

# PERCEIVED SUCCESSFULNESS OF E-LEARNING CURRICULUM DEVELOPMENT

Yap May Lin, Noor Habibah Arshad, Mohd. Aliff Sarjani  
Faculty of Information Technology and Quantitative Sciences,  
Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia  
maylin@tmsk.uitm.edu.my, habibah@tmsk.uitm.edu.my

## ABSTRACT

E-learning may become one of the most prominent technology enabler of providing education to the masses. However, if its curriculum is inadequately planned and poorly managed, Institutions of Higher Learning (IHLs) may require some re-engineering to make it right and in doing so, tie up management resources. This study seeks to determine the perceived successfulness of e-learning curriculum development in the Malaysian environment from the perspectives of the learner, instructor and institution, respectively. Six factors (needs analysis, collaborative development, consistency and standardization, attention to the delivery mode, expertise, and training support) associated with curriculum development are used for this determination. The primary data for this study was collected by means of a questionnaire survey conducted among 14 Malaysian private and public IHLs. Returned questionnaires totaled 140 from institutions, 145 from instructors and 180 from learners. Findings from the survey indicate that, from the perspectives of the learner, instructor and institution, all six factors exhibit significant association with the level of perceived successfulness in e-learning curriculum development. Through the findings, IHLs would be better able to focus on strengthening some crucial aspects of curriculum development that would contribute to a better planned e-learning curriculum.

## 1. INTRODUCTION

The use of information and communication technology (ICT) in education has fundamentally altered the practice of distance teaching and learning. Online distance learning or electronic learning (e-learning) has become one of the most prominent technology enablers of providing education to the masses. In Malaysia, the provision for education is one of the biggest challenges for the government as the nation strives to become a fully developed country by the year 2020. In order to become a competitive player in the global arena, the Malaysian government realized the need for a transition of its production economy to a knowledge-based economy. The government identified e-learning as one of the essential initiatives required to increase the information technology (IT) literate workforce of knowledge workers to support continued economic development (Mageswary Jaiballan and Asirvatham, 2003). However, one of the essential elements of e-learning is the development of its curriculum. If the e-learning curriculum is inadequately planned and poorly managed, IHLs may require some re-engineering to make it right and in doing so, tie up management resources. The objective of this paper is to present empirical findings on the perceived successfulness of

e-learning curriculum development in the Malaysian environment from the perspectives of the learner, instructor and institution, respectively.

## 2. E-LEARNING AND CURRICULUM DEVELOPMENT

Today, with the pervasiveness of computers in the home and workplace together with rapid improvements in bandwidth, affordability of information technology through mass market customization, increasing numbers of knowledge workers, the need for quick response, increasing innovative developments in information systems to derive the competitive advantage, and globalization, there seems to be more focus on e-learning especially for developing countries like Malaysia. Although it is a growing business in developed countries, developing countries have been slow in embracing its many beneficial aspects and opportunities. However the local scene is changing with increasing developments in ICT and the necessity of a knowledge society in the face of globalization. According to the latest Internetworldstats.com survey (updated June 30, 2007), Malaysia has about 13.5 million Internet users with a penetration rate of 47.8%. In the year 2000, the number of Malaysian Internet users was estimated at 3.7 million. These statistics indicate a significant

growth of Internet users, since the turn of the millennium century, which may contribute positively to e-learning adoption among Malaysian citizens. In October 2002, Malaysia's National Steering Committee on e-Learning was established by related ministries and IHLs to promote e-learning. Such an initiative by the government has paved the way for e-learning to become increasingly common in Malaysia in the future. In a 2002 survey research on e-learning, conducted in Malaysia, the following prominent IHLs provided several course activities that were related to e-learning: Multimedia University, Universiti Tun Abdul Razak, Universiti Sains Malaysia, Open University Malaysia, Universiti Teknologi MARA, Universiti Putra Malaysia, and the National Institute of Public Administration Malaysia. Such IHLs that introduced e-learning then are improving their technology and endeavoring to increase e-learning user participation while others are realizing its benefits and have started incorporating it as an alternative and/or support technology to traditional classroom learning. In contemporary online education settings, academic and management support services are directly integrated with the students' e-learning environment. Teaching strategies involve virtual and physical learning resources and communication methods that are designed to facilitate active learning among students. The main concern of developers of such an environment stems from harnessing the ICT capabilities with pedagogical and learning requirements while balancing organizational opportunities and constraints, such as provision of necessary ICT solutions, willingness to adopt online modes of teaching and learning, and institutional policies. In order to better integrate such elements, McPherson and Nunes (2002) proposed an e-learning framework that highlighted all aspects involved and provided a holistic view of the e-learning development process. This framework is based on the five main areas: organizational infrastructure, enabling technologies, curriculum development, instructional design, and course delivery. However, as this study is about e-learning curriculum development, further details on the remaining four areas will not be provided. Incidentally, the proposed framework from McPherson and Nunes was adapted and improved

from an original proposal by Al Rawas (2001). Curriculum development in general focuses on the application of the following four basic principles in the development of any curricula projects (Tyler, 1949):

