

IN SEARCH OF EFFECTIVENESS FACTORS:
A CASE STUDY OF
THE UNIKL IIM E-LEARNING PORTAL

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DECLARATION

I hereby declare that this MDP 7523 Research Project is my original work except for quotations, statements, explanations and summaries, which I have already mentioned their sources. No portion of this Research Project has been submitted in support of any application for any other degree or qualification of this or any other university or institute of learning.

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DEDICATION

I would like to dedicate this to Assoc Prof Dr Stanley Richardson.

ABSTRACT

In 2004, the Universiti Kuala Lumpur Institut Infotech MARA (UniKL IIM) set up an e-learning portal called UniKL IIM E-Learning Portal. This portal was created based on an open source web based course management system—Claroline. After a year of implementation, a case study was carried out to identify the factors that determine the effectiveness of the e-learning portal. This study was started by conducting a series of depth interview with the management, system administrators, and subject matter experts who teach Diploma in Animation (DIA) Programme in UniKL IIM. This was followed by a survey done using semi-structured questionnaire, which involved 52 DIA students. The qualitative data collected in both the interviews and survey were processed using social-technical system approach. The findings indicated that technical factors play the dominant role in determining the effectiveness of this e-learning portal.

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CHAPTER 1 INTRODUCTION

1.1 Origin

The genesis of this research comes largely from the need to evaluate the effectiveness of a learning management system (LMS), employed by Institut Infotech MARA, Universiti Kuala Lumpur (UniKL IIM). This LMS, which was modified based on a course management system—Claroline, is called UniKL IIM E-Learning Portal. This portal acts as the online course repository of UniKL IIM.

All academics of UniKL IIM are required to use the e-learning portal in their teaching activities. As stated in the Annual Performance Plan (Appendix A), it is compulsory for Lecturers, Assistant Lecturers and Instructors to use at least 60 percent of the features available in the portal and upload at least 50 percent of the lecture notes to the portal. The usage of the portal contributes 10 percent to individual achievement in the annual performance evaluation.

Meanwhile, it is not compulsory for students of UniKL IIM to use the e-learning portal. As a result, the students, especially those enrolled in the Diploma in Animation (DIA) Programme seldom access the portal (see Appendix B).

Until evaluation is carried out, the effectiveness of this e-learning portal remains unknown. In order to evaluate the effectiveness of the e-learning portal, the factors that affect its effectiveness must be identified in advanced. Once the factors are identified, a set of measuring variables can be generated to create an effectiveness evaluation tool. The author, having worked in UniKL IIM since June 2004 decided to examine the e-learning portal in some detail using a case study approach. The concentration would be on the factors that determine the effectiveness of UniKL IIM E-Learning Portal.

1.2 The Aim

The aim is to identify the factors that determine the effectiveness of UniKL IIM E-Learning Portal.

1.3 Overview of E-Learning Technologies

Education in today’s world is more learner-oriented than hitherto because students are self-directed or self-motivated (Rao, 2002). Under such environment, learners are supported by various kinds of electronic tools, including virtual tutors, forums, learning management system, learning portal, etc, hence the term electronic learning or e-learning (eLearning Channel, 2003). E-learning is no longer a new phenomenon, but it has not ceased to be a hot topic (Dam 2004).

Table 1.1 shows the brief history of e-learning technologies.

Time frame	Era	Characteristics
before 1983	Instructor-led Training Era	<ul style="list-style-type: none"> • Computers were not widely available. • Instructor-led training (ILT) was the primary training method. • ILT allowed students to get away from the office to focus on their studies and to interact with their instructor and classmates. • However, ILT usually meant high costs and downtime during office hours.
1984 – 1993	Multimedia Era	<ul style="list-style-type: none"> • Windows 3.1, Macintosh, CD-ROMS, and PowerPoint were the technological advancements of this era. • Computer-based training (CBT) courses were delivered via CD-ROM to make training more transportable and visually engaging. • The anytime, anywhere availability of CD-ROMs also provided time and cost savings that ILT could not. • Anyway, CD-ROM courses lacked instructor interaction and dynamic presentations – making the experience slower and less engaging for students.
1994 – 1999	First Wave of E-learning	<ul style="list-style-type: none"> • As the Internet evolved, its potential to improve training was explored. • The advent of email, Web browsers, HTML, media players, low-fidelity streamed audio / video, and simple JAVA began to change the face of multimedia training. • Basic mentoring via email, intranet CBT with text and simple graphics, and Web-based training with low-quality intermittent-delivery Web casts emerged.
2000 - 2005	Second Wave of E-Learning	<ul style="list-style-type: none"> • Advanced web site design, rich streaming media, high-bandwidth access and JAVA/IP network applications revolutionized the training industry. • Live instructor-led training via the Web can be combined with real-time mentoring, improved learner services, and up-to-date, engaging, “born on the Web” content to create a highly-effective, multi-dimensional learning environment. • These sophisticated training solutions provide even greater cost savings, higher quality learning experiences, and are setting the standard for the next wave of e-learning.

Table 1.1: The Four Eras of E-Learning. Source: KnowledgeNet, 2005

1.3.1 Definitions of E-Learning

E-learning is any use of web and Internet technologies to deliver solutions that enhance the instructional process (Tan, Zalifah Awang Long, Fauzan Shukor & Richardson, 2005). This is the definition on which this case study is based. However, e-learning may mean different things to different people, because it has the capacity to cater for the needs of various types of learners and instructors. Thus, its definition should be context-oriented rather than universal. Herewith some of its definitions from various contexts.

Clark and Mayer (2002) defined e-learning as training delivered on a computer, including CD-ROM, Internet, or intranet, that is designed to support individual learning and organizational performance goals. However, as the technologies evolved, some excluded CD-ROM as the delivery mean for e-learning. Horton and Horton (2003) defined e-learning as any use of Web and Internet technologies to create learning experiences. This definition echoes Poon, Low & Yong (2004), though they regarded e-learning as web-based learning, which refers to Internet technologies used to deliver a broad array of solutions that enhance the instructional process. Besides web-based learning, online learning is another synonym for e-learning (Morrison, 2003). Morrison (2003) briefly clarified some common e-learning terms and their synonyms:

“Generic content, off-the-shelf content and third-party content all refer to the same thing: courses or learning objects that have been developed by content publishers for use in more than one enterprise. Custom content and bespoke content have equivalent meanings: courses or learning objects that have been developed to meet a specific business need in a specific enterprise. Custom content is always used in the USA; bespoke content is common in the UK. Self-paced learning and asynchronous learning both describe e-learning courses taken by learners on their own at a time of their choosing. Face-to-face learning, classroom learning and instructor-led learning are synonymous. Finally, live e-learning, synchronous learning and virtual classroom all mean the same thing.”

While Morrison (2003) tried to clarify e-learning synonyms, Piskurish (2003) attempted to analyse them in detail. Anyhow, he stressed that as e-learning is a still-evolving discipline, what might be considered a good definition today may not even be considered tomorrow.

1.3.2 Learning Management Systems

According to Bitpipe Dictionary (2005), learning management systems (LMS) are web-based applications, centring on the provision of courses on-line to individuals, tracking skills and competencies, human resource management, content creation and delivery of courses, along with administrative features. They are also called learning management software, courseware management systems, course management systems or web-based learning management systems.

Brockbank (2003) defined LMS as the “nerve system” of a total e-learning solution, which integrates e-learning components including contents, collaboration, testing and assessment, skills and competency, e-commerce, and Internet video-based learning. He further identified four essential features of any LMS, namely scalability, flexibility, interoperability, and extendibility (see Table 1.2).

Feature	Description
1. Scalability	How well the LMS solution will work when use increases or decreases over time.
2. Flexibility	Allows the LMS processing to be customised to meet business processes without writing additional code.
3. Interoperability	The ease with which an LMS works with tools and contents created by other companies and software packages.
4. Extendibility	The capability of adding new functionality to current or existing LMS product features.

Table 1.2: The top four features of any LMS requirements list, suggested by Brockbank (2003).

From the technical perspective, LMS is a server-based software system that controls e-learning (Brockbank, 2003). It links together and integrates all the other software components that make up the technical solution. Fundamentally, it provides two capabilities:

- Learner self-management, access, and administration of self-paced e-learning, virtual classroom, and classroom-based learning and support
- Training administration, including training records and curriculum management; course publishing, tracking, and reporting; and competency management

A LMS provides a central point for online student access, administration, and content storage (Shepherd 2003). It tracks, supports, manages, and measures e-learning activities. Content that is compliant with an LMS can be accessed through it (Lee & Owens, 2004). However, the term compliant can be very misleading, as there are three levels of standards support, namely compliance, conformance and certification (see Table 1.3). The interface that allows the user to access the content is known as a portal (see Figure 1.1).

Level of standard support	Description
1. Compliance	<ul style="list-style-type: none"> - The lowest level of standard support. - Based on a claim made by the vendor. - Unchecked by independent party.
2. Conformance	<ul style="list-style-type: none"> - A claim made by a vendor following successful completion of self-testing and validation with an authorised testing suite. - No validation made by an independent third party.
3. Certification	<ul style="list-style-type: none"> - The highest level of standard support. - Achieved through successful testing by an authorised, independent, third-party testing firm.

Table 1.3: The level of standard support for learning management systems. Source Brockbank (2004).

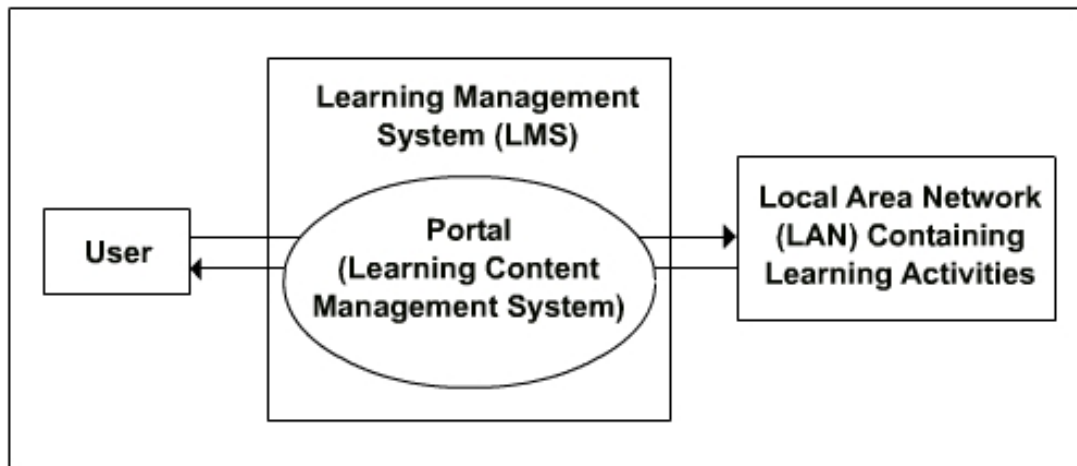


Figure 1.1: The Interaction between LMS and LCMS. Source Lee & Owens 2004.

The LMS is designed to support the management of learner performance by tracking progress and performance across all types of learning activities (Brockbank, 2003). Typical functions and processes supported by an LMS include:

- Managing courses and course registration
- Tracking student registration, access, and progress
- Managing course information, and
- Course scheduling and administration including instructors and physical facilities reporting.

Concerning the types of LMS, Brockbank (2003) stated that vendors have primarily taken three separate and distinct approaches in engineering their LMS, ie which are proprietary, standards-based, and open architecture (see Table 1.4).

Types of LMS	Characteristics
Proprietary	<ul style="list-style-type: none"> - Offer limited interoperability. - Will not 'plug-and-play' with off-the-shelf of customized courseware contents or systems. - Require content to undergo a reworking, re-engineering, and repurposing process to work with the LMS. - Require lengthy processes to bring together propriety systems that are already in-house.
Standards-based	<ul style="list-style-type: none"> - Three levels of standard support (refer to Table 1.2). - Offer interoperability or built-in connectivity. - Limited by the quality of the standards. - Slow to adapt to market needs and demands. - Tend to compromise standards due to panels, experts, hidden agendas, and lengthy discussion processes.
Open Architecture	<ul style="list-style-type: none"> - Require little effort to connect or integrate with content, collaboration, testing and assessment, skills and competency, e-commerce, and Internet video-based learning—whether the tool or content was developed in-house, customized, or purchased from a third-party vendor. - Require little more than minor modifications to comply with the yet to finalised standards. - Work with proprietary, best of breed, customized, and home-grown content and systems. - Allows organizations to use existing information technology systems that are already in place. - Have connectivity with "all" solutions and extendibility to new solutions (systems, content, etc.) as they become available.

Table 1.4: Types of LMS and their characteristics. Source Brockbank (2003)

1.3.3 E-Learning Portal

A learning portal is a gateway to learning for a particular population of learners (Kanahele, 2003). Learning portals can combine many complementary e-learning features together into an effective learning solution, one that can manage the flow of learning that adults follow in their quest for personal and professional improvement. In a word, they deliver on e-learning's promise of "just-in-time learning" and "learning on demand". Although learning portal applications vary widely in their features and functions, there are several features that are shared among many of the portals: knowledge and skill assessment, offline content or instruction, e-commerce, community, online courseware launching, and learning evaluation (Kanahele, 2003).

Though learning portals may be varied in their characteristics, the full-service learning portal is designed to fully support the learning cycle of adult learners. Kanahale (2003) regarded the flow of learning as the learning cycle (Figure 1.2), which is a supporting element of lifelong learning that includes phases of assessment, preparation, and evaluation. He also provided a decision-making guide that compares learning portals to internal learning management systems, outlines criteria for decisions between building versus buying a learning portal, and considers issues when purchasing learning portal services (see Appendix C).

He further depicted the full-service learning portal (Figure 1.3) which supports the learning cycle with various components of e-learning. A full-service learning portal is built around an LMS that can launch and track online courseware from a variety of courseware vendors. Kanahale (2003) stated that the current learning portals are evolving to meet the personalization and intelligence needs of learners. In the future, learning portals will adjust learning content, information, and the learning environment according to the users' knowledge, skills, certifications, learning preferences, personalities, roles, interests, and learning devices (at least, this is his belief).

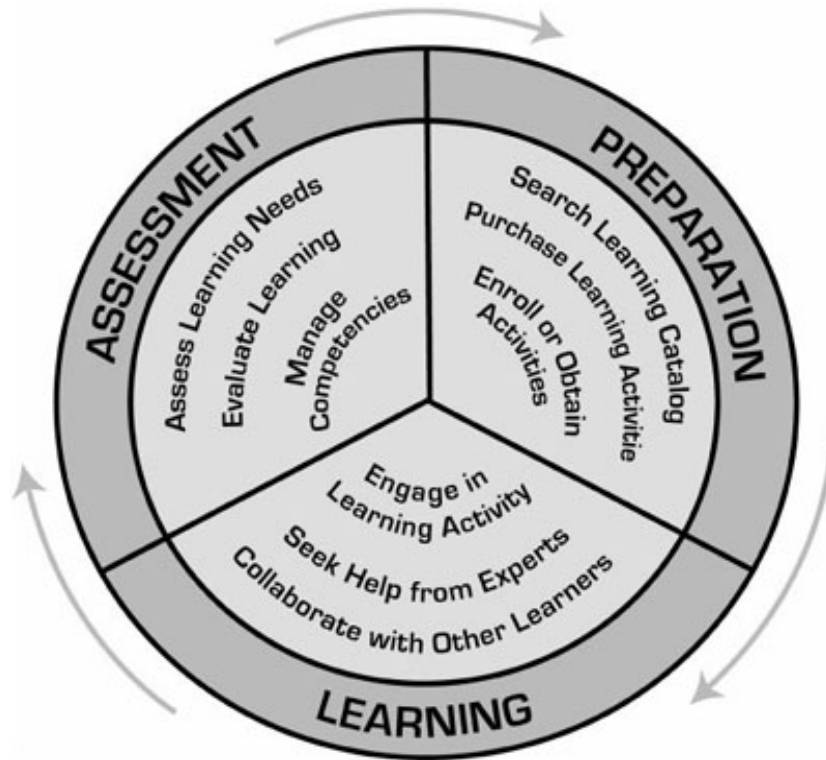


Figure 1.2: Learning Cycle. Source Kanahale, 2003.

