

E-learning in Malaysia: Success Factors in Implementing E-learning Program

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The main objective of this study was to identify successful factors in implementing an e-learning program. Existing literature has identified several successful factors in implementing an e-learning program. These factors include program content, web page accessibility, learners' participation and involvement, web site security and support, institution commitment, interactive learning environment, instructor competency, and presentation and design. All these factors were tested together with other related criteria which are important for e-learning program implementation. The samples were collected based on quantitative methods, specifically, self-administrated questionnaires. All the criteria that were tested to see if they were important in an e-learning program implementation.

E-learning, a method which evolved from distance education, has received special attention from public universities in implementing distance learning courses. In November 2005, the Sloan Consortium published a report on e-learning and defined "online learning" or "e-learning" as learning in which the Internet is used in delivering 80-100% of the content (Charmonman, 2006). E-learning is the most recent evolution of distance learning that creates, fosters, delivers, and facilitates learning, anytime and anywhere, with the use of interactive network technologies. E-learning is the latest evolution in corporate education and training. The first electronic supplement to traditional instructor-led classroom training was computer-based training (CBT), delivered via CD-ROM to individual PCs or local-area networks (LANs.) Then, the rise of the web led to web-based training (WBT), courseware developed specifically for delivery via the Internet or intranets. Then, the ubiquitous "e" was applied, signaling a shift from the "islands" of learning going on at the departmental or line-of-business level, to enterprise e-learning (Frye, 2002). Table 1 shows the comparison between traditional distance learning and present day e-learning (see Choi, Kim, & Kim, 2006).

By 1990, about half of the world's countries had primary enrollment rates of 100% as opposed to only 28% in 1960. The development of e-learning in Malaysia started during the pre e-learning era when the Educational Technology Division was set up by the Ministry of Education in 1972 (Asirvatham, Kaur, & Abas, 2005). Yet, much remains to be done, as illiteracy is still a fact of life in many developing nations (Lopez-Claros, Altinger, Blanke, Drzeniek, & Mia, 2006). Even the second phase of Vision 2020, under the 9th Malaysia Plan (2006-2010), has highlighted building world-class human capital,

which is one of the seven strategies for the development of Malaysia. As mentioned by Y.A.B. Dato' Seri Abdullah bin Haji Ahmad Badawi, Prime Minister of Malaysia,

the Government is interested in continuously developing the people by promoting a 'Continuous Learning Concept' at the industry, organisation and individual level in both the public and private sectors. The Government will set up the national 'Life-long Learning Council' and all public and private higher educational institutions should establish one centre of life-long learning" (Study Malaysia, n.d).

The rapid growth of web-based technologies and the high usage of the Internet have made teaching and learning via the Internet, or e-learning, more viable in recent years. Many universities and educationally-based industries have set up portals to offer an e-learning environment either as teaching aids to support conventional teaching approach or as a teaching medium for long-distance or off-campus programs (Khalid, Yusof, Heng, & Yunus, 2006).

There are currently 20 public universities and university-colleges (14 universities and 6 university-colleges), 30 private universities and university-colleges (11 universities, 5 International universities and 14 university-colleges), and over 600 private colleges in the country of Malaysia (Ministry of Higher Education, 2006). With an increase in the demand for higher education, many institutions in Malaysia have planned for e-learning (Raja Hussain, 2004). Universities in Malaysia have responded actively to this challenge, guided by the Ministry of Education's strategies to enhance the use of ICT in the e-learning (Hassan, 2002; Raja Hussain, 2004):