1. Defining appropriate learning objectives.
2. Establishing useful learning experiences.
3. Organizing learning experiences to have a maximum cumulative effect.
4. Evaluating the curriculum and revising those aspects that did not prove to be effective.

As a result of these basic principles, expected learning outcomes became the prime factor in determination of student learning and hence, the effectiveness of teaching practices. Curriculum development is one of the fundamental aspects of e-learning. The factors identified for e-learning curriculum development were derived from an ICCE 2002 conference workshop conducted to address critical success factors (CSFs) for implementing eLearning (McPherson, 2002). Six significant factors associated with curriculum development CSFs were identified and they are: needs analysis, collaborative development, consistency and standardization, attention to the delivery mode, expertise, and training support.

### 3. RESEARCH METHODOLOGY

An empirical study using three sets of questionnaire surveys were applied in this research. Both primary and secondary data were used in order to achieve the research objective. The primary data for this study was collected by means of a questionnaire survey conducted among 14 Malaysian private and public IHLs. The IHLs are registered with the Malaysian Ministry of Higher Education and most of them have Multimedia Super Corridor (MSC) status. Based on the secondary data, the factors used to determine the perceived successfulness of e-learning curriculum development were derived from previous research conducted mainly in New Zealand, the United Kingdom and Ireland. These factors are used in this research to determine the perceived successfulness of e-learning curriculum development among Malaysian IHLs. The surveys were targeted at three group segments involved in the e-learning environment, namely, the IHLs, instructors, and learners.

## 4. RESEARCH MODEL

The research model in Figure 1 is built based on CSFs associated with e-learning curriculum development identified during the ICCE 2002 conference workshop conducted to address CSFs for implementing eLearning (McPherson, 2002). The model depicts the six factors used in determining the perceived successfulness of e-learning curriculum development. The six factors are needs analysis (Hall and Concannon, 2002; McPherson, 2002), collaborative development (McPherson, 2002; Nunes, 2002; Segrave and Holt, 2003; McPherson and Nunes, 2006), consistency and standardization (Currier and Campbell, 2002; McPherson, 2002), attention to the delivery mode (Coman, 2002; Hall and Concannon, 2002; McPherson, 2002; McPherson and Nunes, 2006), expertise (McPherson, 2002; Nunes, 2002), and training support (McPherson, 2002; Selim, 2003; Moody, 2004; Tallent-Runnels et al., 2005). Based on the six factors, the research has formed the following hypotheses:

H1: Needs analysis on e-learning is significantly associated with the level of perceived successfulness in curriculum development.

H2: Collaborative development is significantly associated with the level of perceived successfulness in curriculum development.

H3: Consistency and standardization is significantly associated with the level of perceived successfulness in curriculum development.

H4: Attention to the delivery mode is significantly associated with the level of perceived successfulness in curriculum development.

H5: Expertise on e-learning is significantly associated with the level of perceived successfulness in curriculum development.

H6: Training support on e-learning is significantly associated with the level of perceived successfulness in curriculum development.

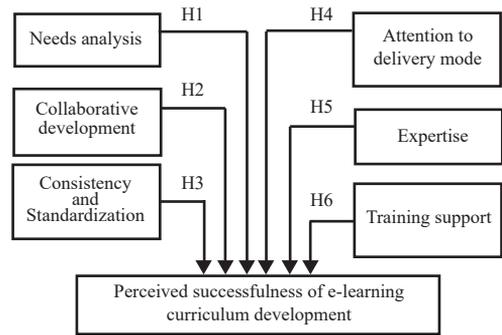


Figure 1 Research Model on Perceived Successfulness of E-Learning Curriculum Development

## 5. FINDINGS AND RESULTS

The survey questionnaires captured background data of respondents profile as well as their e-learning related profile. The study was conducted among IHLs in the Klang Valley region during a two month period in the second half of 2006. Only 14 IHLs were approached as they had on-going e-learning programs. 150 sets of questionnaires were distributed to institutions, 150 to instructors and 200 sets to learners in order to obtain sample sizes that are adequate for the study. Returned questionnaires totalled 140 from institutions, 145 from instructors and 180 from learners. This section discusses the outcome of the study in terms of the perceived successfulness of e-learning curriculum development from the perspectives of the learner, instructor and institution, respectively.