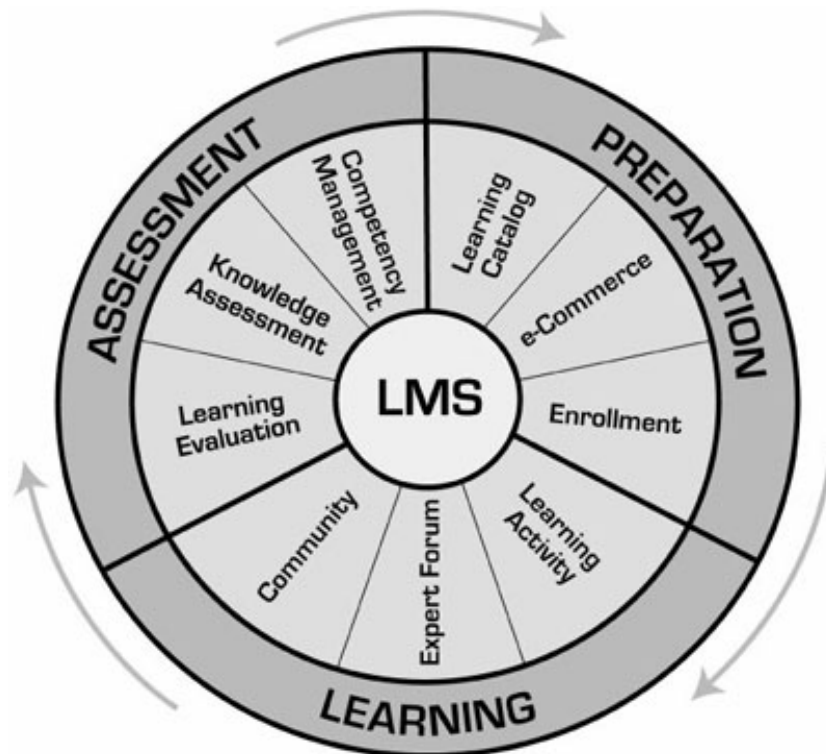


Figure 1.3: The full-service learning portal. Source Kanahale, 2003.

1.3.4 Pitfalls, Challenges and Lessons Learnt

The explosion in e-learning is largely due to the expansion of a specific delivery vehicle on the Internet: the World Wide Web, which allows for a high level of interactivity between the student and the e-teacher (Doyle 2003). According to a report published by the U.S. Department of Education, 7.6% of college students participated in some sort of e-Learning during 1999–2000. Of those that participated, 37.3% participated in live TV/audio events; 39.3% participated in prerecorded TV/audio events; and 60.1% participated in Internet-based e-Learning (Doyle 2003).

Despite the impressive capabilities of e-learning, there are barriers, challenges and pitfalls to the realization of its potential. Clark and Mayer (2002) identified three major pitfalls of e-learning and their results (refer to Table 1.5).

Pitfall	Result
1. Failure to define job knowledge and skills	Lessons do not build knowledge and skills that transfer to the job
2. Failure to accommodate learning processes.	Lessons overload cognitive processes and learning is disrupted
3. Attrition	Learners do not complete their instruction.

Table 1.5: Three pitfalls of e-learning. Source Clark & Mayer 2002.

Labonte (2003) further commented that e-learning sometimes fails to deliver expected results due to the incorrect application of e-learning as a single-event solution to a multiple-cause performance problem.

“This misapplication of e-learning is sometimes driven by internal competition and ego rather than sound analysis and decision-making. Besides, in the rush to get e-learning programs to learners, all too often the programs are poorly designed. E-learning may not get the front-end assessment, the task analysis, audience analysis, and assessment of learner environment required for quality design and effective learning. In the worst situations, the content of classroom programs are merged into e-learning without analysis or design appropriate for the differences and capabilities of each methodology.”

Morrison (2003) indicated the short term and medium term challenges for e-learning:

“In the short term because enterprise learning departments are being tasked with making e-learning work effectively using what are still embryonic tools; in the medium term because all e-learning practitioners are struggling to develop a clear and imaginative vision that will give direction to their current efforts and mollify those making substantial investments in e-learning’s promises.”

In the non-formal educational setting, Dam (2004) depicted that through the lesson learned in 25 case studies of e-learning and blended e-learning implementation, companies are starting to uncover the reality of what works and what doesn’t work in the brave new world of e-learning. He also gave insights into the most common challenges organizations have in aligning e-learning with business goals, designing e-learning and blended learning programs, and deploying e-learning solutions.

Morrison (2003) further claimed that everyone has learning needs but no one has e-learning needs—e-learning is a solution not an end in itself. He stressed the importance of right implementation in making e-learning a powerful way of meeting learning needs. He proposed a four key points e-learning continuum (see Figure 1.4) and provided strategic guidance for decision-makers, implementation teams and delivery teams. Morrison (2003) also identified two headline lessons of e-learning implementation:

- Learning should be driven by business requirements not training requirements.
- The learner not the training department is at the centre of learning in the enterprise.

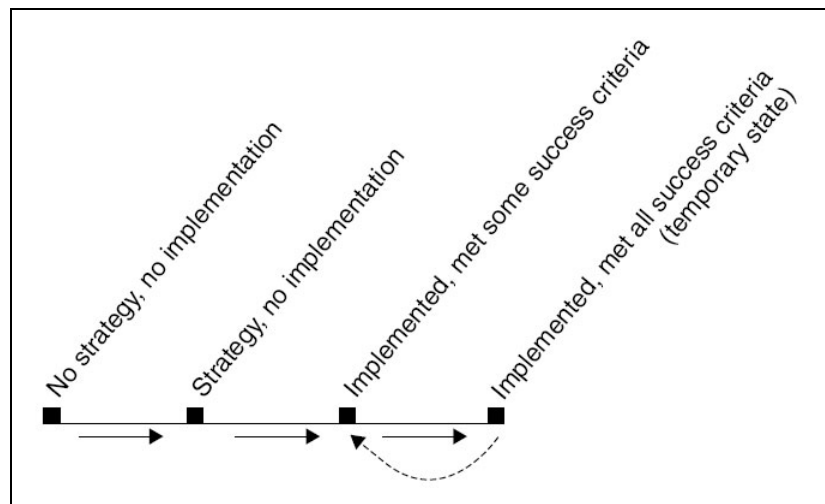


Figure 1.4: The E-learning Continuum. Source Morrison, 2003.

Labonte (2003) argued that e-learning is a single event solution that supports skills and knowledge improvement, but it is not a solution for complex performance problems that require multiple actions in the work environment to solve. He claimed that learning does not equal performance:

“Performance is achieved through the application of learning in a supportive work environment with management champions providing leadership and coaching. The enthusiasm with the technical capabilities of e-learning may lead to talking and acting as if e-learning is the silver bullet, the miracle cure for organizational and individual performance problems.”

Aldrich (2004) illustrated that the e-learning industry’s faith in the Internet actually overshot in the late 1990s:

“In 1999, Knowledge-Planet launched and Asymetrix renamed itself Click2Learn.com to push e-learning portals as one-stop application service provider (ASP) models. Meanwhile the founders of Ninth House, launched in 1999, believed that widely accessible broadband would bring television-like e-learning to the masses. All three organizations had to back away from their aggressive plans within twelve months.”

1.4 Malaysia Interests in E-Learning

In general, there are many e-learning activities in Malaysia. Chronology of e-learning in Malaysia from 1990 to 2005 is summarised below (Table 1.6):

Date	Details of each event
mid 90s	Adoption of e-learning technologies in distance education among public universities.
1996	The setup of computer laboratories in 90 secondary schools.
Sep 98	Establishment of first virtual university in Malaysia, Universiti Tun Abdul Razak.
1999	Smart School Project by Ministry of Education (MoE).
Mar 99	National IT Council (NITC) E-Learning Working Group proposed National Learning Grid as one of the project under E-Learning Working Group. David et al, 2004;
Aug 00	Formation of Open University Malaysia.
Jun 02	NITC-STIC Meeting. The meeting endorsed the conceptual framework of Malaysian Grid for Learning (MyGfL).
Aug 02	Strategic Thrust Implementation Committee Meeting. MyGfL will be used as the integrating platform for the 16 Bridging Digital Divide pilot projects.
Sep 02	Soft launch of MyGfL by Ministry of Human Resource (MoHR)
Mar 03	Development of technical framework. Collaboration with National Library on content for MyGfL.
May 03	Formulation of content, instructional design & technical guidelines.
Oct 03	Development of Metadata Management Systems by MIMOS Berhad. Malaysian Metadata Centre Development of MyGfL technical architecture and framework by MIMOS Berhad.
Dec 03 – Aug 04	Three Standard Expert Group meeting were held. National Consultative Committee for e-Learning (NCCCEL) approved standards.
Feb 04	Formation of MyGfL Standard Expert Group.
Apr 04	MMU offered Master of Multimedia (e-Learning Technologies).
Sep 04	Submitted the Malaysian e-Learning Standards / Guidelines to SIRIM for endorsement and acceptance as Malaysian Standards. MyGfL Portal was completed and available online.
2005	SchoolNet Project by MoE.
Apr 05 – Sep 05	Workshops of National R&D Roadmap for e-Learning Technology by MIMOS. (Zailan, 2005)
Nov 05	Establishment of ASEAN E-Learning Centre in Multimedia University.
Dec 05	ASEAN Seminar on e-Learning by Multimedia University.

Table 1.6: Chronology of e-learning in Malaysia from 1990 to 2005.

Sources: Asirvatham, Azizah, Ewe, Woods & Tengku Putri Norishah (2004); Rohani Ismail (2005) and Mohd Nazir Md. Zabit, Mohd Yahya Mohd Hussin & Tirzah Zubeidah Zachariah (2005).

1.4.1 E-Learning in the Tertiary Education Systems

The adoption of e-learning technologies in Malaysia started in the 1990s as a mean to support distance learning programmes offered by most of the public universities (Syed Othman, 2002). Universiti Sains Malaysia (USM), Universiti Malaya (UM), Universiti Putra Malaysia (UPM) and Universiti Kebangsaan Malaysia (UKM) are the leading public universities in e-learning technologies.

The first private university—Multimedia Universiti (MMU, formerly known as Universiti Telekom) was established in 1996. This marked the crucial development of tertiary education systems in Malaysia. According to a knowledge audit done by the Knowledge Management Centre of MMU in late 2003, over 130 staff in the university were involved in e-learning (Centre of Excellent for e-Learning, 2005). Nearly 10 percent of registered research postgraduates in MMU are actively studying aspects of e-learning technologies and applications. Some of the important contributions of MMU included the creation of Multimedia Learning Management System (MMLS) in 1998 and the setup of the ASEAN E-Learning Centre in 2005. Hence, MMU is playing a leading role in e-learning research and development (R&D) activities in Malaysia.

In September 1998, Universiti Tun Abdul Razak (UNITAR) was established as the first e-learning university in Malaysia (Universiti Tun Abdul Razak, 2005). It offers 28 academic programmes range from foundation courses up to doctorate degrees. Anyhow, the high student drop-out rate in the early years, directed UNITAR to shift from heavily e-learning operation mode to a blended-learning operation mode. Blended-learning integrates e-learning techniques including online delivery of materials through web pages, discussion boards and/or email with traditional teaching methods including lectures, in-person discussions, seminars, or tutorials (Teachnology, 2005). Up till now, UNITAR has seven study centres, providing blended-learning facilities, such as virtual library, computer labs and classrooms.

Open University Malaysia (OUM) which started to operate in August 2000, is backed by a consortium of 11 public universities. The President of OUM, Tan Seri Dr Anuwar Ali (2003) stated that OUM aims to create a conducive environment for the pursuit and dissemination of knowledge and to provide quality higher education for both the individual and professional development. “We offer a flexible mode of

learning via three methods—self-managed learning where learners study independently according to their time availability, on-line learning with direct interaction through the internet, and face-to-face interaction with tutors during tutorial sessions” (Anuwar, 2003). Besides having over 25,000 students in 16 academic programmes (OUM, 2003), OUM also trained 903 blended-learning tutors for these programmes (Abtar, Halimatolhanin, Chai, Rames & Ho, 2005).

1.4.2 E-Learning in the Primary and Secondary Schools

The earliest e-learning initiative taken by Malaysian Government was the setup of ICT laboratories in 90 secondary schools throughout the country (Ministry of Education [MoE], 1996).

The Smart School Project was started in 1999 as one of the Multimedia Super Corridor Flagship Applications (Multimedia Super Corridor, 2005). It aims to promote a school culture which is knowledgeable, creative and at ease with the latest technology (Mohd Nasir et al, 2005). Since the launching of the Smart School Project Internet connection has been provided to nearly all schools in Malaysia. In 2004, MoE moved another step forward by introducing the SchoolNet Project (MoE, 2005). This project involved the installation of broadband Internet connection for 10 000 school throughout Malaysia.

1.4.3 Malaysian E-Learning Readiness

Many e-learning researches have been conducted in Malaysia. Anyhow, in terms of research scale, the national survey on e-learning readiness in Malaysia which was done via the cooperation of Ministry of Energy, Water and Communication (MEWC) and OUM, involved the most number of respondents. The respondents came from four target groups: policy-makers, providers, enablers and receivers (Zoraini, Kuldip & Hairudin, 2004). Table 1.7 presents the results of this study.

Issue	Results
Recognition of qualification by e-learning	<ul style="list-style-type: none"> • 67.5% of learners and 67.7% enablers worry about the recognition • 63.7% of policy makers' institutions recognise e-learning qualifications.
Public perception	<ul style="list-style-type: none"> • 61.2% of enablers believe their organisation ready for e-learning • 58.5% of students capable of managing their e-learning • 52.9 students are committed to e-learning
Learner's perception	<ul style="list-style-type: none"> • Face-to-face is the most effective way to learn (88.9%) • Teachers are the best information provider (87.8%) • Personal touch very important in teaching (87.8%) <hr/> <ul style="list-style-type: none"> • Preferred medium for learning: <ul style="list-style-type: none"> 86.0% printed materials 72.9% online materials 72.2% face to face 66.9% multimedia materials 48.1% online lectures / tutorials 16.8% online conference
Institutionalised support	<ul style="list-style-type: none"> • 50% policy makers have provided budget to develop e-learning contents • 57% policy makers have a plan for staff development in e-learning. • 46% policy makers have a team of dedicated instructional designer • 37% policy makers have a learning management system. <hr/> <ul style="list-style-type: none"> • 85.5% learners will take up opportunity to upgrade themselves by e-learning. • 21% learners said their employers will give them time off to study.