Table 1
Evolution of Distance Learning

	Past Distance Learning	Present e-Learning
Definition	<ul style="list-style-type: none"> Any approaches to education delivery that replace the same-time, same-place, and face-to-face environment of a traditional classroom (i.e., correspondence teaching; multimedia distance teaching) 	<ul style="list-style-type: none"> The most recent evolution of distance learning that creates, fosters, delivers, and facilitates learning, anytime and anywhere, with the use of interactive network technologies (i.e., E-learning)
Paradigm in education	<ul style="list-style-type: none"> Focus on teaching: lesson based Objectivist model of learning in which learners are passive A series of lectures for efficient transfer of knowledge from instructor to learner 	<ul style="list-style-type: none"> Focus on learning: learner based Constructive, collaborative, and cognitive information processing of learning Individual differences in the learning process; learning as a social process
Interaction	<ul style="list-style-type: none"> Lack of direct interaction between the teacher and the learner Asynchronous interaction 	<ul style="list-style-type: none"> Interactions between instructor and learner, and among learners Asynchronous/synchronous or real-time (e.g., chat forum, instant messaging, video conferencing) interaction
Technology	<ul style="list-style-type: none"> Written or printed materials, broadcast media, audio/ videotapes, telephone, and CAI/ CBT with stand-alone computers 	<ul style="list-style-type: none"> All electronic media, especially, network technologies such as the Internet, intranets, and extranets

- The preparation of sufficient and up-to-date tested ICT infrastructure and equipment to all educational institutions.
- The roll-out of ICT curriculum and assessment and the emphasis of integration of ICT in teaching and learning.
- The upgrading of ICT knowledge and skills in students and teachers.
- The Increasing usage of ICT in educational management.
- The upgrading of the maintenance and management of ICT equipment in all educational institutional.

The former Secretary-General of the Ministry of Education, Tan Sri Datuk Dr Johari Mat (Mat, 2000) explained that there are many benefits of e-learning in the Malaysian education system. First, e-learning provides more learning opportunities to adults who are no longer of the formal education age which ranges of from 17-25 years. This is supported by Galloway (2000) who stated that in the new education environment, the traditional 4-year degree of education has evolved into a 40-year degree to indicate a lifetime relationship between education and human beings. E-learning opens up a new platform for many adults who have been tied up with many commitments in life and enables them to learn anytime and anywhere they want at their convenience. Access to learning via the Internet has made geographical or physical constraints no longer a critical issue for adults to enroll in any course with any university where e-learning opportunities are available.

Secondly, e-learning also ensures quality in education since technology is able to provide interactivity and active learning. Lectures are constantly modified based on learners' feedback and hence enhance their understanding. The integration of many different rich resources like the virtual library, videos, diagrams and audio clips in the e-learning environment could be easily utilized. Adults who are busy with their daily lives can be attracted to the convenient way of information sharing. In e-learning lectures, there is no problem of unmanageable class size or insufficient number of students to start the course. As long as there are students taking the course, they can attend the class anytime at any place they want. Hence, e-learning can be a way to produce a quality and innovative generation (Mat, 2000).

Thirdly, compared to the conventional learning environment, e-learning can be a factor in changing the environment from brick to click. The Ministry of Education and organizations do not have to worry about building more concrete campuses to train and equip the working generation (Mat, 2000). With e-learning, the cost of infrastructure can be reduced tremendously from the millions required to build a campus to thousands to have a complete network infrastructure. In the past, learners had to spend much of their time and money to get to the physical campus for lectures. The learners can now access the campus from their home without much traveling and being away from their families. It cuts the learning time and cost. Thus, it encourages more organizations to supports e-learning education for their employees (Mat, 2000).

A survey conducted in 2004 (Asirvatham, Kaur, & Abas, 2005) showed that

- Malaysia is moderately ready for e-learning,
- Malaysia is not environmentally ready,
- Malaysia is technically ready,
- Enablers are mostly ready, culturally,
- Learners are more ready for e-learning compared to the perception of their lecturers, and
- Malaysia is not seen as financially ready by providers and policy-makers.