### 5.1 Demographic profile

Demographic characteristics examined in general included gender and respondent's age. For the survey directed at IHLs, additional questions such as respondent's position and number of years position was held were posed. The instructor's survey included in addition, the type of work, mode of employment and number of years the position was held. For the learner's survey, questions on the type of courses offered and course disciplines, together with student status were asked. When analyzing the IHL respondents' responses, it was noted that 26.4 percent were IT or

E-learning managers or higher while the rest were senior IT staff. About 16.4 percent have held their positions for more than 4 years. From the instructor’s respondent group, it was found that 71 percent was involved in teaching while the remainder provided the management and support work. Also, a high response rate of 85.5 percent of the respondents are working full-time with 43.4 percent having held their positions for more than 4 years. Analysis from the learner respondent group indicated that a majority (68.3%) are within the ages of 18 to 25 years, with 69.4 percent being full-time students. Only 16.1 percent are distance learners. In the category of type of courses offered, about 98 percent responses showed that their institutions offered combinations of online distance learning courses, traditional courses with technology or both.

### 5.2 Reliability Tests

Cronbach’s Alpha Coefficient was used to test the survey items’ reliability in this study. A coefficient value which is closer to value ‘1’ is desired. Since all measured items in Table 1 had a reliability of more than 0.7, the scales for these constructs were deemed to exhibit an adequate reliability.

Table 1 Reliability Test for Curriculum Development

	Item	Cronbach’s alpha	N
Institution	6	0.802	140
Instructor	6	0.861	145
Learner	6	0.740	180

Note: Item – Number of variables  
N – Total number of respondents

### 5.3 Results of Factors Associated with Curriculum Development

The highest mean in Table 2 represents the most important factor while the lowest mean represents the least important factor associated with e-learning curriculum development. From the institution’s perspective, the ‘attention to delivery mode’ factor is ranked the highest. This is probably due to the fact that IHLs practicing e-learning endeavour to provide instructors and learners with a good delivery system in order to access online resources as well as

to participate in any online discussions. This finding is consistent with studies from past literature. Another observation is regarding the ‘collaborative development’ factor that is ranked second in this study. Its significance is consistent with past studies as such a curriculum development would involve collaborative effort amongst educationists, technologists and subject matter experts to design and develop an appropriate curriculum that meets the learning and pedagogical concerns of online education.

Table 2 Ranking of Factors Associated with Curriculum Development (Institution’s Perspective)

No.	Factors	Mean
1	Attention to the delivery mode	4.06
2	Collaborative development	4.04
3	Consistency and standardization	3.94
4	Needs analyses	3.89
5	Expertise	3.87
6	Training support	3.71

The results further indicate that the ‘training support’ factor exhibits the least important association with e-learning curriculum development. The observation made here is that these results reflect current practice in the local scene. Hence, the need arises for further improvement of the training support provided so as to provide more effective service to all parties involved in the e-learning environment. From the instructor’s perspective, the ranking of the ‘attention to the delivery mode’ factor in Table 3 is consistent with previous studies. However, in Table 3, the ‘training support’ factor is ranked higher probably owing to the critical role an e-learning instructor plays in providing support to learner queries and questions pertaining to the instructor’s subject matter. Understandably, the ‘needs analysis’ factor showed the least important association as needs analysis is generally conducted by the curriculum committee appointed by the institution.

Table 3 Ranking of Factors Associated with Curriculum Development (Instructor's Perspective)

No.	Factors	Mean
1	Attention to the delivery mode	3.87
2	Training support	3.64
3	Expertise	3.60
4	Collaborative development	3.59
5	Consistency and standardization	3.53
6	Needs analyses	3.46

In Table 4, the results indicated that, from the learner's perspective, the 'attention to the delivery mode' was the most important factor associated with the development of the curriculum. Apparently, learners feel that the delivery mode need to be interesting enough to ensure their online attention with user friendly features, easy navigability, and overall screen display attractiveness. The 'collaborative development' factor was ranked second in the learner's perspective. Students embarking on proper online distance learning programs lack face-to-face interaction. Hence in their opinion, online forums provide strong interaction and discussion platforms for students to collaborate on projects as well as to be actively involved in discussions on current or subject matter issues.