Table 1.7: E-learning Readiness in Malaysia 2004, with 5704 respondents (4625 learners, 977 enablers, and 102 policy makers). Source: Zoraini et al, 2004

1.5 In Search of Effectiveness Factors

According to Moore (2000), effectiveness is concerned with the extent to which a service achieves its objectives. He also stressed the important to know what the service objectives are at the outset, and to be able to express them in measurable terms (Moore 2000). In the context of pedagogy, the term effectiveness is defined as, “first, articulating course goals in terms of student understanding, analytical reasoning, domain-appropriate beliefs and attitudes, and communication skill; and second, creating strategies for assessing the extent to which such course goals have been met” (Steinkuehler 2001).

Many studies have been conducted to explore the effectiveness of e-learning. Table 1.8 shows e-learning related factors that were identified, hypothesised, identified or used to measure the effectiveness of e-learning systems.

In the search for e-learning success factors for the Malaysian e-learning industry, Salleh & Teh (2000) identified seven key institutional success factors, based on the performance dimension framework developed by Cooper, Easingwood, Kleinschmidt and Story (1993). Although success factors might not be the same as effectiveness factors, the results sought were meant to achieve institutional goals. Thus, they can be used as reference for identifying factors of effectiveness.

Siragusa (2002) conducted a survey to identify effective instructional design principles for online learning environment in higher education. Both quantitative and qualitative approaches were used in this study. 250 students responded to an online questionnaire and 25 students were interviewed. However, the preliminary data analysis of the both quantitative and qualitative approaches did not present the students perceived effective factors for instructional design in the web-based learning environments.

Hsu, Wang and Wang (2002) did an empirical study on the LMS of National Taiwan University, called VICAS system. This study investigated the correlations among motivation, satisfaction and effectiveness of e-learning. A nine-item learning effectiveness questionnaire was factor analysed, and two major factors—socialization and ability were generated. Besides, their results showed that the “richness” of contents and systems is the critical factor for e-learning.

Author(s), year	E-learning related factors
Salleh & Teh, 2000	Seven key institutional success factors for the Malaysian e-learning industry: <ol style="list-style-type: none"> 1. strong leadership at all level 2. pro-active strategic planning with top management commitment 3. private enterprise paradigm 4. world-class customer-oriented service quality 5. cross-functional teamwork, 6. sound pedagogical grounding 7. well-structured content development process
Siragusa, 2002	Six elements of online learning environment in higher education for effective instructional design principles: <ol style="list-style-type: none"> 1. content, 2. structure, 3. motivation, 4. feedback, 5. interaction and 6. learning strategies.
Chen & Lin, 2002	<ul style="list-style-type: none"> • Internet transmission speed and stability is the most significant factor that affects the achievement of e-learning.
Hsu et al, 2002	<ul style="list-style-type: none"> • Two major factors of e-learning effectiveness: socialization and ability. • The 'richness' of contents and systems is the critical factor for e-learning
Karr et al, 2003	<ul style="list-style-type: none"> • The mode of delivery has little effect on student performance.
Poon et al, 2004	Five factors for the effectiveness of e-learning courses offered in Malaysian universities: <ol style="list-style-type: none"> 1. Instructors' characteristics 2. Students' behaviour & attitude 3. Interactive applications 4. Technology / system 5. Institutional factors
Mansor & Zoraini, 2004	Key success factors for e-learning implementation: - Human, content, pedagogy, monitoring, technology
Chou et al, 2005	Four categories of relationships between learner control and the effectiveness of a technology-mediated virtual learning environment (TVLE): <ol style="list-style-type: none"> 1. learning achievement 2. self-efficacy 3. satisfaction 4. learning climate

Table 1.8: E-learning related factors used to measure the effectiveness of e-learning systems.

After that, by using the same LMS, Hsu, Wang and Hong (2003) conducted another empirical research to investigate the relationships of subjects' participation in an e-learning discussion forum with a number of independent variables, including sex, Grade Point Average (GPA), computer self-efficacy, and learning motivation. Based on a sample of 126 in National Taiwan University, the results of a regression

analysis showed that the level of subjects' participation in the e-learning process could only be predicted by students' academic performance—GPA. They claimed that other variables that were commonly regarded as important were all absent in the model. However, the results would be more useful if they were generated through a comparative study—using other LMS or other batch of students.

Karr, Weck, Sunal and Cook (2003) conducted an experiment to analyse the relationship between the mode of delivery and the effectiveness of online learning in a graduate engineering maths course. In addition, the performance of the students taking the class was compared to that of a previous semester's students who took the class via the traditional mode of delivery. Results indicated that the mode of delivery had little effect on student performance.

A more comprehensive study, compared to the previous studies, was carried out by Poon et al (2004). They surveyed 500 students who learned through e-learning courses at eight universities in Malaysia. This study indicated that a student's personal characteristics is one of the main factors that influenced the effectiveness of online learning process.

Mansor Fadzil and Zoraini Wati Abas (2004) proposed five key success factors for e-learning implementation: monitoring, content, human, pedagogy and technology. They also suggested four characteristics of successful e-learning:

1. high access rate
2. active and quality interaction between tutors and students
3. up-to-date, relevant and engaging content
4. promotes knowledge sharing culture

Chou and Liu (2005) tried to develop a framework that outlines the relationships between learner controls and learning effectiveness. A field experiment was conducted in a junior high school of Taiwan. They focused on the effectiveness of a technology-mediated virtual learning environment (TVLE) in the context of basic information technology skills training. The constructed framework contained four categories of relationships: learning achievement, self-efficacy, satisfaction, and learning climate.

CHAPTER 2 UNIKL IIM E-LEARNING PORTAL

2.1 Universiti Kuala Lumpur (UniKL)

Universiti Kuala Lumpur (UniKL) is the first technical university established in Malaysia (Universiti Kuala Lumpur, 2005). It is a private institute of higher learning managed by Universiti Teknikal MARA Sdn Bhd, a wholly owned subsidiary of Majlis Amanah Rakyat (MARA), or the Council of Trust For the Indigenous People. MARA is an agency under Ministry of Entrepreneur And Co-operative Development (MARA, 2005).

It was registered as a full-fledged university on 20 Aug 02. This university was founded to provide world standard technical education and training opportunities for Malaysian. To date, it is the fusion of eight specialised campuses and three faculties, (see Figure 2.1), offering 35 diploma programmes and 13 degree programmes.

1. Faculty of Computer Engineering & Telecommunication
2. Faculty of Product Design & Manufacturing
3. Faculty of Engineering Business Management
4. Institut Infotech MARA
5. British Malaysian Institute
6. Malaysia France Institute
7. Malaysian Spanish Institute
8. Malaysian Institute of Aviation Technology
9. Malaysian Institute of Marine Engineering Technology
10. Malaysian Institute of Chemical & Bioengineering Technology
11. Royal College of Medicine Perak

Figure 2.1: List of faculties and branch campuses of Universiti Kuala Lumpur

2.2 Institut Infotech MARA

Institut Infotech MARA, a.k.a. UniKL IIM has been a branch campus of Universiti Kuala Lumpur since 01 Sep 03. Formerly known as Akademi Infotech MARA, Kuala Lumpur, Institut Infotech MARA has been at the forefront in

providing IT education since 1982. The vision of UniKL IIM is to be the first choice of information and communication technology (ICT) learning and research institution for all; while its mission is to produce ICT technologists with the capacity to develop relevant technology for the country and mankind (UniKL IIM, 2005). At present, UniKL IIM offers four diploma programmes and three bachelor degree programmes, as shown in Table 8.

Bachelor Degree Programmes	Diploma Programmes
Bachelor of Information Technology (Software Engineering)	Diploma in Multimedia
	Diploma in Computer Systems and Networking
Bachelor of Information Technology (Computer E-Commerce)	Diploma in Animation
	Diploma in Information Technology
Bachelor of Multimedia Technology (Interactive Multimedia Design)	

Table 2.1: Programmes offered by UniKL IIM

2.3 UniKL IIM E-Learning Portal

2.3.1 Introduction

UniKL IIM E-Learning Portal was introduced to academics in order to create e-learning awareness within UniKL IIM community. Though it was created in 2003, the Management of UniKL IIM officially made the usage of this portal compulsory for all academics in February 2004.

The UniKL IIM E-learning Portal is the gateway to online learning for students who are studying in the UniKL IIM (see Figure 2.2). The Uniform Response Locator (URL) of this portal is <http://elearn.iim.edu.my>. This e-learning portal was created by IT Services Department of UniKL IIM in 2003 based on Claroline Version 1.52, running on Linux operating system. Claroline (an acronym of classroom online) is a free LMS that was released under open source licence. It was created by Thomas De Praetere at the University of Louvain, Belgium (Claroline, 2005). According to Mr Fauzan Hisham, the Manager of IT Services Department in UniKL IIM, Claroline was chosen because of its simplicity, stability and rapid evolution, hence the best open source LMS for UniKL IIM to start with.

The screenshot shows the UniKL IIM E-Learning (Course Repository) home page. At the top, there is a blue header with the text 'UniKL IIM E-Learning (Course Repository)' on the left and 'UniKL IIM' on the right. Below the header, on the left, is an image of a person sitting at a computer. To the right of the image is a message addressed to lecturers, stating that housekeeping work for the academic year Jul/Dic 2005 is completed and providing instructions on how to enroll to specific subject portals. Below this is a message for new students, informing them that they can now collect their user accounts at the RQ Floor counter. Further down, there is a 'Regards. If Services' section and a 'Category' section listing various courses and their counts, such as 'Lecturers' Portal (1)', 'SIMPET (1)', 'Public (9)', 'Bachelor of Information Technology in Software Engineering (9)', 'Bachelor of Information Technology in Computer E-Commerce (7)', 'Bachelor of Information Technology in Interactive Multimedia Design (7)', 'Diploma in Animation (19)', 'Diploma in Multimedia (20)', 'Diploma in Information Technology (19)', 'Diploma Sains Komputer (11)', and 'Diploma in Computer Systems and Networking (13)'. On the right side, there is a login form with fields for 'Username' and 'Password', an 'Enter' button, and links for 'Getting started', 'Academic Announcement & Resources', and 'Examination Result Online'. At the bottom right, it says 'Powered by Caroline © 2004'.

Figure 2.2: The home page of UniKL IIM E-Learning Portal.

2.3.2 Features of UniKL IIM E-Learning Portal

UniKL IIM E-learning Portal consists of 11 features. Each feature has different function and may support the other features. Table 2.2 shows the features with their functions.

Features	Functions
1. Course description	It provides the detail information and description of the course.
2. Agenda	It displays the learning sequence in a chronological order.
3. Announcements	It acts as a bulletin board for instructors to place notice or news.
4. Documents and Links	It provides instructional materials, references and Internet links.
5. Exercise	It provides self-directed quiz.
6. Assignment	It provides an Internet channel for assignment submission.
7. Forums	It provides a platform for post-lecture or tutorial discussion.
8. Groups	It lets instructors manage the grouping of students.
9. Users	It displays the list of registered users.
10. Chat	It provide real-time public chat room.
11. Statistics	It records the traffic information of the portal.

Table 2.2: The features of UniKL IIM E-learning Portal

2.4 Conceptual Interaction among Four Entities with the Portal

The partial organisational structure shown in Figure 2.3 depicts the reporting relationships in UniKL IIM. Based on these relationships, a conceptual diagram that indicates the interactions among four entities in UniKL IIM with the e-learning portal was created (see Figure 2.4).

The Provost, the Dean and the Head of Sections are considered as the 'management', as they are the individuals responsible for setting and/or achieving the organization's objectives. The system administrators work under IT Services Department. They are responsible for customising the system, maintaining the system and providing training to academics.

The academics (Lecturers, Assistant Lecturers, Instructors and specialists) are considered as the subject matter experts for the e-learning portal. A subject matter expert (SME) is the person responsible for the academic content of a course (Athabasca University, 2005). The SMEs who are teaching DIA programmes work under two different academic sections: General Studies Section and Creative Multimedia Section. Each of the sections has a Head who leads and monitors academic activities, including the SMEs' contribution towards the e-learning portal. It is compulsory for SMEs to use at least 60 percent of the features available in the portal and upload at least 50 percent of the lecture notes to the portal. However, the frequency of accessing the e-learning portal is subject to the preferences of a SME (see Table 5.1). SMEs normally access the e-learning portal to update lecture notes, collect students' assignment, and communicate with students through forum or chatting facilities. The time spent for developing online teaching materials varies from one individual to another. To date, two technical training (July 2003 and July 2004) and one courseware development training (December 2004) were provided to SMEs in using the e-learning portal. The DIA students mainly access the e-learning portal to download notes and to submit assignments.

Although there are four entities that are interact with the UniKL IIM E-Learning Portal, the actual end users of the portal are the academics and the students. The management evaluates the contribution towards e-learning portal of each SME through the records done by the Head of Academic Section. Thus the

management does not physically use the e-learning portal. As for system administrators, though they set up and customised the e-learning portal, they are responsible for the maintenance and backup tasks of the LMS. So they are not the users of the portal too.