Literature Review

The potential use of information technology in education and training, shares the very characteristics of information technology that businesses have used to gain competitive advantage and allow a range of productive improvements: the interactivity of computers, the distribution of information, the provision of analytical tools, the elimination of distance barriers, and, to a lesser extent, the replacement of repetitive tasks (Kim & Kim, 2006; Leidner & Jarvenpaa, 1993). This is supported by previous studies on teaching effectiveness which has identified that distance education is as effective as traditional on-campus approaches for delivering information (Choi et al., 2006; Dohner et al., 1985; Fraser, 1985; Jones & Timpson, 1991; Maloy & Perry, 1991; Saba, 2000; Sullivan & Osburn, 1990; Threlkeld & Brzoska, 1994).

There are a number of surveys that have been carried out to identify critical success factors in e-Learning. Webster and Hackley (1997) emphasized effectiveness, where they used student involvement and participation, cognitive engagement, technology self-efficacy and perceived usefulness of technology employed to measure effectiveness of E-learning. The reliability, quality, and medium richness were also key technological aspects considered in defining successful factors for E-learning (Sanders & Nagelhout, 1995). In a survey done by Volery and Lord (2000) in one online management course at an Australian university, they identified three critical success factors in online delivery: technology, instructor, and previous use of the technology from the student perspective. In addition to technology, which has been emphasized by some researchers, instructor attitudes toward students, instructor technical competence, and classroom interaction are also important (Dillon & Gunawardena, 1995).

A survey by Lim (2001) showed that computer self-efficacy is an important factor in adult learner's satisfaction and intent to take future Web-based courses. Self-efficacy is affected by computer experiences and frequency of computer usage (Tarkzadeh & Koufteros, 1994). In addition, years of computer use, Internet experience in a class and academic self-concept also had

a positive relationship with adult learner satisfaction in learning. With higher satisfaction levels, there will be greater opportunities of taking a web-based program in future. Therefore, we can conclude that these factors are important influencers in E-learning course enrolment for adult learners.

According to a study done by Hill, Lomas, and MacGregor (2003), the quality of the lecturer and the student support systems were the most influential factors in the provision of quality education. Their empirical research made use of focus groups involving a range of higher education students. Prior to this, Laudon and Laudon (1998) identified critical factors for successful implementation of E-learning programs: management support, user participation, degree of complexity and risk according to the new technologies, and role of project management in the implementation process. Le Blanc and Wands (2001) categorized the critical success factor for e-learning into three main groups: organizational, general, and cognitive.

Organizational factors include

- Technical infrastructure,
- Clearly defined change leadership strategy, and
- Management support for training

General factors include

- Adult learning principles,
- Clearly defined learning outcomes,
- Pretest option,
- Clearly defined learning pathways, and
- Assessment

Cognitive factors include

- Access to useful help facilities
- User control of screen information
- Simple user interface
- Access to presentation of complex information
- Appropriate use of multimedia
- Avoidance of redundant information

There are a number of studies that point out challenges and issues in implementing e-learning. Alexander and McKenzie (1998) reported that E-learning would fail for the following reasons:

- Being overly ambitious in terms of desired outcomes for the budget and time available.
- Utilizing particular information technologies for their own sake, without sufficient regard for appropriate learning design.
- No change in the assessment of learning to suit the changed learning outcomes.

- Commencing software development without adequate planning.
- Failure to prepare students for participation in learning experiences such as working in groups.
- Failure to obtain copyright clearance.

According to Parson (1997), much of the efforts to use the Web for teaching and learning have merely resulted in using Internet-based structure to deliver content. It has only changed traditional text to electronic text. Doherty (1998) also noted that the Internet would become passive learning technology if it were used to deliver traditional instructional materials without realizing its capabilities of facilitating communication and collaboration. Therefore, it is clear to see that Internet usage in education must be interactive and aggressive to benefit all parties.