Table 4 Ranking of Factors Associated with Curriculum Development (Learner's Perspective)

No.	Factors	Mean
1	Attention to the delivery mode	3.83
2	Training support	3.78
3	Expertise	3.73
4	Collaborative development	3.67
5	Consistency and standardization	3.64
6	Needs analyses	3.62

The 'training support' factor was unexpectedly ranked the lowest. This could probably be due to late feedback from instructors with regards to questions asked on their related subject areas. To ensure continuous successful online education, it is vital that instructors be prompt in

providing appropriate relevant responses to learners' online queries on related subject matters.

## 5.4 Results of Hypotheses Testing

The factors associated with e-learning curriculum development are needs analysis, collaborative development, consistency and standardization, attention to the delivery mode, expertise, and training support. Pearson's Correlation Coefficient analysis was used to determine correlations between these factors and their associations with the level of perceived successfulness in curriculum development from three perspectives. In order to test these hypotheses, the value of Pearson's correlation coefficient was calculated. Weak relationship is indicated by a value of less than 0.3, value between 0.3 to 0.7 indicate moderate relationship while a strong relationship has a value higher than 0.7. The results of the hypotheses testing show that all the hypotheses are accepted and that all the factors have significant associations with the level of perceived successfulness in e-learning curriculum development.

Table 5 Relationship between Factors and Perceived Successfulness of E-Learning Curriculum Development (Institution's Perspective)

Hyp	Person Coeff.	Sig	Result
H1	0.619	.000*	Moderate +ve relationship
H2	0.510	.000*	Moderate +ve relationship
H3	0.619	.000*	Moderate +ve relationship
H4	0.487	.000*	Moderate +ve relationship
H5	0.618	.000*	Moderate +ve relationship
H6	0.631	.000*	Moderate +ve relationship

\*Significance at 0.05 levels

Results in Table 5 show that all the hypotheses (H1 to H6) were accepted where p-value < 0.05. However, all hypotheses displayed only moderate positive relationships. Although hypothesis H4 result is seen to contradict the findings in Table 2, it may be assumed that as some of the

14 IHLs had implemented e-learning a while back, the perspective of the institution could be that online delivery modes are deemed as common basic facilities required. The institutions probably felt that more emphasis should be placed on bridging closer interaction between instructors and learners. Hence, that may be the reason why H6 showed such a significant association. The assumption is that in the institution's perspective, instructors should be better able to provide prompt and accurate information to learners through efficient training support, thereby ascertaining a 'lock-in' effect on students as well as minimizing student attrition.

Table 6 Relationship between Factors and Perceived Successfulness of E-Learning Curriculum Development (Instructor's Perspective)

Hyp	Person Coeff.	Sig	Result
H1	0.743	.000*	High +ve relationship
H2	0.699	.000*	Moderate +ve relationship
H3	0.797	.000*	High +ve relationship
H4	0.663	.000*	Moderate +ve relationship
H5	0.600	.000*	Moderate +ve relationship
H6	0.722	.000*	High +ve relationship

*\*Significance at 0.05 levels*

From Table 6 above, all the hypotheses (H1 to H6) were accepted where  $p\text{-value} < 0.05$ . Hypotheses H1, H3 and H6 showed strong positive relationships while the remainder indicated moderate positive relationships. The result of hypothesis H3 indicates that there must be consistency in the online resource materials provided in terms of format, display, etc. Accordingly, assessments and evaluations must be in line with guidelines and standards set by the institution's management. Hypothesis H5, on the other hand, does support the opinion that instructors do not need to have e-learning expertise. Their contribution is their expertise in their respective subject areas as input for curriculum development.

Table 7 Relationship between Factors and Perceived Successfulness of E-Learning Curriculum Development (Learner's Perspective)

Hyp	Person Coeff.	Sig	Result
H1	0.648	.000*	Moderate +ve relationship
H2	0.490	.000*	Moderate +ve relationship
H3	0.562	.000*	Moderate +ve relationship
H4	0.567	.000*	Moderate +ve relationship
H5	0.539	.000*	Moderate +ve relationship
H6	0.583	.000*	Moderate +ve relationship

*\*Significance at 0.05 levels*

Table 7 results indicate the acceptance of all the hypotheses (H1 to H6) as  $p\text{-value} < 0.05$ . All the hypotheses showed moderate positive relationships. As may be expected, before curricula are developed, needs analyses must be conducted and the data analyzed. Hence, from the learner's perspective, H1 result depicts the strongest positive relationship as input from learners' needs is very useful for curriculum development. The result of hypothesis H2 has the weakest positive relationship and this is consistent with an observation that, from students' perception, online forums have little bearing on the perceived successfulness of curriculum development. The students have neither active nor direct involvement in an institution's curriculum development.

