

Strategic Model Of Implementing E-Learning

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Abstract: E-learning is the application of information technology in the teaching and learning process. This paper presents the Funnel model as a solution for the problems of implementation of E-learning in tertiary education institutions. While existing models such as TAM, theory-based E-learning and pedagogical model have been used over time, they generally been found to be inadequate because of their tendencies to treat materials development, instructional design, technology, delivery and governance as separate and isolated entities. Yet it is matching components that bring framework of E-learning strategic implementation. The Funnel model enhances all these into one and applies synchronously and asynchronously to E-learning implementation where the difference only is modalities. Such a model for E-learning implementation has been lacking. The proposed Funnel model avoids ad-ad-hoc approach which has been made other systems unused or inefficient, and compromised educational quality. Therefore, the proposed Funnel model should help tertiary education institutions adopt and develop effective and efficient E-learning system which meets users' requirements.

Index Terms: E-learning, Asynchronous, Synchronous, Instructional Strategy, TAM, Implementation and Pedagogy.

1 INTRODUCTION

E-learning is the application of information technology such as Internet, mobile and other computer aided systems in the teaching and learning process, either asynchronously or synchronously. Asynchronous E-learning is used mainly for content management system where users access information at different times without real time collaborations (Nichols, 2005). Synchronous E-learning (or pedagogy) is designed for online users who collaborate at the same time (Stafin, 2009). In both case, content management system for E-learning acts as archives for learning materials availed on the web. E-learning pedagogy only delivers curriculum to learners. Establishing E-learning demands different institutional requirements, but in all cases, an institution that deserves to use E-learning must ensure that the system is properly established and maintained system (Azizah, 2007). Many institutions tend to establish E-learning systems without careful assessment of the factors that could affect the system's usability within the structure. E-learning system is best implemented through stages of careful planning of the life components that are needed to ensure and establish a maintained system (Mark, 2005). Ad-hoc implementations of E-learning systems usually do not meet users' needs, and end up making the system unusable or stand-alone. Most higher education institutions have tended to ignore strategic components when developing E-learning system. They either outsource without proper customization or just develop and implement without adequate consideration the major components of strategic implementation of E-learning (Anderson, 2005). The basic building blocks of E-learning are (a) technological, (b) pedagogical (materials development and instructional design), (c) and managerial. It is the close coordination between these components that reflects the relevance system implementation. An institution's purpose of utilizing E-learning system affects the modalities of implementation (Anita, 2006). The type of E-learning adopted also shapes the strategies to implement or establish it, depending on an institution's academic operations and strategies (Roberts, 2012). E-learning has become the cornerstone of the present day education. In the current era of information and communication advancement never witnessed before, the practice of face-to-face teaching delivery is fast becoming obsolete. Learners in most parts of the world now use technology to receive class notes and information, take assessments, and communicate on demand. University students' needs have become more diverse and the need for E-learning based courses have increased (Volery & Lord,

2000), and so are the necessities of properly working E-learning units. Preconditions for acceptance and use of the E-learning need to be uncovered in order to assist development of the system. Effective implementation of E-learning initiatives requires that a number of issues such as technological, pedagogical and individual factors be simultaneously taken into account. However, lack of theoretical or/and conceptual frameworks for effective implementation of E-learning systems has resulted in inconsistent results and left one basic question unanswered- "What are the factors to determine the effective delivery of E-learning?"

2 PROBLEM STATEMENT

Several higher education institutions tend to adopt nonspecific E-learning systems which do not align with their objectives or other necessary user requirements. While the need for E-learning system is undisputable, and while many universities have taken bold steps to satisfy this need, the implementation of these systems have been haphazard and often lacked in structure across several universities, and in some cases, is different units within the same university. Currently, there is no standard strategic model of implementing E-learning that reflects on an institution's general status and requirements. The development of such model is long overdue.

3 OBJECTIVES

The objectives of this study were to:

1. Describe the major features of the existing models of implementing E-learning in educational institutions.
2. Identify the major limitations and inadequacies of the existing models for implementing E-learning in educational institutions.