According to Madhukar (2002), the Internet has positive influences on learning as it is a source of information, provides independent and individualized learning, gives in-depth understanding, and improves learners' motivation. However, he also pointed out a few negative influences of the Internet on learning, which includes interfering with student concentration, being time consuming, presenting questionable resources, and increasing student dependency on Internet rather than application of knowledge. By comparing the pros and cons of the Internet as a tool for learning, he has provided some guidelines to consider making Internet learning effective:

- Monitor use of Internet in class.
- Identify beforehand lessons and/or activities that will necessitate use of the Internet. This will instil disciplined use of the Internet by the students.
- Provide Internet search guidelines and skills at the beginning of the course and bookmark important sites for students.
- Diversify instructional strategies with textbooks, group discussions, CDs and videos instead of focusing solely on the Internet.
- Discourage students from pirating on the Internet.

Mutula (2002) also identified several important issues and challenges in implementing E-learning. The most important challenge is the resources and infrastructure needed to support this new way of learning, which can be a constraint. Information network equipment, laboratories and bandwidth requirements fall under this category. The technology must be practically appraised to meet academic

programs. The IT skills shortage is also likely to have negative impact on the Internet economy development. It is estimated that by the year 2010, the digital economy will have one billion Internet users, but the skills needed to sustain this growth will be lacking (Gordon, 2002).

Objectives

The main objective of this study is to identify the success factors in implementing an E-learning program in Malaysia. The study mainly focuses on eight criteria of success factors, which are (a) program content (Le Blanc & Wands, 2001), (b) Web page accessibility (Parson, 1997; Doherty, 1998), (c) learners' participation and involvement (Webster & Hackley, 1997), (d) Web site security and support (Laudon & Laudon, 1998), (e) institution commitment (Laudon & Laudon, 1998), (f) interactive learning environment (MacDonald, Gabriel, & Cousins, 2000), (g) instructor competency (Volery & Lord, 2000), and (h) presentation and design (Harun & Yusof, 2001).

Method

Two forms of questionnaires were developed: paper-based and online. Both forms of questionnaires, which were identical in content, catered for general opinions, were distributed to the adults through researcher's contacts. Respondents for the paper-based questionnaire were required to return the completed questionnaires before the deadline given. By doing this, the time required to wait for completion of questionnaire was controlled with the help from the researchers' contacts, and a higher response rate within limited time frame was ensured. An online survey form was designed to reach adults who have frequent access to the Internet. The cost was reduced with this paperless contact and free hosting service from the Internet. The questionnaire was posted online and the link was sent by e-mail to adults through the researcher's contacts. Both printed and online surveys were implemented by distributing questionnaires to a snowball sample of adults in public.

Interviews helped to gather wider opinions and in-depth information on E-learning programs in Malaysia. With the time allocated for interviews with staff from institutions of higher learning, fruitful discussion, and generous feedback were able to take place. Interviews were carried out with two main players in Malaysia's E-learning programs: University Tun Abdul Razak and Open University Malaysia. Through the interviews, a clearer picture of current E-learning programs offered was seen. Furthermore, a deeper understanding of the programs implementation and public responses was obtained.

The data collected were analyzed based on mean, standard deviation, percentages, and frequencies using SPSS. The analyzed data were then synthesized and presented in tables, figures, and narrative forms. In the event of missing data or invalid answers, the questionnaire was considered void and not used in the analysis. This was to be consistent as the online survey could not be sent and was therefore considered invalid if there was even one question left unanswered.

Analysis and Discussion

Table 2 shows the mean score and standard deviation for each criterion. The criteria are arranged from the highest mean score to the lowest mean score. There were five criteria that received more than 4.0 mean score whereas the others there were less than 4.0. The five criteria that had above 4.0 mean score are program content, web page accessibility, learners' participation and involvement, Web site security, and support and institution commitment. The other criteria that had mean score below 4.0 are interactive learning environment, instructor competency, and presentation and design. As all the mean scores were more than 3.5, it means all these criteria are important for E-learning implementation. They play vital parts in determining the success of an e-learning program.