## 6. CONCLUSION

The provision for education is one of the biggest challenges faced by the Malaysian government as the nation strives to become a fully developed country by the year 2020. The solution is to use technology as an enabler to bring education to the masses. IHLs are taking up the challenge by not only updating their programme content but more importantly, utilizing the latest technologies to improve the delivery of education. As a result, e-learning is rapidly becoming the way of providing education to the masses. One critical area of e-learning is its curriculum development. In order to attain some measure of success, its curriculum must be well-planned, -coordinated and -managed. Findings from the study indicate that, from the perspectives of the learner, instructor and institution, all six factors used in the study exhibited significant associations with the level of perceived successfulness in e-learning curriculum development. Through the findings, IHLs would be better able to focus on strengthening some crucial aspects of

curriculum development that would contribute to a better planned e-learning curriculum.

## REFERENCES

- Al Rawas, A. 2001. The Challenge of New Learning Technologies for Higher Education in Oman. Towards a National E-Learning System: Potential and Challenges. Proceedings of the University of the 21st Century UNESCO International Conference. 17-19 March 2001. Muscat, Oman. pp. 512-520.
- Coman, P.G. 2002. Critical Success Factors for eLearning Delivery. In Proceedings of the ICCE 2002 CSF Workshop. 3-6 December 2002. Auckland, New Zealand.
- Currier, S. and Campbell, L.M. 2002. Learning Technologies Critical Success Factors for eLearning Implementation: Educational Technology Interoperability Standards. In Proceedings of the ICCE 2002 CSF Workshop. 3-6 December 2002. Auckland, New Zealand.
- Hall, T.H. and Concannon, F. 2002. Curriculum Development CSFs for eLearning Implementation. In Proceedings of the ICCE 2002 CSF Workshop. 3-6 December 2002. Auckland, New Zealand.
- Mageswari Jaiballan and Asirvatham, D. 2003. Multimedia Learning System (MMLS): Malaysian Grown E-Learning Engine. Multimedia University. Retrieved October 1, 2006 from [www.mmlsmelaka.mmu.edu.my/articles/article3.htm](http://www.mmlsmelaka.mmu.edu.my/articles/article3.htm)
- McPherson, M. 2002. The ICCE 2002 CSF Workshop: The Changing Face of HE in the 21st Century: Critical Success Factors for Implementing eLearning. Proceedings of the ICCE 2002 CSF Workshop. 3-6 December 2002. Auckland, New Zealand.
- McPherson, M. and Nunes, M. 2002. A Framework to Support eLearning Management. Proceedings of the International Conference on Computers in Education (ICCE 2002). 3-6 December 2002. Auckland, New Zealand. pp. 1740-1841.
- McPherson, M. and Nunes, M. 2006. Organisational Issues for E-Learning. International Journal of Educational Management. Vol.20, No.7, pp.542-558. ISSN 0951-354X.
- Moody, J. 2004. Distance Education: Why are the Attrition Rates so High?. Quarterly Review of Distance Education. Vol.5, Issu.3, pp.205-210. ISSN 1528-3518.
- Nunes, M. 2002. Instructional Design CSFs for eLearning. In Proceedings of the ICCE 2002 CSF Workshop. 3-6 December 2002. Auckland, New Zealand.
- Segrave, S. and Holt, D. 2003. Contemporary Learning Environments: Designing e-Learning for education in the Professions. Distance Education. Vol.24, No.1, pp.7-24. ISSN 0158-7919.
- Selim, H.M. 2003. E-Learning Critical Success Factors: An Exploratory Investigation of Student Perceptions. Proceedings of the 4th Annual U.A.E. University Research Conference. In: RAPS, Vol.5. UAEU Press
- Survey Research on E-Learning in Asian Countries – Fiscal Year 2002. Retrieved October 27, 2006 from [www.asia-elearning.net/content/relatedInfo/report/elearning-trend-2002-malaysia.pdf](http://www.asia-elearning.net/content/relatedInfo/report/elearning-trend-2002-malaysia.pdf)
- Tallent-Runnels, M.K., Cooper, S., Lan, W.Y., Thomas, J.A. and Busby, C. 2005. How to Teach Online: What the Research Says. Distance Learning. Vol.2, Issue 1, pp.21-27.
- Tyler, R.W. 1949. Basic Principles of Curriculum and Instruction. University of Chicago: Chicago, USA.
- Webster, J. and Hackley, P. 1997. Teaching Effectiveness in Technology-mediated distance learning. Academy of Management Journal, Vol. 40, Issue.6, pp. 1282-1309.