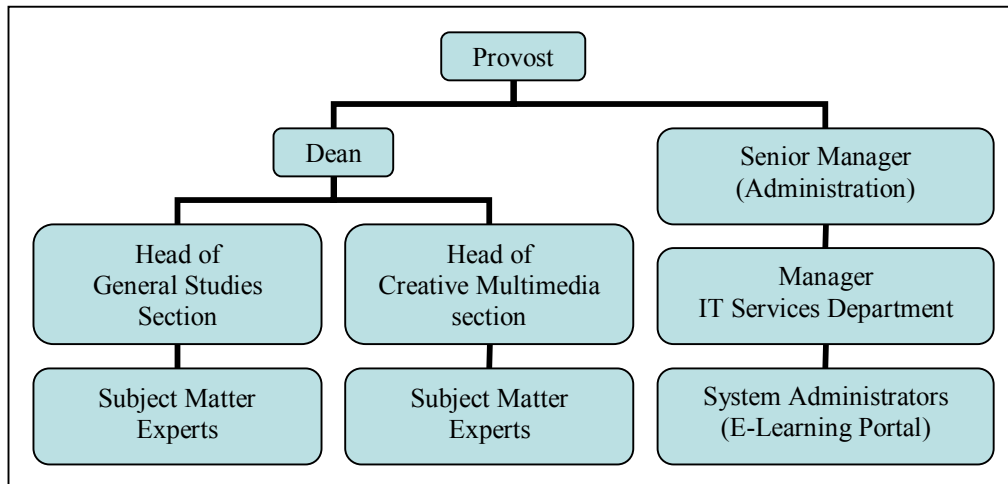


Figure 2.3: Partial Organisational Structure of UniKL IIM

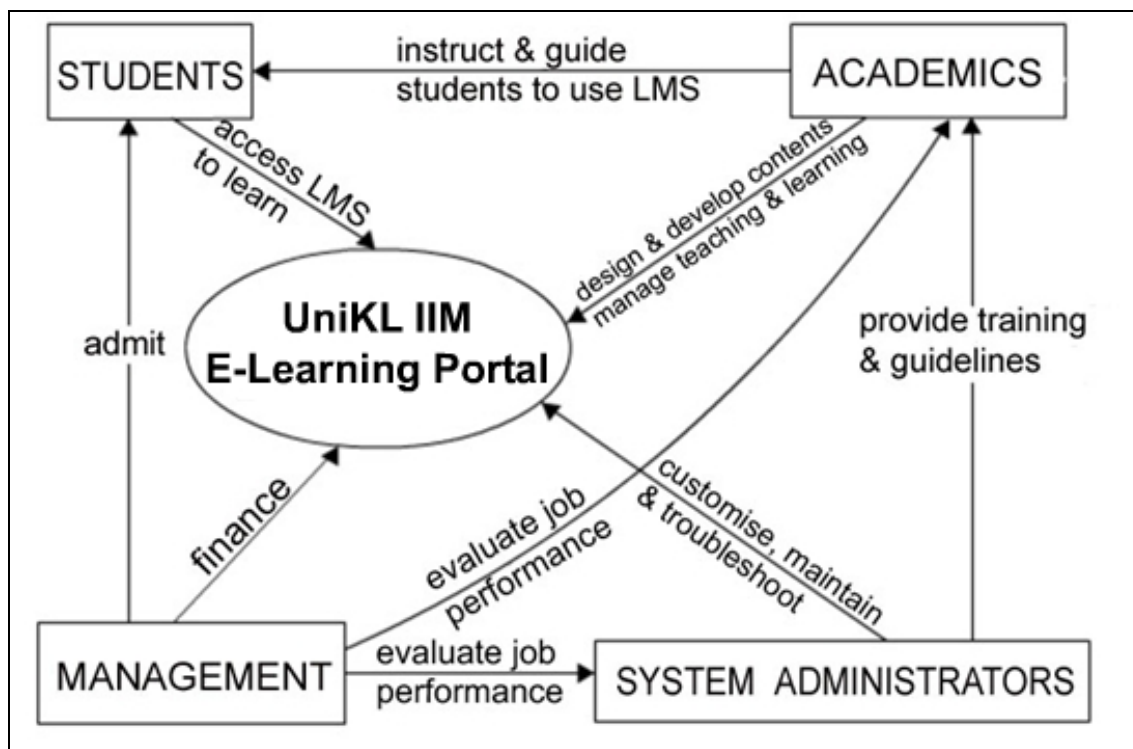


Figure 2.4: Conceptual interactions among four entities with UniKL IIM E-Learning Portal.

CHAPTER 3 DIPLOMA IN ANIMATION PROGRAMME

3.1 Introduction

The Diploma in Animation (DIA) Programme was started in 2003. It was developed as a result of a joint venture between UniKL IIM and Capilano College, Canada. It aims to produce animators for the local and international 2D and 3D animation industry. There is one intake per annum, and the new academic year starts in July. To date, four batches of students enrolled in this programme, and the first batch of DIA students graduated in August 2005. The entry requirement for this diploma programme is a pass in Sijil Pelajaran Malaysia (SPM) / Sijil Pelajaran Malaysia Vokasional (SPMV) or its equivalent (such as O Level) with at least five credits for the subjects inclusive of Bahasa Melayu, Mathematics and English.

In 2005, this programme became the first programme in UniKL IIM which received accreditation from the National Accreditation Board, a statutory body set up under the Ministry of Education to monitor the standards and quality of higher education provided by the private higher educational institutions in Malaysia (National Accreditation Board, 2006).

3.2 The Structure of DIA Programme

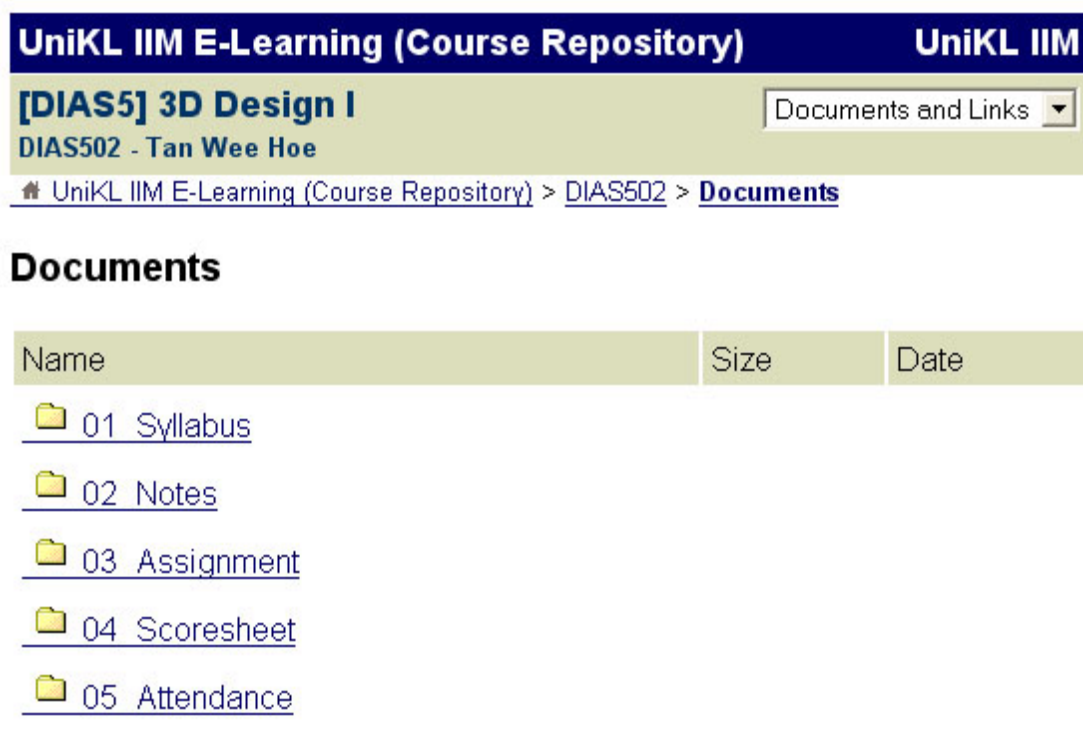
There are 32 subjects offered under the DIA Programme (see Appendix D). These subjects can be classified into three groups: core subjects, university subjects and LAN subjects (see Table 3.1). These subjects are structured into six semesters, and the duration for each semester is half a year. Thus, in normal circumstances, a student takes three years to complete the programme. Since three batches of students are taught concurrently in one semester, at least 14 subjects are offered every semester.

Types of subjects	Number of subjects	Total credit hours
Core subjects	21	68
University subjects	8	13
LAN subjects	3	9
TOTAL	32	90

Table 3.1: Classification of subjects offered under DIA Programme

3.3 Links between DIA Programme and UniKL IIM E-Learning Portal

Each subject offered in a particular academic semester is allocated with a space in UniKL IIM E-Learning Portal. Figure 3.1 shows the types of documents that a SME is required to create and upload to the portal every academic semester.



The screenshot displays the UniKL IIM E-Learning (Course Repository) interface. At the top, the course title is "[DIAS5] 3D Design I" and the instructor is "DIAS502 - Tan Wee Hoe". A dropdown menu is set to "Documents and Links". The breadcrumb trail shows the path: "UniKL IIM E-Learning (Course Repository) > DIAS502 > Documents". Below this, a table lists the available documents:

Name	Size	Date
01 Syllabus		
02 Notes		
03 Assignment		
04 Scoresheet		
05 Attendance		

Figure 3.1: Types of course related documents that are available in the portal

The Syllabus folder contains the course structure based on the syllabus and lecture plan for a semester. The Notes folder contains lecture and / or tutorial notes which are generally in Adobe Portable Document Format (PDF), Microsoft Word or Microsoft PowerPoint formats. The specifications of all assignments are placed at Assignment folder. Students' assessment and attendance records are uploaded to the portal once a month. The first three types of course materials are normally prepared before a new semester begins. However lecturers are recommended to update the documents from time to time.

As for students, they can access the course materials anytime anywhere, provided there is Internet connection. They can also submit their assignments or post questions in a forum.

CHAPTER 4 METHODOLOGY

4.1 Overall Design

The core method used in this research was case study. Two data collection methods were applied in this case study: depth interview and semi-structured questionnaire. The combined methods were chosen based on the needs of the case and the nature of the respondents. This research was done in the following steps:

Step 1 – Define the problem statement and the research aim

Step 2 – Conduct the literature review.

Step 3 – Develop the questions for both interview and questionnaire.

Step 4 – Identify the interviewees for depth interview.

Step 5 – Determine the sampling plan and size for semi-structured interview

Step 6 – Conduct depth interview sessions.

Step 6 – Collect data from DIA students using semi-structured questionnaire.

Step 7 – Analyse collected data

4.2 Qualitative Data Collection

In this case study, qualitative data was collected using depth interview and semi-structured interview methods. “Qualitative data refers to any information acquired from research activities...it could be in the form of an essay, a paragraph, a sentence or even a phrase...” (Sulaiman, 2004). “Qualitative research is concerned with information about things that are less easily understood by counting them...it is all about developing a detailed understanding of individuals’ views, attitudes and behaviour” (Moore, 2000). This is similar to “an exploration of relatively intangible variables resulting in a largely verbal description or explanation of the phenomena (often behaviour) studied” (Richardson, 2005).

4.3 Case Study

“A case is a description of a situation faced by an enterprise; a story about people and their problems at work...” (Richardson, 1991). A case study is ‘the study that seeks to understand and interpret the world in terms of its actors and consequently may be described as interpretive and subjective’ (Richardson, 1991).

‘Case studies are used when it is necessary to develop a detailed understanding of what is happening in complex circumstances...’ (Moore, 2000). This, then, is the rationale on which this research is based since it is, essentially, a description of a situation faced by the UniKL IIM, which is a sub-set of UniKL. The analysis of this case contributes to the process of formulating recommendations for management actions to enhance the effectiveness of UniKL IIM E-Learning Portal.

The case study method was chosen in this research because the results are easily understood by a wide audience, including non-academics. Besides strong in reality, case studies provide insights into other, similar situations and cases, thereby assisting interpretation of other similar cases (Nisbet & Watt, 1984). Thus, the results of this study might be useful for other branch campuses of UniKL, which share similar organizational structure and nature.

4.4 Depth Interviews

4.4.1 Introduction

“Depth interviews seek to explore in depth what it is that people feel about issues...respondents are given time to think and to reflect on the questions that they are being asked—they are encouraged to elaborate and to explain in more detail the subtleties and complexities of their feelings ” (Moore, 2000).

In this case study, a series of depth interviews were carried out with the management, the system administrator and the academics (see Table 4.1). Four different sets of interview questions regarding the UniKL IIM E-Learning Portal were prepared (refer to Appendix E-1, E-2, E-3 & E-4) and emailed to the management, the system administrators, and the academics, at least one week before the interviews were conducted.

During the interview sessions, the interviewees were given a topic guide that listed the issues which were to be explored. Next, they were briefed about the background to the study and the nature and aim of the research. The interviewees were encouraged to talk in their own words and at their own level of understanding. “Because the interviews explore issues in greater depth, it is seldom possible to cover the breadth of issues interview...” (Moore, 2000).

Entity	Personnel interviewed	Number of interviewee
The Management	Provost	1
	Dean	1
System Administrator	Manager of IT Services Department	1
Academics	Head of Creative Multimedia Section	1
	Subject Matter Experts who teach Diploma in Animation programme	10
TOTAL		14

Table 4.1: The interviewees of the depth interview

4.4.2 The IT Service Manager

The first depth interview was of the IT Service Manager, Mr Fauzan Hisham bin Shukor, who was also one of the system administrators of UniKL IIM E-Learning Portal. The aim of this interview session was to understand the history and technical background of the portal, as Mr Fauzan was the person who introduced Claroline to UniKL IIM community in year 2003. In the e-learning portal development, he customised Claroline to meet the needs of UniKL IIM. He was also asked to suggest the effectiveness factors of UniKL IIM E-Learning Portal.

4.4.3 The Provost

The second depth interview were carried out with the Provost, Tuan Haji Sukor bin Aain. In UniKL, Provost is the title of the head of an institute. This interview session aimed to understand the rationale, policies and planning for the implementation of e-learning technologies in UniKL IIM. His views on the effectiveness factors and expectations towards the e-learning portal were recorded.

4.4.4 The Dean

The third depth interview was conducted with the Dean of UniKL IIM, Prof Dr Abu Talib bin Othman. The Dean is the head of academic affairs. Although the same set of questions was used in interviewing the Provost and the Dean, the scope of the questions asked here focused on the academic affairs in the institute.

4.4.5 The Head of Creative Multimedia Section

Mdm Fadzillah binti Abd Aziz, the Head of Creative Multimedia Section was the fourth interviewee. Diploma in Animation Programme is run under Creative Multimedia Section, thus all SMEs who are teaching animation related subjects work under her. At the end of each academic semester, the head of section evaluates the contributions of SMEs to the e-learning portal.

4.4.6 The Subject Matter Experts of DIA Programme

Nine SMEs were interviewed. These SMEs come from two sections: five of them are from Creative Multimedia Section and the rest are from General Studies Section. Figure 4.1 is a screen shot captured from UniKL IIM E-Learning Portal. It shows all the subjects offered under DIA programme in Semester July / December 2005, together with the SMEs who manage the courses in the portal. Though the author was one of the SMEs, he was excluded as an interviewee.

Diploma in Animation

Courses

- [\[DIAS1\] Character Design I](#)
DIAS102 - Mohd Zaky
- [\[DIAS1\] Communications Skills I](#)
DIAS106 - Norilawati Md Jali
- [\[DIAS1\] Drawing I](#)
DIAS103 - Fauzi Naeim
- [\[DIAS1\] History of Animation](#)
DIAS107 - Rosli
- [\[DIAS1\] Principles and Timing I](#)
DIAS101 - Nurul Lina
- [\[DIAS1\] Story Structure](#)
DIAS104 - Samratul Janin bt Hj Sidal & Nor Hidayu
- [\[DIAS3\] Pengajian Malaysia](#)
LAN 1003 - Che Hamdan - malay
- [\[DIAS3\] Character Design III](#)
DIAS302 - Mohamad Zaky
- [\[DIAS3\] Computer Animation I](#)
DIAS303 - Nurul Lina
- [\[DIAS3\] Drawing III](#)
DIAS304 - Fauzi Naeim
- [\[DIAS3\] Principles and Timing III](#)
DIAS301 - Tan Wee Hoe
- [\[DIAS3\] Sound Production](#)
DIAS405 - Norhidayu
- [\[DIAS3\] Storyboard Design](#)
DIAS406 - Norhidayu
- [\[DIAS5\] 3D Design I](#)
DIAS502 - Tan Wee Hoe
- [\[DIAS5\] Business and Marketing I](#)
DIAS504 - Marhaini
- [\[DIAS5\] Colour and Media II](#)
DIAS503 - Norhidayu
- [\[DIAS5\] Computer Animation III](#)
DIAS501 - Rosli
- [\[DIAS5\] Major Project I](#)
DIAS505 - Rosli & Tan Wee Hoe

Figure 4.1: All the subjects offered under DIA programme in Semester July / December 2005, a screenshot captured from UniKL IIM E-Learning Portal.

