-university[8].

There are three ways to form this partnership: first; corporate forms the e-university on his own; second, partnership with the traditional university and Third, traditional university develops it on his own. Among the three alternatives, the second is more viable, because there is less risk to face by the traditional university as there is no financial involvement and moreover it would not jeopardize the good name of the traditional university if the project fails midway. Any new venture needs to face certain degree of risk; in this respect e-university is not an exception. It is best not to use the name of the traditional university, but it may indicate that the traditional university validates the programme. The certification body may be a third party university.

REVENUES, COSTS AND RETURN ON INVESTMENT (ROI)

There are three important considerations for e-university venture; that is, firstly, the cost of both developing and delivering E-learning; secondly, the returns or benefits; and finally, the period over which benefits accrue[2]. The sources of revenue of an e-university are from learning fees, use of design tools, communication services, e-university database and e-commerce. The learner fee collected is for content owner, learning support provider, provider for technology platform, navigator services and award provider. Key costs for an e-university include technology platform, content development, marketing and launch. Organizational infrastructure costs involve staff, IT and communications, accommodation and others[3].

In an e-university, the way to calculate the return on investment is quite straightforward. The formula used is as followed:

$$ROI\,(\%) = \frac{net\;monetary\;benefits}{costs} \times 100$$

$$Time\;to\;break\;even = \frac{cost}{benefit} \times period$$

On the learner side, he has to pay for course fee as well as management and facilities overhead. Registration fee, library fee and computer fee are overhead cost for management and facilities. The learner is charged on the rational of the number of credit hours taken per semester. It is a fair deal

because you pay for what you learn. E-university has the flexibility that allows learners to take what they think they can handle within the limitation of time frame.

It is worth mentioning here that there are some major differences between direct learning costs in traditional classroom and the e-learning mode. Table 1 below shows the differences.

Table 1: A breakdown and comparison of learning costs

Direct Learning Costs	
Classroom	E-learning
Wages and salaries of trainers	Development
Payments to outside vendors	Purchase and/or licensing of materials
Facilities expenses	Hardware for delivery
Development	
Production and distribution of materials	
Travel expenses	
Administrative and support costs	

It is difficult to evaluate the benefits of e-learning, Kirkpatrick designed an evaluation model on this, and it is called Kirkpatrick Four-level Model[2]. These four levels are:
Level 1 Reaction: a measure of learner satisfaction.
Level 2 Learning: a measure of learning.
Level 3 Behaviour: a measure of behaviour change.
Level 4 Results: a measure of results.

Later on Jack Phillips added a fifth level to the Kirkpatrick's model. The fifth level is the return on investment which answers the question of whether the monetary value of the results exceeds the cost of the learning or not[2].

In order to get a measure of all these, questions pertaining to each of these attributes are ask. They are summarized in Table 2.

Table2: Questions for each Kirkpatrick level

Level	Questions
1. Reaction	• Did the learners like it?
	• What do they plan to do with what they've learned?
2. Learning	• Did the learners get it?
	• Have their skills, knowledge or attitudes changed as a result?
	• How much have they changed?
3. Behaviour	• Can the learners go out and do it?
	• Has their behaviour changed as a result of learning?
4. Results	• Do the learners use what they've learned?
	• Does the change in their behaviour have a positive and measurable impact on the business?

8.0 EMERGING ISSUES

It is always the concerns of the public that whether the degrees conferred by an e-university are on par with the traditional universities. The standards of teaching and learning, assessment and examination are always a question mark for the e-university. Without the strong support of the faculty, people doubt the teaching. According to a report by CNETAsia that the Malaysian government will not recognize all part-time qualifications from foreign universities or other institutions of higher learning, including e-learning courses[5]. In a similar report it was told that a candidate has to spend US$15,000 for a speedy 18 months online Ph.D course. To overcome such issue the authority concerns must set up an agency like LAN (Lembaga Akredasi Nagara), the National Accreditation Board, Malaysia to look after all issues pertaining to quality of degrees awarded.

Massy in a summary report on quality of e-learning in Europe cited four criteria to evaluate quality; they are (i) whether it functions technically without problems across all users; (ii) it has clear, explicit pedagogical design principles taking into considerations of learner type, needs and context; (iii) subject content is maintained up to date; and (iv) it has a high level of interactivity[6]. Quality learning can take place either in the classroom or in some online environments.

Mayes describes this situation aptly, he elaborated that not all kinds of student learning need to be campus-based. There is some highly effective learning can occur in some online environment. He warned that many web-based distance-learning courses are failing to meet the expectations of the learners, with very low completion rates[7].