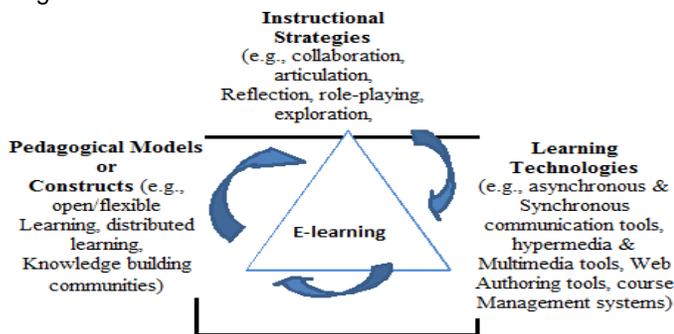
4 SIGNIFICANCE OF THE STUDY

A major contribution of this study is the development of a comprehensive model for implementing E-learning. While the value of E-learning in education need not be emphasized, and while explosion of technology in all fields is all evident, a model that can guide the implementation of E-learning as an innovation in universities has been lacking. This has resulted in a rather ad-hoc and uncoordinated implementation strategies often with disappointing results. This study has sealed this gap. A model for implementing E-learning is available and can be applied uniformly across-all universities. Henceforth, educators and institutions need not rely on costly trial and errors, or traditions to implement E-learning, but do so based

on a scientific model. This model has been used in African Virtual Universities with complete success.

5 THEORY-BASED DESIGN FRAMEWORKS FOR E-LEARNING

The theory based design was developed by Dabbagh in 2005 as a means of combining strategies, learning technologies and pedagogy. According to Dabbagh (2005), an E-learning design is a collaborative interaction between three main components. First is instructional strategy. This concerns pedagogical aspects of delivering a curriculum or content but which does not focus on materials development in the E-learning. The second aspect is learning technologies. This is about tools of support for delivering content to E-learners using mainly synchronous and asynchronous tools of communication. Third, concerns the different pedagogical models through which a curriculum is delivered. These elements are related as shown in Figure 1.



Theory-Based Design Framework for E-Learning Adapted from N. Dabbagh, (2005).

Figure 1 shows the relationship between the elements of Pedagogical Model. In this model, the elements of instructional design and pedagogy represent the pedagogical dimensions of the model while technology assists both dimensions to work together effectively and efficiently. The model is applicable to both synchronous and asynchronous learning. However, the theory-based model is useful only for delivering content but do not have students' and teachers' support structures. Additionally, the model focuses only on instructional strategy and to some extent on pedagogical construct, which is basically the same as instructional strategy. Moreover, pedagogy and instructional strategy as used here merely duplicates structures, as there is no real difference between them. In fact, they are not complementary as technology complements E-learning delivery. This makes the model weak for implementing E-learning when used alone. A better model should embrace the three major axes of implementing E-learning. The proposed Funnel Model has pedagogical, technological and governance structures to establish the desired E-learning system.

6 E-LEARNING TECHNOLOGY ACCEPTANCE MODEL

The other popular available model in implementing E-learning technology is the Acceptance Model developed by Davies in 1989, which is based on user requirements. The model is based on the premise that both students' perception of E-learning use and its perceived usefulness affect users' intention. According to this hypothesis, one fundamental

determinant of successful implementation of E-learning is user acceptance. The TAM model consists of three variables; (a) perceived usefulness, (b) perceived ease of use, and (c) intention to use. This model focuses on the use of E-learning technology for content management but does not consider either the pedagogical aspects of E-learning or planned implementation of E-learning system. The main features of the TAM Model are shown in Figure 2.