4.5 Semi-structured Questionnaire Survey

A semi-structured questionnaire designed by the author was used to collect qualitative data from students. According to Moore (2000), this technique is best used to collect both structured information and information about attitudes or beliefs. It aims to collect the respondents' spontaneous views.

The questionnaire consists of three open-ended questions (Appendix F). Open-ended questions were used as an attempt to extract all the possible answers from the students. The questionnaires were distributed to a total of 52 DIA students who are currently pursuing their first, second or third year of study. These students have been using UniKL IIM E-Learning Portal since their enrolment in Universiti Kuala Lumpur.

The questionnaire set was distributed to the students by the author on one-to-one basis. The response rate was 98 percent (51). All of the responses were usable as the three questions were adequately answered. Like data collected via interviews, the collected data was analysed through socio-technical system approach.

4.5.1 Sampling

This survey was conducted at the end of Semester July / December 2005. The population of DIA students in this semester was 88. In total, there were 54 male students and 34 female students. Table 4.2 shows the structure of DIA students who participated in this survey. More than half (52 persons or 59.1 percent) of the DIA students were involved in this study. Non-random sampling technique was used in this case study, and a convenience sample was selected. In a convenience sample, the most accessible members of the population are selected to obtain the results quickly (Mann, 1998).

Year	Sample/Population		
	Male	Female	Total
First	12/24 = 50.0%	6/9 = 66.7%	18/33 = 54.5%
Second	11/14 = 78.6%	7/10 = 70.0%	18/24 = 75.0%
Third	10/16 = 62.5%	6/15 = 40.0%	16/31 = 51.6%
TOTAL	33/54 = 61.1%	19/34 = 55.9%	52/88 = 59.1%

Table 4.2: The structure of DIA students who participated in the survey.

4.6 Socio-technical Systems

The qualitative data collected in this case study was analysed through a socio-technical system approach. This approach was used to classify factors which were suggested by the management, the system administrator, the academics and the students.

“Social-technical System is an intellectual tool which is used to recognise patterns in the way technology is used and produced....identification of these patterns will assist in analysing the ethical issues associated with the technology and its social system” (Computing Cases, 2005). The concept of social technical system was initiated when Trist and Bamforth (1951) studied the effects of mechanisation on British coal mining. “This study of the effects of technological change led Trist to develop the concept of the working group as being neither a technical system nor a social system, but as an interdependent socio-technical system” (Pugh & Hickson, 1989). “The optimal utilisation of technology depends on an appropriate system of work organisation that itself determines the social organisation of the workforce and the relations and inter-dependencies between individuals” (Bridger, 2003).

In sum, a socio-technological system has three components,-

- a) technical factors: equipment, materials, processes and the environment
- b) social factors: the relationships among the workers and their attitudes to the work and their co-workers
- c) economic factors: how efficiency of the system is measured, with emphasis on productivity.

CHAPTER 5 ANALYSIS AND RESULTS

5.1 Introduction

According to Tuan Haji Sukor bin Aiin, the Provost of UniKL IIM, e-learning portal is needed to support and complement traditional face-to-face classroom teaching. “It can also be useful to increase the efficiency and effectiveness of teaching and learning process as well as the educational administration...when lessons are put into the system, they become a method of consistent delivery, which avoid the fluctuation of quality if the lessons are to be repeated,” he added. Prof Abu Talib bin Othman, the Dean of UniKL IIM echoed the Provost’s view, “by adopting e-learning technologies, the accessibility and effectiveness of teaching and learning can be improved...it can help UniKL IIM to extend its services in the form of distance learning.”

Factor analysis was the core method used to analyse the data collected for this case study. This involved the process of analyzing and classifying the factors of effectiveness which were suggested by the interviewees and questionnaire respondents. All the suggested factors were classified under the three components of social-technical system: technical factors, social factors and economic factors.

5.2 Results obtained from the Depth Interviews

5.2.1 Introduction

Two types of results were gathered through the depth interview, they were the background study of the UniKL IIM E-Learning Portal (see Chap 2), and the effectiveness factors that were suggested by interviewees.

5.2.2 The Management and the System Administrator

The Provost listed six factors (all with equal priority) that might determine the effectiveness of UniKL IIM E-Learning Portal. These factors are: supporting technology, user-friendliness, relevance of contents, training provided to lecturers and students, accessibility, and reliable and stable Internet connection. All the factors he suggested were technical factors.

Table 5.1 shows the factors listed and prioritised by the Dean, the Head of Section and the System Administrator.

Priority	Suggested factors of effectiveness		
	Dean	Head of Section	System Administrator
First	Planning (s)	Accessibility (t)	Enabling technology (t)
Second	Resources (e)	Content (t)	User preferences (teaching & learning techniques) (s)
Third	Training & development (t)	Layout design (t)	Technical support system (t)
Fourth	Research & development (t)	System design (t)	Time given to develop content (t)

Table 5.1: Factors of effectiveness, suggested and prioritised by the Dean, the Head of Section and the System Administrator: t = technical factor; s = social factor; e = economic factor.

5.2.3 The Subject Matter Experts of DIA Programme

Table 5.2 shows the overall list of effectiveness factors suggested by SMEs. A total of 31 factors were collected through the interviews. These factors were then classified into eleven groups: seven technical factors, three social factors and one economic factor. The results indicate that most of the SMEs regarded technical factors as the dominant factors in determining the effectiveness of UniKL IIM E-Learning Portal. Only one SME did not prioritise the suggested factors (see Table 5.3). Among the technical factors, the four most frequent factors proposed by SMEs were 1) Facilities, portal accessibility and Internet service; 2) Content; 3) System design and 4) User friendliness.

Type of Factors	Factors	Frequency				Percent	
		GS n = 4		CM n = 5			
Technical Factors	1. Facilities & accessibility	4	9	4	17	25.8	83.9
	2. Content (quality of materials)	3		4		22.6	
	3. System design (features; interactivity)	1		4		16.1	
	4. User friendliness	1		1		6.5	
	5. Interface design	0		2		6.5	
	6. E-learning culture & exposure	0		1		3.2	
	7. Training	0		1		3.2	
Social Factors	8. SMEs' attitude (frequent monitoring; resistance of change)	2	2	0	2	6.5	12.9
	9. Encouragement	0		1		3.2	
	10. Enforcement	0		1		3.2	
Economic Factors	11. Financial support	1	1	0	1	3.2	3.2
Subtotal		12		19			
TOTAL		31				100	

Table 5.2: Frequency of factors, suggested by SMEs from two academic sections, grouped under the three components of socio-technical systems. (GS = General Studies Section, CM = Creative Multimedia Section)

Types of factor	Factors	Priority (Frequency)				
		1 st	2 nd	3 rd	4 th	No
Technical factors	1. Facilities, portal accessibility & Internet service	2	3	1	-	1
	2. Content	2	3	-	1	1
	3. System design	1	-	1	3	-
	4. User friendliness	-	-	2	-	-
	5. Interface design	-	-	3	-	-
	6. E-learning culture & exposure	1	-	-	-	-
	7. Training	1	-	-	-	-
Social factors	8. Encouragement	-	-	1	-	-
	9. SMEs' attitude	-	1	-	-	1
	10. Enforcement	-	1	-	-	-
Economic factors	11. Financial support	1	-	-	-	-
Subtotal		8	8	8	4	3
TOTAL		31				

Table 5.3: Factor of effectiveness, prioritised by SMEs.

5.3 Results obtained from the Semi-structured Questionnaire Survey

In the semi-structured questionnaire survey, there were a total of 51 (98.1 percent) usable responses from the DIA students. A total of 37.3 percent were female respondents. Table 5.4 shows the overall grouping and the frequency of the identified factors, based on the data collected through the questionnaire survey. It shows how many respondents gave each of the different answers to the question.

A total of 126 factors were collected through the survey. Nine technical factors and three social factors were identified. However, no economic factor was identified. The results indicate that most of the Most of the DIA students did not prioritise the factors they proposed, resulting 67 factors (53.2 percent) were not prioritised (see Table 5.5).

DIA students regarded technical factors as the dominant factors in determining the effectiveness of UniKL IIM E-Learning Portal. The four most frequent technical factors suggested by DIA students were: 1) Content; 2) Interface Design; 3) Facilities, portal accessibility and Internet service; and 4) System design.

Type of Factors	Factors	Frequency		Percent	
Technical Factors	1. Content	37	123	29.4	97.6
	2. Interface design	22		17.5	
	3. Facilities & accessibility	19		15.1	
	4. System design	13		10.3	
	5. User friendliness	11		8.7	
	6. Password issue	9		7.1	
	7. Instructional design	8		6.3	
	8. Encouragement	3		2.4	
	9. Training	1		0.8	
Social Factors	10. Encouragement	1	3	0.8	2.4
	11. SMEs' attitude	1		0.8	
	12. Cater students' needs	1		0.8	
Economic Factors	Nil	0		0	0
TOTAL		126		100	

Table 5.4: Frequency of factors, suggested by DIA students grouped under the three components of socio-technical systems.

Types of factor	Factors	Priority (Frequency)				
		1 st	2 nd	3 rd	4 th	No
Technical factors	1. Content	8	8	2	1	18
	2. Interface design	-	4	6	-	12
	3. Facilities, portal accessibility & Internet service	2	2	-	-	15
	4. System design	4	3	-	1	5
	5. User friendliness	3	1	2	-	5
	6. Password issue	2	2	-	-	5
	7. Instructional design	3	3	-	-	2
	8. E-learning exposure	1	-	-	-	2
	9. Training	-	-	-	-	1
Social factors	10. Encouragement	-	1	-	-	-
	11. SMEs' attitude	-	-	-	-	1
	12. Cater students' needs	-	-	-	-	1
Subtotal		23	24	10	2	67
TOTAL		126				

Table 5.5: Factor of effectiveness, prioritised by DIA students.

Table 5.6 shows the frequency comparison of effectiveness factors among male and female DIA students from three different batches.

Types of factors	Factors	Frequency					
		Year 1 (n = 18)		Year 2 (n = 18)		Year 3 (n = 16)	
		M ¹	F ¹	M ²	F ²	M ³	F ³
Technical factors	1. Content (management, updated)	6	5	8	7	6	5
		11		15		11	
	2. Interface design (navigation)	5	3	5	1	5	3
		8		6		8	
	3. Facilities, portal accessibility & Internet service	1	1	7	0	7	3
		2		7		10	
	4. System design (systematic; features; feedback mechanism)	5	0	3	1	3	1
		5		4		4	
	5. User friendliness	4	1	1	0	5	0
		5		1		5	
Social factors	6. Password issue	2	1	1	0	1	4
		3		1		5	
	7. Instructional design (methods of delivering content, instruction used)	0	3	0	5	0	0
		3		5		0	
	8. E-learning exposure	0	0	1	1	1	0
	0		2		1		
Economic factors	9. Training	0	0	0	1	0	0
		0		1		0	
	10. Encouragement	0	0	0	1	0	0
	0		1		0		
Social factors	11. SMEs' attitude (frequent monitoring)	0	1	0	0	0	0
		1		0		0	
Economic factors	12. Cater students' needs	0	0	1	0	0	0
		0		1		0	
Economic factors	nil	-		-		-	
Subtotal		38		44		44	
TOTAL		126					

Table 5.6: Frequency of factors, suggested by three different years of DIA students: frequency totals are > n because of multiple answers. (M¹ = 12; F¹ = 6; M² = 11; F² = 7; M³ = 10; F³ = 6)

5.4 Integrating the results of Interviews and Survey

Table 5.7 shows the grouping and the frequency of the identified factors, based on the data collected through depth interview sessions and semi-structured questionnaire survey. The results indicate that most of the interviewees and questionnaire respondents regarded technical factors as the dominant factors in determining the effectiveness of UniKL IIM E-Learning Portal.

Type of factors	Frequency of the identified factors			
	Management (n = 3)	System Administrator (n = 1)	Subject Matter Experts (SME) (n = 9)	Students (n = 51)
Technical Factors	12	3	26	123
Social Factors	1	1	4	3
Economic Factors	1	0	1	0
Total	14	4	31	126

Table 5.7: Frequency of factors, grouped under the three components of socio-technical system: frequency totals are > n because of multiple answers.

Figure 5.1 shows the effectiveness factors perceived by four entities in UniKL IIM. This juxtaposition of factors depicts the comparison among the opinion given by those who participated in this case study.

Management	System Administrator
<ul style="list-style-type: none"> - Facilities, portal accessibilities & Internet service - Content - Training - System design 	<ul style="list-style-type: none"> - Enabling technology - User preferences - Technical support system - Time given to develop content
Subject Matter Experts	DIA Students
<ul style="list-style-type: none"> - Facilities, portal accessibilities & Internet service Content System design User friendliness 	<ul style="list-style-type: none"> - Content - Interface design - Facilities, portal accessibilities & Internet service - System design

Figure 5.1: Effectiveness factors perceived by four entities in UniKL IIM

CHAPTER 6 DISCUSSION AND RECOMMENDATIONS

6.1 Research Findings

The aim of this case study: to identify the factors that determine the effectiveness of UniKL IIM E-Learning Portal was achieved. The effectiveness factors perceived by four different entities: the management, the system administrator, the subject matter experts, and the students were identified, as shown in Chapter 5.

The data collected through depth interviews should be representative since the interviewees selected were the population. Besides, the sample of 52 DIA students should be representative as the proportions for the three batches (sample/sub-population) are 18/33, 18/24, and 16/31, which involve more than half (59.1 percent) of the DIA students.

Two similar studies were done along with this case study (see Tan et al, 2005 & Zalizah et al, 2005). The aim of the both of the studies was similar to this study: to identify the factors that determine the effectiveness of UniKL IIM E-Learning Portal. The first study involved the management (the Provost, the Dean and four Heads of Sections), two system administrator and 24 SMEs; while the second study surveyed 214 UniKL IIM students who enrolled in four different diploma programmes. The results gathered in both studies indicated that technical factors were the dominant factors that determine the effectiveness of UniKL IIM E-Learning Portal, which echoed the findings of this case study.

6.2 Research Limitation

Since the cross-cultural differences (especially regarding cultural values) have effects largely unmeasured (see, for example, Fontaine & Richardson, 2003 & Fontaine & Richardson, 2005), caution must be exercised in generalising the results herein to other institutes under UniKL, or farther afield.

The time spent for collecting data in this case study was four months—both depth interviews and semi-structured questionnaire took two months each. The interviews and the survey were not conducted concurrently, due to the limited capability of the researcher. Thus, the captured scenario in this case study may be

distorted due to the evolution of UniKL IIM. One example of such distorted scenario was the change of Provost in December 2005.

6.3 Recommendations for Future Research

The case assumed that all DIA students who enrolled in three different batches have no significant different characteristics, or were really members of the same population. However, if this study were conducted using a quantitative approach, a chi square test should be done to test the homogeneity and the independence of the samples (i Six Sigma, 2005). Besides, instead of surveying more than half of the population, a focus group which may target on several students from each batch could have been used in collecting data for the study. Also, with the reduction of the number of respondents, depth interviews could have been conducted, replacing the questionnaire, hence minimising the possible bias in duo data collecting techniques, which were the depth interview and the questionnaire survey.

As for further research, a study to evaluate the effectiveness of UniKL IIM E-Learning Portal should be conducted based on the variables or factors gathered in this case study.