Issues like security and privacy are important to e-commerce. They are likewise to e-university. Online

276

transactions are carried out in an e-university. For an e-university the main concern is to prevent hackers' intrusion to the system, because they can modify examination results and other important academic records, which can tarnish the good name of an e-university. Public trust is important to an e-university. Privacy is a growing concern for most people, learners would not like their academic records review to other unauthorized people, and therefore, it is the duty of the authority to uphold privacy of its customers.

An e-university needs course materials; these materials are written or jointly developed by academic staff. Once the knowledge has been digitized then the role of an academic staff diminishes[10]. There is common debate that who owns the course materials, the authority or the academic staff?

Research activities are at low priority in such corporate university. If such trend prevails then society will not progress. Further more every traditional university has its own culture; this culture can only be nurtured within the campus. In a virtual university where campus does not exist, then where is the culture?

9.0 KEY TRENDS

Adkins from Brandon-Hall gave the following comments on the e-learning industry:" There are signs of wide adoption, convergence, consolidation, and early signs of commoditization"[8]. There is a convergence of technology indicated by wider integration among the systems, more automated features and more personalization in terms of learning. It can even customize your own learning.

Today there is another driving force in the market for mobile E-learning. Mobile E-learning is a result of a natural progression from desktop products to handheld products; following the same way as a telephone[9]. The mobile e-learning technology is believed to improve performance and productivity.

Due to some other reasons many people miss their tertiary education, now, with the advent of E-learning many can resume their dream. Moreover with the arrival of K-economy, human capital is the key asset of corporations. Knowledge or qualification becomes the primary determinant of our career potential.

The difference between the haves and have-nots will be further aggravated with the inception of new technologies and new innovations. The developed countries will enjoy the fruits of ICT development. The underdeveloped countries are still facing the fundamental problems of life, like, food, health and education. They do not have extra for ICT infrastructures.

E-learning technology will grow together with the market acceptance of E-learning. LMS and LCMS are two solid examples of technologies consolidation. The open architecture concept of Internet technology is another driving force for E-learning. Products from different companies can be easily integrated into one another. Where there is an International standard like TCP/IP, this will favor industry innovations because the investors know that there is a consistent market for their products. Likewise for courseware development, there is a reference model called SCORM Sharable Content Object Reference Model. It is an emerging standard that tells you how learning content can be labeled by defining/marking sets of meta-tags for learning contents, the tags represent the specific criteria that can be used by a learning management system to search, organize, track and deliver content to specific learner. The trends of all these standards were to work toward interoperability, reusability, manageability, accessibility, durability and affordability[2].

10.0 CONCLUSION

Every innovation has its teething problems; there is no exception to E-learning. E-learning started at around 1985, initially using PC for training. It has evolved into three stages; namely, the stage of stand-alone software, client-server networks and the Internet/ intranet. The fourth stage has just started, that is the stage of wireless connectivity. Along the way there are successful stories as well as stories on failures.

Perhaps it is timely here that some reflections needed to be done by studying some failure story and infer some causes of failure, so that this can be avoided in future undertakings. "The ill-fated UKeU is expected to be broken up by June, 2004" reported by MacLeod[11]. John Beaumont, chief executive of UKeU said, "Expectations were badly mismanaged, there were poor implementation". It wasn't just a matter of putting lecture notes and a few PowerPoint presentations on the Web, and then leaving the student to navigate his or her way through them." In this respect the future e-university provider should rethink about course design so that it is pedagogically sound. Another reason cited by him is the pedagogical failure was compounded by technical problems. The early platforms were designed with needs of academics rather than the learners' needs. Another important factors quoted were money because UKeU is a commercial undertaking.

On the other side of the story, Open University (OU) reported some positive results about E-learning. Robin Mason from OU said that very few courses have been put totally online, but this doesn't mean that online courses are not growing but rather OU does it carefully[12]. The mixed approach where e-learning providers offer a blend of face-to-face, traditional distance-learning methodologies and some

online innovations, depending on the nature of the course appears to be the way that E-learning is moving. Further research needed to be carried out to find out the best-mix of practice for E-learning. Fundamental principles must be clear before any research is to be carried out "The focus must always be on the learning and on the learners in mind, and not how much the ROI is going to be?"

The path toward success for E-learning is not through revolution, but it is going to be incremental and it will evolve over time. Technology is only the vehicle for success. In order to be successful, several critical success factors must be met[13]. These are:

- Education offerings must be demand-driven and serve marketplace needs.
- Technology and business model must be scalable.
- Business must exploit the 24/7/365 ubiquitous, on-demand learning environment of the Web.
- Education providers must work toward standardization of credentials and transnational marketplace acceptance.
- There must be dependable infrastructure and user access.
- Business must find a market entry point with local knowledge and local relationships
- Business must find strategic partners to add competencies that solve marketplace problems in ways that you cannot do on your own.

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