Program content has the highest mean score at 4.32. This may imply that respondents were very concerned of the program content in e-learning implementation. It is important to have clear program content presented to help in the learning process. At the lowest end was the presentation and design criterion. Respondents have put it with lower importance compared to the other criteria.

Program Content

Program content has the highest mean score among all the criteria. From Table 3, we can see that there were 45.1% of respondents who made it a top priority criterion in an E-learning program implementation. Another 42% also felt it is a very important criterion. None of the respondents felt it is not important at all. Hence, we can conclude that all respondents in this survey have a common opinion that program content is a critical success factor in E-learning program implementation. The reason why program content is so critical to the respondents could be due to the fact that adult learners know what they want to learn from a program. MacDonald, Gabriel, and Cousins (2000) have commented that adult learners are more independent with much experience; therefore, the expectation on programs is much higher than young learners. If the program content which includes the syllabus, scope of study and learning methodologies

cannot satisfy the adults, it may be considered as an unsuccessful program.

Web Page Accessibility

None of the respondents thought that web page accessibility is not important. Results are shown in Table 4. The highest percentage was found in the "very important" category at 48.4%. Web page accessibility is crucial as the learning process has to take place through the Internet. Without an easily accessible web page, learner will easily lose their patience and find this learning method becoming less convenient for them. One of the benefits for E-learning is to provide a fast and easy to learning environment. Learners will definitely evaluate this benefit based on their experience interacting with the web page. Therefore, E-learning providers have to ensure their web pages are easily accessible at all times anywhere.

Learner's Participation and Involvement

As reported by MacDonald et al. (2000), effective group discussion is very important in e-learning. In order to have that, learners' participation and involvement is very important. Therefore, this criterion was also tested to gauge the respondents' perception on the importance of learner participation and involvement. Table 5 presents the results.

More than 75% of respondents rated it as very important or top priority. None of the respondents felt it is not important. This implies that respondents generally think learner's participation and involvement are critical success factors in E-learning program implementation. Since E-learning is a self-learning method, learners should have active participation and involvement to help them learn effectively.

Web Site Security and Support

Web site security and support includes the issue of how safe is the online learning place and how fast the learners are supported by the web site administrator. An unsafe web site may cause the assignments posted by learners or notes posted by instructors to get lost. Problems faced by learners during the learning process must be supported proactively by the administrator or else, the learners might lost their interest and patience to learn. Therefore, a majority of respondents (42.6%) felt this criterion is very important in an E-learning program implementation. Some respondents (31.5%) have even put it as top priority. This criterion can be considered as a highly critical success factor (see Table 6).

Table 2
E-learning's Criteria

Criteria	Mean	Standard Deviation
Program content	4.32	0.693
Web page accessibility	4.14	0.755
Learner's participation and involvement	4.10	0.858
Web site security and support	4.02	0.838
Institution commitment	4.02	0.909
Interactive learning environment	3.86	0.929
Instructor competency	3.68	0.963
Presentation and design	3.60	0.880

Table 3
Program Content

Importance	Frequency	Percentage
Not important	0	0.0
Less important	0	0.0
Important	21	13.0
Very important	68	42.0
Top priority	73	45.1
Total	162	100.0

Table 4
Web Page Accessibility

Importance	Frequency	Percentage
Not important	0	0.0
Less important	4	2.5
Important	24	14.8
Very important	79	48.8
Top priority	55	34.0
Total	162	100.0

Table 5
Participation and Involvement

Importance	Frequency	Percentage
Not important	0	0.0
Less important	6	3.7
Important	34	21.0
Very important	60	37.0
Top priority	62	38.3
Total	162	100.0

Table 6
Web site Security and Support

Importance	Frequency	Percentage
Not important	1	0.6
Less important	4	2.5
Important	37	22.8
Very important	69	42.6
Top priority	51	31.5
Total	162	100.0

Table 7
Institution Commitment

Importance	Frequency	Percentage
Not important	1	0.6
Less important	7	4.3
Important	38	23.5
Very important	58	35.8
Top priority	58	35.8
Total	162	100.0