CHAPTER 7 CONCLUSIONS

Technical factors were the dominant factors that determine the effectiveness of the UniKL IIM E-Learning Portal. The four most frequent technical factors suggested by each entity are shown in Figure 5.1.

All entities in UniKL regarded ‘facilities, portal accessibility and Internet service’ as one of the top priority factors that determine the effectiveness of an e-learning portal. Facilities, including the computer lab, computer, software installed in the computer, stable Internet service are the essential elements in enabling users to access the e-learning portal, hence the term ‘enabling technology’, as suggested by the System Administrator.

Content is also one of the top priority factors suggested by all entities. In this case study, content means the teaching and learning materials, created by SMEs and uploaded to the e-learning portal for the students. The existence of content in the e-learning portal is crucial, as it is the essence of teaching and learning. Without content, the purpose of having an e-learning portal would be defeated. Anyhow, the interviewees and respondents highlighted several content issues which might affect the effectiveness of e-learning, including the quality of content, the methods of content delivery, the management of content in the portal and the time given to SMEs to develop content.

System design is among the top priority factors in determining the effectiveness of UniKL IIM E-Learning Portal. Aspects like features, interactivity, feedback mechanism, and simplicity are among the views given by SMEs and students concerning the effectiveness of the portal.

The Management also proposed ‘training to use the e-learning portal’ as one of the effectiveness factors; while the System Administrator considered ‘user (both SME and student) preferences’ as the effectiveness factors. The SMEs regarded the ‘user friendliness’ may affect the portal’s effectiveness; while the concern of students was the ‘interface design’ of the portal.

APPENDIX A: Partial 2005 Performance Plan for Executive Group

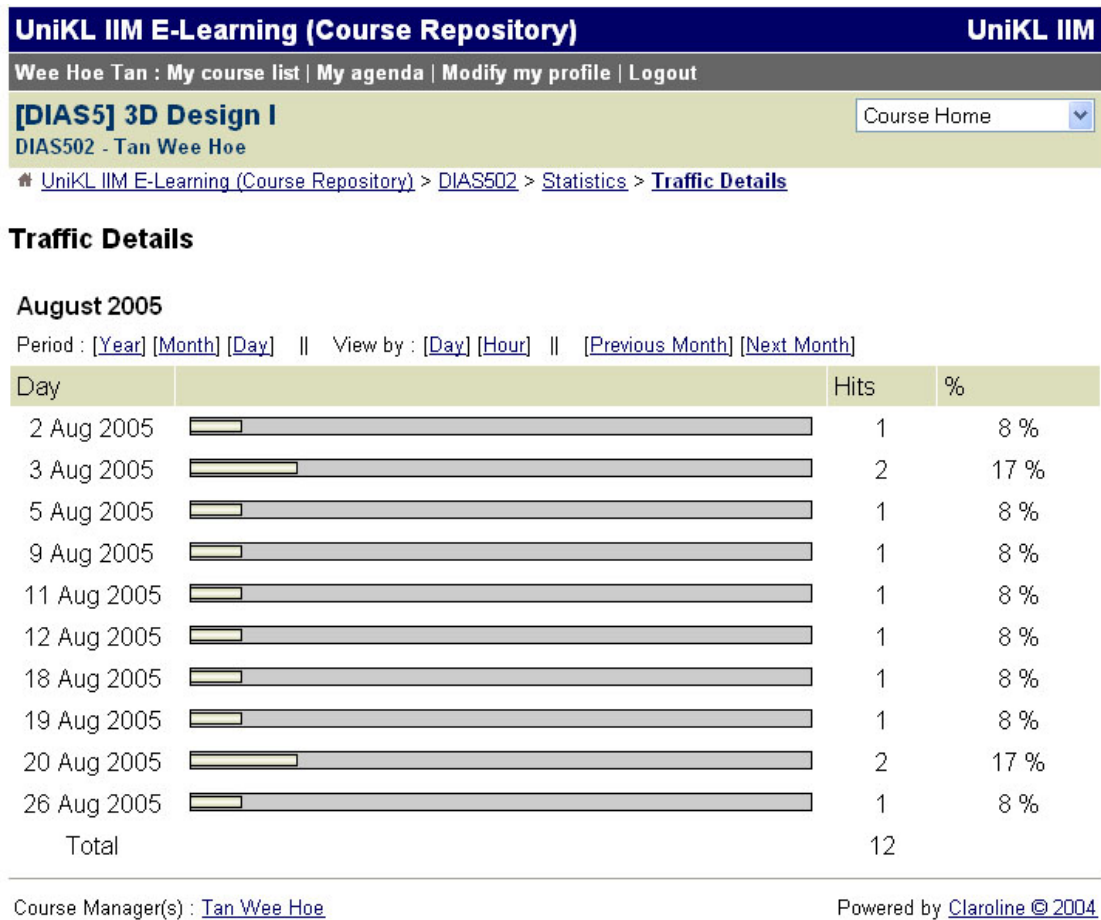
(Due to the confidentiality nature of the document, only partial structure of the performance plan is shown here.)

No.	Objectif (Objective)	Peratus (%)																		
6	<p>Melaksanakan __ penggunaan E-learning portal serta melengkapkan __ nota untuk portal.</p> <p>Ditetapkan pada Gred __ dengan varian pencapaian seperti berikut:</p> <table border="1" data-bbox="384 591 1134 833"> <thead> <tr> <th data-bbox="384 591 552 633">Grade*</th> <th data-bbox="552 591 831 633">Element</th> <th data-bbox="831 591 1134 633">Note</th> </tr> </thead> <tbody> <tr> <td data-bbox="384 633 552 676">5</td> <td data-bbox="552 633 831 676">100%</td> <td data-bbox="831 633 1134 676">90%</td> </tr> <tr> <td data-bbox="384 676 552 719">4</td> <td data-bbox="552 676 831 719">90%</td> <td data-bbox="831 676 1134 719">80%</td> </tr> <tr> <td data-bbox="384 719 552 761">3</td> <td data-bbox="552 719 831 761">80%</td> <td data-bbox="831 719 1134 761">70%</td> </tr> <tr> <td data-bbox="384 761 552 804">2</td> <td data-bbox="552 761 831 804">70%</td> <td data-bbox="831 761 1134 804">60%</td> </tr> <tr> <td data-bbox="384 804 552 833">1</td> <td data-bbox="552 804 831 833">60%</td> <td data-bbox="831 804 1134 833">50%</td> </tr> </tbody> </table>	Grade*	Element	Note	5	100%	90%	4	90%	80%	3	80%	70%	2	70%	60%	1	60%	50%	
Grade*	Element	Note																		
5	100%	90%																		
4	90%	80%																		
3	80%	70%																		
2	70%	60%																		
1	60%	50%																		

Note:

1. All academics in UniKL are categorised under executive group.
2. All academics are graded according to their salary.

APPENDIX B: UniKL IIM E-Learning Portal Access Record



Note:

This is the traffic detail in August 2005 for 3D Design 1, a subject offered under the Diploma in Animation Programme.

APPENDIX C: Considerations in purchasing a learning portal.

Category	Criteria
Administration	- Does the portal offer you remote management of your organization's people, catalog, and learning records?
Rich catalogue	- Does the portal offer a rich catalog with learning activities of all types of delivery methods and from a multitude of vendors? - Is blended learning offered? - Are the courses relevant and of high quality?
Standards support	- Does the portal support e-Learning standards such as AICC, IMS, and SCORM?
Custom content	- Can custom content be added to the portal's catalog? - How much time is required to do so?
Infrastructure	- Does the portal ensure security (redundant components, data backup, precautions against attacks)? - Is the system scalable to support the number of users expected? - Is the product Web-based or just Web-enabled?
Interoperability and connectivity	- Can the portal be connected to your existing systems to which data must be exchanged? - Does the portal support standard data exchange formats such as XML?
Customer orientation	- Is the portal designed to support your target market? - Does it support B2C, B2B, or B2E (business to employee) business models?
Vendor ability	- How long has the portal vendor been in the business of developing e-Learning solutions? - How long does it take to deploy a new customer?
Service level	- Does the vendor guarantee a minimum of 99.5% uptime?

Source: Kanahele, 2003.

APPENDIX D: Curriculum Schema of Diploma in Animation Programme

Semester I

No	Subject Matter	Code	Status	Credit Hours
1	History of Animation	ANM 0013	Core	3
2	Principles and Timing I	ANM 0113	Core	3
3	Drawing I	ANM 0023	Core	3
4	Story Structure	ANM 0213	Core	3
5	Character Design I	ANM 0033	Core	3
6	Communications Skills I	DCE 1032	University	2
7	Co curriculum I	DGS 1051	University	1
Total credit hours for Semester I				18

Semester II

No	Subject Matter	Code	Status	Credit Hours
1	Principles and Timing II	ANM 0313	Core	3
2	Drawing II	ANM 0123	Core	3
3	Computer Animation I	ANM 0053	Core	3
4	Perspective and Layout Design	ANM 0133	Core	3
5	Storyboard Design	ANM 0233	Core	3
6	Mandarin I	MAN 3051	University	1
7	Pendidikan Islam	DGS 1082	University	2
	Perkembangan Personaliti	DGS 1122	University	
Total credit hours for Semester II				18

Semester III

No	Subject Matter	Code	Status	Credit Hours
1	Visual Communication	ANM 1043	Core	3
2	Character Design II	ANM 1333	Core	3
3	Computer Animation II	ANM 1153	Core	3
4	Colour and Media I	ANM 1143	Core	3
5	Pengajian Islam	LAN 1004	LAN	3
	Pendidikan Moral	LAN 1005		
6	Mandarin II	MAN 3151	University	1
7	Communications Skills II	DCE 1042	University	2
Total credit hours for Semester III				18

Semester IV

No	Subject Matter	Code	Status	Credit Hours
1	3D Design I	ANM 1253	Core	3
2	Post Production	ANM 1063	Core	3
3	Colour and Media II	ANM 1243	Core	3
4	Major Project I	PRJ 1014	Core	4
5	Ko Kurikulum II	DGS 2201	University	1
6	Pengajian Malaysia	LAN 1003	LAN	3
Total credit hours for Semester IV				17

Semester V

No	Subject Matter	Code	Status	Credit Hours
1	Major Project II	PRJ 1116	Core	6
2	Business and Marketing	BNM 2023	Core	3
3	Entrepreneurship in Engineering and Science	BNM 2123	Core	3
4	Bahasa Malaysia	LAN	LAN	3
Total credit hours for Semester V				15

Semester VI

No	Subject Matter	Code	Status	Credit Hours
1	Practical Training	PRJ 2124	Core	4
Total credit hours for Semester VI				4

TOTAL CREDIT HOURS = 90

In Search of Effectiveness Factors: A Case Study on UniKL IIM E-Learning Portal

With the rapid growth of e-learning technologies, the guidelines to enhance e-learning effectiveness are also evolving and expanding tremendously. In 2004, among all the available learning management systems, University Kuala Lumpur Institut Infotech MARA (UniKL IIM) has chosen Claroline to be its e-learning platform—UniKL IIM E-Learning Portal. This study aims **to identify the factors that determine the effectiveness of this e-learning portal.**

Hence, I would be grateful if you would answer the following questions.

1. Background of e-learning portal
 - When did IIM start to adopt e-learning technologies? What kinds the learning management systems that were used by IIM in the past?
 - When did IIM start to use Claroline as the platform for e-learning portal?
 - Why does IIM use Claroline as the platform for e-learning portal?
 - What are the system specifications of IIM's e-learning portal?
 - How much do the whole systems (hardware and software) cost?
 - How does the portal support the teaching activities in IIM?
 - How does the portal support other staffs (e.g. Programme and Academic Department) in IIM?
 - How does the portal support students' learning activities?
 - What are the students' benefits for using e-learning portal?
 - Does any statistical information / documents on students' or academics' accessing records that available?
2. Responsibilities
 - How many people involve in customising, development and maintaining e-learning portal?
 - What is the role of each staff in the team?
 - How do the organisational structure / chart in IT Department look like?
3. Training
 - How do you schedule the e-learning portal training for academics / staffs / students?
 - How frequent these trainings are organized for academics / staffs / students?
 - What are the guidelines / manuals provided to academics / staffs / students after training?
4. Technical support
 - How do you provide technical support to the e-learning systems (portal)?
 - How do you maintain the e-learning portal?
 - How frequent the maintenance works are carried out?
 - How do you manage the uploaded materials?
5. Expectation
 - What is your expectation towards the current e-learning portal?
 - What are the future plans on e-learning technologies implementation in IIM?
6. Factors of effectiveness
 - What are the factors that determine the effectiveness (achieving of IIM's vision and mission) e-learning portal? What is the priority of these factors? (From the most important to the least important)

Note: This interview session was conducted with En Fauzan, Manager of IT Services Department, from 10:00 a.m. to 11:30 a.m., on 25 April 2005

In Search of Effectiveness Factors: A Case Study on UniKL IIM E-Learning Portal

With the rapid growth of e-learning technologies, the guidelines to enhance e-learning effectiveness are also evolving and expanding tremendously. In 2004, among all the available learning management systems, University Kuala Lumpur Institut Infotech MARA (UniKL IIM) has chosen Claroline to be its e-learning platform—UniKL IIM E-Learning Portal. This study aims **to identify the factors that determine the effectiveness of this e-learning portal.**

Hence, I would be grateful if you would answer the following questions.

1. Rationale of learning portal
 - a. Why do you think that IIM needs to incorporate e-learning technologies in its academic (teaching and learning) systems?
 - b. What are the benefits and advantages of adopting e-learning technologies in IIM?
 - c. What are the existing (or future) policies on the implementation of e-learning technologies in IIM?
 - d. How would you expect the e-learning portal to contribute towards the achievement of IIM's vision and missions?
 - e. How would you satisfy with
 - i. the current development of e-learning portal?
 - ii. the contribution of staffs / academics for e-learning portal?
 - iii. the performance of students upon the portal utilization?
2. Financial support
 - a. How much money had been spent and will be spent for e-learning technologies implementation in IIM? (hardware and software)
 - b. What are the financial incentives that were (or will be) obtained from the UniKL / MARA / Ministry?
3. Non-financial supports (reward to staffs, etc)
 - a. What are the non-financial resources that had been (or will be) allocated for e-learning technologies implementation in IIM?
4. Performance evaluation of staffs / academics / students.
 - a. What performance expectations IIM has towards academics and staffs on their involvement and contribution towards e-learning technologies implementation?
 - b. How does the contribution of academics and staffs towards the development of e-learning technologies be evaluated?
5. What are IIM expectations on the students towards the usage of the e-learning portal?
6. Factors of effectiveness
 - a. What are the factors that determine the effectiveness of (achieving of IIM's vision and mission) e-learning portal?
 - b. What is the priority of these factors? (From the most important to the least important)

Note: This interview session was conducted with Tuan Haji Sukor bin Aain, Provost of UniKL IIM, from 9:30 a.m. to 11:30 a.m., on 30 May 2005

In Search of Effectiveness Factors: A Case Study on UniKL IIM E-Learning Portal

With the rapid growth of e-learning technologies, the guidelines to enhance e-learning effectiveness are also evolving and expanding tremendously. In 2004, among all the available learning management systems, University Kuala Lumpur Institut Infotech MARA (UniKL IIM) has chosen Claroline to be its e-learning platform—UniKL IIM E-Learning Portal. This study aims **to identify the factors that determine the effectiveness of this e-learning portal.**

Hence, I would be grateful if you would answer the following questions.