Table 8
Interactive Learning Environment

Importance	Frequency	Percentage
Not important	1	0.6
Less important	10	6.2
Important	46	28.4
Very important	58	35.8
Top priority	47	29.0
Total	162	100.0

Table 9
Instructor Competency

Importance	Frequency	Percentage
Not important	3	1.9
Less important	12	7.4
Important	55	34.0
Very important	56	34.6
Top priority	36	22.2
Total	162	100.0

Table 10
Presentation and Design

Importance	Frequency	Percentage
Not important	0.0	0.0
Less important	15	9.3
Important	62	38.3
Very important	57	35.2
Top priority	28	17.2
Total	162	100.0

Institution Commitment

Institution commitment measures the efforts and credibility of an institution in providing E-learning programs. There are many institutions promoting their E-learning programs today with different motivations and strategies. If the institution does not have the right perspectives of E-learning, it will fail to give full commitment in helping the e-learners to gain the knowledge they want. Respondents in this survey gave very high priority for institution commitment. More than 70% of respondents felt it is a very important or top priority criterion in measuring the success of an E-learning program. The results support Henry's (2001) theory. He emphasized that E-learning requires the same management commitment as other mission-critical

organization-wide initiatives. The management in an institution providing E-learning program must offer quick assistance to learners whenever is needed and has continuous improvement in mind to upgrade the program quality (see Table 7).

Interactive Learning Environment

As E-learning programs do not require learners to attend any scheduled classroom lectures, learners may not have the opportunity to experience campus learning. Therefore, interactive learning environment through electronic communication was considered very important. The result is shown in Table 8. 35.8% respondents placed it in the "very important" category while 29% of respondents felt it is a "top priority" criteria.

Instructor Competency

There were 34.6% respondents who chose the “very important” scale for instructor competency. This is the highest percentage among the other scales. Generally, the respondents felt instructor competency is important in implementing an E-learning program. The reason could be because the learning materials and the course organization highly depend on instructor. Without a good and competent instructor, learners may easily lose interest in their self-learning schedule. Only 15 respondents did not think it is an important criterion (see Table 9).

Presentation and Design

Comparatively, presentation and design criterion had more respondents placed in “important” category (38.3%) than “very important” category (35.2%). This can imply that respondents had higher endurance level for presentation and design. However, none of the respondents felt it is not important as shown in Table 10.

In an E-learning program implementation, presentation and design should include the web presentation of notes, lectures, and other materials. It is not necessary to have very sophisticated presentation and design, but the message each material presents must be clear and understood by the learners. This criterion might not be very critical for the successful implementation of E-learning program but it is an important factor to help learners’ learn easily.

Conclusion

All the criteria were deemed important to the respondents. With the responses and findings from survey, they can assist institutions in deciding which factors should be given higher priority and which criterion has lesser importance. Five criteria (program content, Web page accessibility, learner’s participation and involvement, Web site security and support, and institution commitment) had a mean score of more than 4.0 while the rest were below 4.0 (interactive learning environment, instructor competency, and presentation and design).

During the first years of using the Internet and ICT, most of the E-learning projects, even those aiming to design learning processes, were focused on technical innovation to create technology based learning environments. There would appear to have been a change in thinking on E-learning in the past three to four years, with a new focus on discussions on E-learning. Rather than the emphasis on technology, the new focus of thinking on E-learning is increasingly on the learner him/herself and on methodologies and

didactics. This is seen as more important in developing the quality of E-learning provision and ensuring the success of ICT supported learning processes (BIBB, 2003; Hamburg, Lindecke, & Terstriep, 2005). The transformational impact of blended and fully online delivery methods on learning is only now beginning to be felt, and will only spread further as more organizations experiment and learn from their successes and failures. The fact that effective models for delivering instruction online to global audiences have been developed and can be improved upon will fuel this expansion (Brennan, 2004).

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