1. Rationale of learning portal

- What are the benefits and advantages of adopting e-learning technologies in IIM?
- How would you satisfy with
 - the current development of e-learning portal?
 - the contribution of staffs / academics for e-learning portal?

2. Factors of effectiveness

- What are the factors that determine the effectiveness of (achieving of IIM's vision and mission) e-learning portal?
- What is the priority of these factors? (From the most important to the least important)

3. Expectation

- What is your expectation towards this e-learning portal?

Note: This interview session was conducted with Prof Abu Talib bin Othman, Dean of UniKL IIM, from 8:30 a.m. to 9:30 a.m., on 08 June 2005

In Search of Effectiveness Factors: A Case Study on UniKL IIM E-Learning Portal

With the rapid growth of e-learning technologies, the guidelines to enhance e-learning effectiveness are also evolving and expanding tremendously. In 2004, among all the available learning management systems, University Kuala Lumpur Institut Infotech MARA (UniKL IIM) has chosen Claroline to be its e-learning platform—UniKL IIM E-Learning Portal. This study aims **to identify the factors that determine the effectiveness of this e-learning portal.**

Hence, I would be grateful if you would answer the following questions.

1. Factors of effectiveness

- What are the factors that determine the effectiveness of (achieving of IIM's vision and mission) e-learning portal?
- What is the priority of these factors? (From the most important to the least important)

2. Online teaching materials

- What are the features of e-learning portal that you use frequently?
- How frequent you access e-learning portal?
- How much time you spend on developing teaching materials for e-learning portal?

3. Expectation

- What is your expectation towards this e-learning portal?

In Search of Effectiveness Factors: A Case Study on UniKL IIM E-Learning Portal

With the rapid growth of e-learning technologies, the guidelines to enhance e-learning effectiveness are also evolving and expanding tremendously. In 2004, among all the available learning management systems, University Kuala Lumpur Institut Infotech MARA (UniKL IIM) has chosen Claroline to be its e-learning platform—UniKL IIM E-Learning Portal. This study aims **to identify the factors that determine the effectiveness of this e-learning portal.**

Hence, I would be grateful if you would answer the following questions.

- a. What are the factors that you think will make the e-learning portal effective?
- b. What is the priority of these factors?
(From the most important to the least important)
- c. What is your expectation towards this e-learning portal?

REFERENCES

Abtar, K.; Halimatolhanin Mohd Khalid; Chai C. L.; Rames M. & Ho, W. (2005) "Pedagogical Orientations in Implementing e-Learning at Open University Malaysia". Presentation slides of ASEAN Seminar of e-Learning, [CD-ROM], Dec 8-9, Sunway, Selangor.

Aldrich, C. (2004) *Simulation and the Future of Learning: An Innovative (and Perhaps Revolutionary) Approach to e-Learning*, Pfeiffer, San Francisco, pp 4-5.

Anuwar Ali, Tan Sri (2003) *Message from President / Vice Chancellor* [Online] Available: <http://www.oum.edu.my/v2/> [2005, December 28]

Asirvatham, D; Azizah; Ewe, H.T.; Woods, P.C. & Tengku Putri Norishah (2004) *Country Report: Development of e-Learning in Malaysia*. Presentation slides of the 3rd Asian e-Learning Network Conference, December 15-17, Singapore [Online] Available: <http://www.asia-elearning.net/content/conference/2004/>

Athabasca University (2005) *Glossary of Terms and Acronyms*. [Online] Available: <http://www.athabascau.ca/misc/glossary.html>

Bitpipe Dictionary (2005) [Online] Available: <http://www.bitpipe.com/tlist/LMS.html> [2005, March 22]

Bridger, RS (2003) *Introduction to Ergonomics*, 2nd ed, London: Taylor & Francis, p482.

Brockbank, B.J. (2003) *Learning Management Systems for E-learning*. In In Piskurich, G.M. (2003) *The AMA Handbook of E-learning: Effective Design, Implementation, and Technology Solutions*, American Management Association, USA.

Centre of Excellent for e-Learning (2005) *Welcome to Centre of Excellence for eLearning (Ce-L) Web Portal* [Online] Available: <http://kmc.mmu.edu.my/cel/html/news.php>

Chen, N.S. & Lin, K.M (2002) "Factors affecting e-learning for achievement", Proceedings of IEEE International Conference on Advanced Learning Technologies (ICALT 2002), [Online] Available: http://lutf.ieee.org/icalt2002/proceedings/t502_icalt148_End.pdf [2005, March 29]

Chou, S.W. & Liu, C.H. (2005) "Learning effectiveness in a Web-based virtual learning environment: a learner control perspective", Journal of Computer Assisted Learning, Vol. 21, Issue 1, pp 65.

Clark, R.C. & Mayer, R.E. (2002). *e-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*, Jossey-Bass/Pfeiffer, USA.

Claroline.net (2005) *Claroline: Open Source e-Learning*, [Online] Available: <http://www.claroline.net/> [2005, July 28]

Computing Cases (2005) *Why a Social Technical System?* [Online] Available: http://www.computingcases.org/general_tools/sia/socio_tech_system.html

Cooper, R; Easingwood, C; Edgett, S; Kleinschmidt, E & Storey, C. (1993) *What Distinguishes the Top Performers in Financial Services*, Management of Innovation and New Technology (MINT) Working Paper, 1993. [Online] Available: <http://mint.mcmaster.ca/mint/papers/wp28.htm>

Dam, N. (2004) *The E-Learning Field book: Implementation Lessons and Case Studies from Companies that are Making e-Learning Work*, McGraw-Hill, New York.

- Doyle, M. (2003) *Dreamweaver MX e-Learning Toolkit: Building Web-based Training with CourseBuilder*, Willey Publishing, Indiana. Pp11.
- eLearning Channel (2005). *eLearning for Business*. [Online] Available: <http://www.learning-channel.co.uk> [2005, February 11].
- Fontaine, R & Richardson, S (2003) "Cross-Cultural Research in Malaysia", *Cross Cultural Management: An International Journal*, 10(2), p75-89
- Fontaine, R & Richardson, S (2005) "On Cultural Values in Malaysia", *Cross Cultural Management: An International Journal*, 12(4), p63-77
- Horton, W. & Horton, K. (2003) *E-Learning Tools and Technologies: A consumer's guide for trainers, teachers, educators, and instructional designers*, Willey Publishing Inc, Indiana. Pp 13-20.
- Hsu, T., Wang, C.H. & Wang H.F. (2002) "An Empirical Study of the Learning Motivation, Satisfaction, and Effectiveness among Web-based Learners in Taiwan", *Proceedings of the 2002 World Conference on E-Learning in Corporate, Government, Healthcare & Higher Education*, pp 1628-1631.
- Hsu, T., Wang, H., & Hong, M. (2003). "Effects of Gender, GPA, Computer Self-Efficacy, and Learning Motivation on the Collaborative E-Learning Participation". *World Conference on E-Learning in Corp., Govt., Health, & Higher Ed. 2003*(1), 241-248. [Online]. Available: <http://dl.aace.org/13650> [2005, March 28]
- i Six Sigma (2005) *Chi Square Test* [Online] Available: http://www.isixsigma.com/dictionary/Chi_Square_Test-67.htm [2006, December 27]
- Kanahele, C. (2003) *Learning Portals*. In Piskurich, G.M. (2003) *The AMA Handbook of E-learning: Effective Design, Implementation, and Technology Solutions*, American Management Association, USA.
- Kaplan, E. (2006) Learning Circuits Glossary [Online] Available: <http://www.learningcircuits.org/glossary.html> [2006, January 24]
- Karr, C.L., Weck, B., Sunal, D.W. & Cook, T.M. (2003) "Analysis of the effectiveness of online learning in a graduate engineering math course", *The Journal of Interactive Online Learning*, Vol. 1 No. 3, [Online] Available: <http://www.ncolr.org/jiol/archives/2003/winter/3/index.asp> [2005, April 27]
- KnowledgeNet. (2005) *History of e-Learning* [Online] Available: <http://www.knowledgenet.com/corporateinformation/ourhistory/history.jsp> [2005, Dec 26]
- Labonte, T.J. (2003) *E-learning and Performance*. In Piskurich, G.M. (2003) *The AMA Handbook of E-learning: Effective Design, Implementation, and Technology Solutions*, American Management Association, USA.
- Lee, W.W. & Owens, D.L. (2004) *Multimedia Based Instructional Design, Second Ed*, John Willey & Sons, Inc, San Francisco. Pp 99-100.
- Mann, P. S. (1998) *Introductory Statistics, 3rd Ed*, John Wiley & Sons, Inc, USA. Pp 700
- Mansor Fadzil & Zoraini Wati Abas (2005) "Key Success Factors for E-Learning Implementation", *Presentation of Education Management through Technology Conference 2005*, 4 Aug, Marriot Putrajaya, Malaysia.

- MARA (2006) Corporate Profile, [Online] Available: <http://www.mara.gov.my/english/corporate/profile.htm> [2005, December 27].
- MIMOS Berhad. (2005) About MIMOS. [Online] Available: <http://www.mimos.my/about2.html> [2006, December 27]
- Ministry of Education Malaysia's Official Portal (2005) ICT Projects [Online] Available: <http://www.moe.gov.my/> [2006, December 27]
- Mohd Nazir Md. Zabit, Mohd Yahya Mohd Hussin and Tirzah Zubeidah Zachariah (2005) "E-Learning : Needs And Challenges In Implementations In Malaysia", Proceedings of International Symposium of E-learning 2005, [CD-ROM], Jul 25-26, 2005, Kota Kinabalu, Sabah.
- Moore, N. (2000) *How to do Research: The Complete Guide to Designing and Managing Research Projects, 3rd Ed*, Library Association Publishing, London.
- Morrison, D. (2003) *E-learning Strategies: How to get implementation and delivery right first time*, John Wiley & Son Ltd, West Sussex
- Multimedia Super Corridor (2005) MSC Flagship Applications. [Online] Available: <http://www.msc.com.my/msc/flagships.asp> [2006, January 6]
- National Accreditation Board (2006) Introduction [Online] Available: <http://www.lan.gov.my/index.htm> [2006, January 6].
- Nisbet, J; Watt, J. (1984) Case Study. In J. Bell, T. Bush, A. Fox, J. Goodey and S. Goulding (eds) *Conducting Small-scale Investigations in Educational Management*, Harper & Row, London.
- Open University Malaysia (2003) University Background Profile. [Online] Available: <http://www.oum.edu.my/v2/modules.php> [2005, December 30]
- Piskurich, G.M. (2003) *The AMA Handbook of E-learning: Effective Design, Implementation, and Technology Solutions*, American Management Association, USA.
- Poon, W.C, Low, L.T. & Yong, G.F. (2004) "A study of Web-based learning (WBL) environment in Malaysia", The International Journal of Educational Management, Vol 18, No. 6, pp. 374-385.
- Pugh, D.S. & Hickson, D.J. (1989) *Writers on Organizations, 4th ed*, Penguin, London, p186-192.
- Rao, A. (2002). "Novel Adaptive Learning Approach in Higher Education Using Data Mining Techniques". Proceedings of The Sixth International Research Conference on Quality, Innovation and Knowledge Management, 17-20 Feb, Kuala Lumpur, Malaysia.
- Rchardson, S (1991) *Southeast Asian Management Cases and Concepts*. Singapore University Press, Singapore, p19.
- Richardson, S (2005) *How to Research*. Thomson Learning, Singapore, p6.
- Rohani Ismail (2005) "Development for the National R&D Roadmap for e-Learning Technology", Presentation slides of ASEAN Seminar of e-Learning, [CD-ROM], Dec 8-9, Sunway, Selangor.
- Salleh, A.H. & Teh, S.W. (2000) "In Search of Key Success Factors in E-learning: An Exploratory Industry Study on Malaysian Universities". Referred Proceedings of International Conference on Electronic Commerce: 'Emerging Trends in E-Commence', Nov 21-23, 2000, Kuala Lumpur.
- Shepherd, C. (2003) *E-Learning's Greatest Hits, Above & Beyond*, UK

- Siragusa, L. (2002). "Research into the effectiveness of online learning in higher education: Survey findings." Proceedings Western Australian Institute for Educational Research Forum 2002. [Online] Available: <http://education.curtin.edu.au/waier/forums/2002/siragusa.html> [2005, April 30]
- Steinkuehler (2001) Strategies for Assessing Learning Effectiveness. [Online] Available: <http://www.alnresearch.org/HTML/AssessmentTutorial/index.html> [2005, February 20]
- Sulaiman Shamsuri (2004) *Research Methods for the Social Sciences made simple*, DSS Publishing Enterprise, Selangor, p61.
- Syed Othman Alhabshi, Datuk (2002) "e-Learning: A Malaysian Case Study". Paper presented at the Africa-Asia Workshop on Promoting Co-operation in Information and Communication Technologies Development, Mar 26, National Institute of Public Administration (INTAN), Kuala Lumpur.
- Tan, W.H.; Zalifah Awang Long; Fauzan Shukor; & Richardson, S (2005) "In Search of Effectiveness Factors: A Case Study of the UniKL IIM E-Learning Portal," Proceedings of International Symposium of E-learning 2005, [CD-ROM], Jul 25-26, 2005, Kota Kinabalu, Sabah.
- Teachnology (2005) Teacher Glossary of Terms in Teaching. [Online] Available: <http://www.teach-nology.com/glossary/terms/b/> [2006, January 8]
- Trist, E.L. & Bamforth, K.W. (1951) "Some social and psychological consequences of the Longwall method of coal getting", Human Relations 4, p3-38.
- Universiti Tun Abdul Razak (2005) Welcome to Universiti Tun Abdul Razak [Online] Available: <http://www2.unitar.edu.my/index.php> [2005, December 30]
- Universiti Kuala Lumpur (2005) Universiti Kuala Lumpur: A New Niche in the Malaysian Education System. [Online] Available: <http://www.unikl.edu.my/index.php> [2005, December 30]
- UniKL IIM (2005) About Us [Online] Available: <http://www.iim.edu.my/htmlsite/aboutus.html> [2005, December 30]
- Wikipedia (2006) The Free Encyclopaedia. [Online] Available: http://en.wikipedia.org/wiki/Main_Page [2006, January 24]
- Zalifah Awang Long; Tan, W.H. & Richardson, S. (2006) "Effectiveness Factors: Prolonged Study Universiti Kuala Lumpur – Institut Infotech MARA E-Learning Portal," Proceedings of International Conference on Distance, Collaborative and e-Learning (DCEL 2006), [CD-ROM], Jan 4-5, 2006, Kuala Lumpur.
- Zoraini Wati Abas; Kuldip Kaur; & Hairudin Harun (2004) *e-Learning Readiness in Malaysia 2004*, Open University Malaysia, Kuala Lumpur.

GLOSSARY

Accessibility: A characteristic of technology that enables people with disabilities to use it. For example, accessible Websites can be navigated by people with visual, hearing, motor, or cognitive impairments. Accessible design also benefits people with older or slower software and hardware.

ASEAN (Association of Southeast Asian Nations): A political and economic organisation of countries located in Southeast Asia.

ASP (application service provider): A third-party organization that supplies software applications and/or software-related services over the Internet. ASPs allow companies to save money, time, and resources by outsourcing some or all of their information technology needs.

Asynchronous learning: Learning in which interaction between instructors and students occurs intermittently with a time delay. Examples are self-paced courses taken via the Internet or CD-ROM, Q&A mentoring, online discussion groups, and email.

Blended learning: Learning events that combine aspects of online and face-to-face instruction.

Browser: A software application that displays World Wide Web pages originally written in the text-based HTML language in a user-friendly graphical format.

CAI (computer-assisted instruction): The use of a computer as a medium of instruction for tutorial, drill and practice, simulation, or games. CAI is used for both initial and remedial training, and typically does not require that a computer be connected to a network or provide links to learning resources outside of the course. See also CBT.

CBT (computer-based training): An umbrella term for the use of computers in both instruction and management of the teaching and learning process. CAI (computer-assisted instruction) and CMI (computer-managed instruction) are included under the heading of CBT. Some people use the terms CBT and CAI interchangeably.

CD-ROM (compact disc read-only memory or compact disc read-only media): A computer storage medium similar to the audio CD that can hold more than 600 megabytes of read-only digital information.

Certification: The awarding of a credential acknowledging that an individual has demonstrated proof of a minimum level of knowledge or competence, as defined by a professional standards organization. Professional certification can be used as a screening tool and verification of an individual's skills and knowledge.

Chat: Real-time text-based communication in a virtual environment. Chat can be used in e-learning for student questions, instructor feedback, or even group discussion.

Claroline (Classroom Online): a free learning management system based on PHP /MySQL allowing teachers or education organizations to create and administrate courses through the web. It was created by Thomas De Praetere at the University of Louvain, Belgium.

CMS (content management system): A centralized software application or set of applications that facilitates and streamlines the process of designing, testing, approving, and posting e-learning content, usually on Webpages.

Compliant (standards-compliant): E-learning that meets established standards of, and has received official approval from, an accrediting organization.

Conformant (standards-conformant): E-learning that meets the standards of an accrediting organization but that has not gone through the formal application process to be deemed compliant.

Content: Information captured digitally and imparted to learners. Formats for e-learning content include text, audio, video, animation, simulation, and more.

Courseware: Any type of instructional or educational course delivered via a software program or over the Internet.

Delivery: Any method of transferring content to learners, including instructor-led training, Web-based training, CD-ROM, books, and more.

Discussion boards: Forums on the Internet or an intranet where users can post messages for others to read.

Distance education: Educational situation in which the instructor and students are separated by time, location, or both. Education or training courses are delivered to remote locations via synchronous or asynchronous means of instruction, including written correspondence, text, graphics, audio- and videotape, CD-ROM, online learning, audio- and videoconferencing, interactive TV, and FAX. Distance education does not preclude the use of the traditional classroom. The definition of distance education is broader than and entails the definition of e-learning.

Distance learning: The desired outcome of distance education. The two terms are often used interchangeably.

Download: (noun) A file that's transferred or copied to a user's computer from another connected individual computer, a computer network, a commercial online service, or the Internet. (verb) To transfer or copy a file to a user's computer from another connected individual computer, a computer network, a commercial online service, or the Internet.

E-learning (electronic learning): Term covering a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via Internet, intranet/extranet (LAN/WAN), audio- and videotape, satellite broadcast, interactive TV, CD-ROM, and more.

Economic factors: One of the components of socio-technical systems; it includes how the efficiency of the system is measured, with emphasis on productivity.

Email (electronic mail): Messages sent from one computer user to another.

End user: The person for whom a particular technology is designed; the individual who uses the technology for its designated purpose. In e-learning, the end user is usually the student.

Evaluation: Any systematic method for gathering information about the impact and effectiveness of a learning offering. Results of the measurements can be used to improve the offering, determine whether the learning objectives have been achieved, and assess the value of the offering to the organization.

Extensibility: The ability to expand and adapt an e-learning application or infrastructure by adding features, components, or services to a core set of capabilities.

F2F (face-to-face): Term used to describe the traditional classroom environment.

Homepage: A document that has an address (URL) on the World Wide Web, is maintained by a person or an organization, and contains pointers to other pieces of information.

HTML (Hypertext Markup Language): The programming language used to create documents for display on the World Wide Web.

ILT (instructor-led training): Usually refers to traditional classroom training, in which an instructor teaches a course to a room of learners. The term is used synonymously with on-site training and classroom training (c-learning).

Internet: An international network first used to connect education and research networks, begun by the US government. The Internet now provides communication and application services to an international base of businesses, consumers, educational institutions, governments, and research organizations.

Interoperability: The ability of hardware or software components to work together effectively.

IP (Internet Protocol): The international standard for addressing and sending data via the Internet.

Java: An object-oriented programming language developed by Sun Microsystems. Java isn't dependent on specific hardware and can be launched from within an HTML document or stand-alone.

LAN (local-area network): A group of personal computers and/or other devices, such as printers or servers, that are located in a relatively limited area, such as an office, and can communicate and share information with each other.

LCMS (learning content management system): A software application (or set of applications) that manages the creation, storage, use, and reuse of learning content. LCMSs often store content in granular forms such as learning objects.

Learning: A cognitive and/or physical process in which a person assimilates information and temporarily or permanently acquires or improves skills, knowledge, behaviors, and/or attitudes.

Learning object: A reusable, media-independent collection of information used as a modular building block for e-learning content. Learning objects are most effective when organized by a meta data classification system and stored in a data repository such as an LCMS.

Learning objective: A statement establishing a measurable behavioral outcome, used as an advanced organizer to indicate how the learner's acquisition of skills and knowledge is being measured.

Learning platforms: Internal or external sites often organized around tightly focused topics, which contain technologies (ranging from chat rooms to groupware) that enable users to submit and retrieve information.

Learning portal: Any Website that offers learners or organizations consolidated access to learning and training resources from multiple sources. Operators of learning portals are also called content aggregators, distributors, or hosts.

IEEE (The Institute of Electrical and Electronics Engineers): An USA organization whose Learning Technology Standards Committee is working to develop technical standards, recommended practices, and guides for computer implementations of education and training systems.

LMS (learning management system): Software that automates the administration of training. The LMS registers users, tracks courses in a catalog, records data from learners; and provides reports to management. An LMS is typically designed to handle courses by multiple publishers and providers. It usually doesn't include its own authoring capabilities; instead, it focuses on managing courses created by a variety of other sources.

Log in/Log on: To establish a connection over a network or modem with a remote computer to retrieve or exchange information.

MARA (Majlis Amanah Rakyat): The Council of Trust For the Indigenous People; an agency under the Malaysian Ministry of Entrepreneur And Co-operative Development, set up to promote, stimulate,

facilitate and undertake all activities pertaining to the economic and social development of the nation particularly in the rural areas.

MDC (Multimedia Development Corporation): A government-owned institution responsible for the management of the Multimedia Super Corridor in Malaysia as a world-class technology industry and commerce zone.

Metadata: Information about content that enables it to be stored in and retrieved from a database.

Microsoft Power Point: A presentation programme developed for the Microsoft Windows and Mac OS computer operating systems. Being widely used by businesspeople, educators, and trainers,

MIMOS (Malaysian Institute of Microelectronic Systems) Berhad: A agency under the Malaysian Ministry of Science, Technology and Innovation, which acts as the technology promoter, partner or provider for innovation in and through ICT.

Multimedia: Encompasses interactive text, images, sound, and color. Multimedia can be anything from a simple PowerPoint slide to a complex interactive simulation.

MSC (Multimedia Super Corridor): A designated zone, designed to leapfrog Malaysia into the information and knowledge age. It includes an area of approximately 15x50 km which stretches from the Petronas Twin Towers to the Kuala Lumpur International Airport and also includes the towns of Putrajaya and Cyberjaya. It aims to attract companies with attractive tax breaks and facilities such as high speed internet and proximity to the local international airport, Kuala Lumpur International Airport.

MyGfL (Malaysian Grid for Learning): A national e-Learning initiative undertaken by MIMOS Berhad to promote and support the lifelong learning agenda in Malaysia to accelerate the growth of K-Society through the use of ICT.

Navigation: 1) Moving from Webpage to Webpage on the World Wide Web. 2) Moving through the pages of an online site that may not be part of the WWW, including an intranet site or an online course.

NCCeL (National Consultive Committee for e-Learning): A committee formed in early 2004 to monitor the development of e-learning implementation in Malaysia. It is chaired by the Secretary General, Ministry of Energy, Water and Communication. Its membership consists of government agencies, higher learning institutions and industries.

Net: Common nickname for the Internet

Network: Two or more computers that are connected so users can share files and devices (for example, printers, servers, and storage devices).

NITC (National IT Council): A council formed by Malaysian Government to promote the sustainable growth of IT development and application via R&D planning and technology acquisition strategies; to ensure smooth integration of new technologies into social and economic development; to determine the likely impact of IT on the economy and society; and to explain and promote the potential of IT in transforming societies in all its dimension.

O Level (Ordinary Level): It is one of the academic qualifications under the General Certificate of Education (GCE). O Level examinations are offered by The Cambridge International Examinations board.

Online: The state in which a computer is connected to another computer or server via a network. A computer communicating with another computer.

Online learning: Learning delivered by Web-based or Internet-based technologies. See Web-based training and Internet-based training.

Open source software: 1) Generally, software for which the original program instructions, the source code, is made available so that users can access, modify, and redistribute it. The Linux operating system is an example of open source software. 2) Software that meets each of nine requirements listed by the non-profit Open Source Initiative in its Open Source Definition.

PDF (portable document format): File format developed by Adobe Systems to enable users of any hardware or software platform to view documents exactly as they were created--with fonts, images, links, and layouts as they were originally designed.

Plug-and-play: The ability of a personal computer's operating system to recognize and install-- with little to no intervention by the user--new peripheral devices that are added to the computer. Also spelled plug-n-play or plug 'n' play.

Portal: A Website that acts as a doorway to the Internet or a portion of the Internet, targeted towards one particular subject. Also see learning portal.

Power Point: see Microsoft Power Point.

Provost: The title of a senior academic administrator at many institutions of higher education in the United States and Canada, the equivalent of Vice-Chancellor at certain UK universities such as University College London, and the head of certain Oxbridge colleges (e.g., Worcester College, Oxford). Even within these different types of appointments, the precise role of a provost varies from institution to institution.

Real-time communication: Communication in which information is received at (or nearly at) the instant it's sent. Real-time communication is a characteristic of synchronous learning.

Reusable: E-learning content that can be transferred to various infrastructures or delivery mechanisms, usually without changes.

Scalability: The degree to which a computer application or component can be expanded in size, volume, or number of users served and continue to function properly.

SCORM (Sharable Content Object Reference Model): A set of specifications that, when applied to course content, produces small, reusable learning objects. A result of the Department of Defence's Advance Distributed Learning (ADL) initiative, SCORM-compliant courseware elements can be easily merged with other compliant elements to produce a highly modular repository of training materials.

Screenshot: A picture of a computer display that shows the display at a given point in time. Also called a screen capture. Annotated screenshots are often used in software manuals and training programs.

Self-paced learning: An offering in which the learner determines the pace and timing of content delivery.

Server: A computer with a special service function on a network, generally to receive and connect incoming information traffic.

SIRIM Berhad: Formerly known as Standards and Industrial Research Institute of Malaysia, a corporate organisation owned wholly by the Minister of Finance Incorporated. It has been entrusted by the Malaysian Government to be the national organisation for standards and quality, and as a promoter of technological excellence in Malaysian industry.

SME (subject matter expert): An individual who is recognized as having proficient knowledge about and skills in a particular topic or subject area.

Social factors: One of the components of socio-technical systems; it includes the relationships among the workers and their attitudes to the work and their co-workers.

Socio-technical Systems: An intellectual tool which is used to recognise patterns in the way technology is used and produced.

Software: A set of instructions that tell a computer what to do; a program.

SPM (Sijil Pelajaran Malaysia): It is the Certificate of Education, a national examination taken by most of the form 5 students in Malaysia. It is equivalent to the British GCE-O level. The minimum requirement to get a certificate is a pass in Malay. SPM provides the opportunity for Malaysians to continue their studies to pre-university level. The evaluation scheme is 100% exam-based. The examination for SPM usually takes place around early November and lasts for more than 3 weeks. There are also papers in June, but only for the compulsory subjects.

SPMV (Sijil Pelajaran Malaysia Vokasional): It is the Certificate of Vocational Education, a national examination taken form 5 students of vocational secondary school in Malaysia.

Standard: An e-learning specification established as a model by a governing authority such as IEEE or ISO to ensure quality, consistency, and interoperability.

Streaming media (streaming audio or video): Audio or video files played as they are being downloaded over the Internet instead of users having to wait for the entire file to download first. Requires a media player program.

Synchronous learning: A real-time, instructor-led online learning event in which all participants are logged on at the same time and communicate directly with each other. In this virtual classroom setting, the instructor maintains control of the class, with the ability to "call on" participants. In most platforms, students and teachers can use a whiteboard to see work in progress and share knowledge. Interaction may also occur via audio- or videoconferencing, Internet telephony, or two-way live broadcasts.

TBT (technology-based training): The delivery of content via Internet, LAN or WAN (intranet or extranet), satellite broadcast, audio- or videotape, interactive TV, or CD-ROM. TBT encompasses both CBT and WBT.

Teaching: A process that aims to increase or improve knowledge, skills, attitudes, and/or behaviors in a person to accomplish a variety of goals. Teaching is often driven more toward the long-term personal growth of the learner and less toward business drivers such as job tasks that are often the focus of training. Some people characterize teaching as focused on theory and training as focused on practical application. See also Training and Learning.

Technical factors: One of the components of socio-technical systems; it includes the equipment, materials, processes and the environment.

Training: A process that aims to improve knowledge, skills, attitudes, and/or behaviors in a person to accomplish a specific job task or goal. Training is often focused on business needs and driven by time-critical business skills and knowledge, and its goal is often to improve performance. See also Teaching and Learning.

Tutorial: Step-by-step instructions presented through computer or Web-based technology, designed to teach a user how to complete a particular action.

Upload: To send a file from one computer or server to another.

URL (uniform resource locator): The address of a page on the World Wide Web. For example, .

Usability: The measure of how effectively, efficiently, and easily a person can navigate an interface, find information on it, and achieve his or her goals.

Virtual: Not concrete or physical. For instance, a completely virtual university does not have actual buildings but instead holds classes over the Internet.

Virtual classroom: The online learning space where students and instructors interact.

WBT (Web-based training): Delivery of educational content via a Web browser over the public Internet, a private intranet, or an extranet. Web-based training often provides links to other learning resources such as references, email, bulletin boards, and discussion groups. WBT also may include a facilitator who can provide course guidelines, manage discussion boards, deliver lectures, and so forth. When used with a facilitator, WBT offers some advantages of instructor-led training while also retaining the advantages of computer-based training.

Webpage: A document on the World Wide Web that's viewed with a browser such as Internet Explorer or Netscape Navigator.

WWW (World Wide Web): A graphical hypertext-based Internet tool that provides access to Web pages created by individuals, businesses, and other organizations.