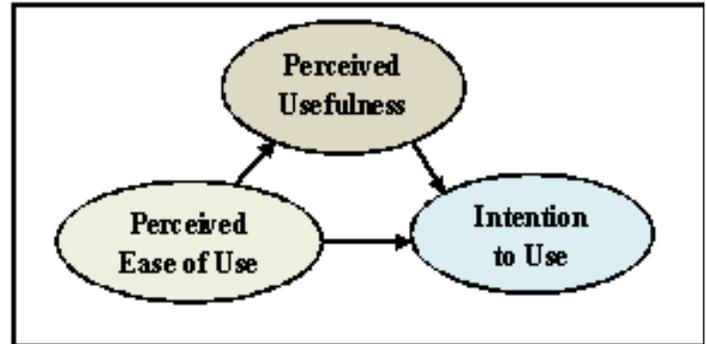


Figure 2: Technology Acceptance Model Adapted from A.A, Davies, (1989)

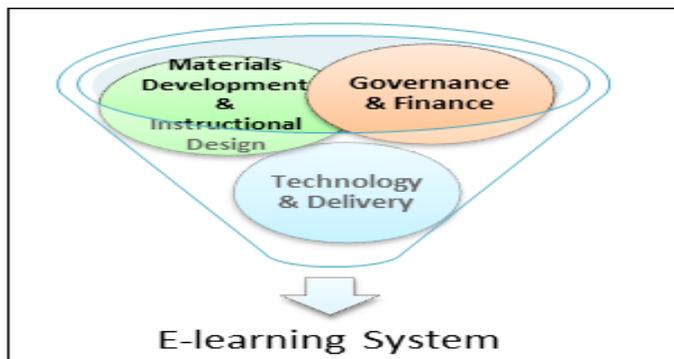
The TAM Model depicted in Figure 2 consists of three correlated components. First is user interface and usability of technology; the second is the usefulness of E-learning system, and the third component is users' intention. According to the construct of the TAM Model, perceived ease of use influences perceived usefulness of E-learning and these together influence students' intention to use of the E-learning system. While TAM Model makes great effort to cover for the weakness of theory-Based Model, it does not consider other components of E-learning system such as pedagogy, governance and curriculum design, which are the foundation of a fully-fledged E-learning system. Additionally, this TAM Model is incomplete due to its limitation to user interface or technology usability only. Technology is not everything but only a complementary factor in establishing E-learning system, be that asynchronous and synchronous.

7 PEDAGOGICAL MODELS

The other model of E-learning developed by Dabbagh (2005) is the Pedagogical Models, which relates content management and delivery. This model considers mainly on two actors; the student and the teacher services. This system depends upon purchasing a package and customizing it according to academic requirements of the user entity. The model is based on the activity diagrams of the actors in order to allow each one of them to use the system based on predefined academic activity (Davies, 1989). But outsourced E-learning systems are almost naturally incompatible with requirements of the adopting institution since universities have their own standards and procedures (Hanke & Owoc, 2006). This makes the pedagogical model inadequate for use in all universities. A better model should provide the fundamental elements needed to construct a complete and compatible E-learning system in educational institutions.

8 PROPOSED MODEL FOR IMPLEMENTING E-LEARNING

Successful implementation of E-learning can only be achieved by joining three interrelated components as proposed in the final model. Funnel-shaped E-learning implementation model, displays the interaction between these three components. The Funnel Model is designed to solve the mismatches between curriculum design of E-learning and its delivery. The other preceding models have either focused only usability, or on pedagogy or on technology. In fact, the TAM and Theory-Based Models do not have governance and finance, and materials development and instructional design, which are key in any educational endeavor. Funnel model takes curriculum or materials development together with beneficiaries' analysis when implementing E-learning. This is followed by instructional design, which is a pedagogical model. The Funnel Model requires that teaching and learning materials be put in place and delivery mode designed. Secondly, technological design can be either synchronous or asynchronous since technology is only a tool to convey content to learners. The Funnel Model pays attention to usability and availability of technology to ensure that technology matches instructional design of the teaching materials. The Funnel Model also incorporates administration, which encompasses governance and finance, being aware that sustainability of any system depends on its management. This component is a central axis of this model because of high cost of technology investment and other resources required to develop a fully-fledged E-learning system. The elements of the Funnel Model are depicted in Figure 3.



The Funnel Model

Figure 3 displays the relationships between the three components of the Funnel Model, and how each component adds value and service to the system. The interaction and effective coordination of the component leverages well-established E-learning in universities. Materials development and instructional stream deals with requirement determination of E-learning implementation, focusing mainly on E-learning curriculum development, user profile analysis (learning styles) and pedagogical design. The second stream is technology and delivery and assists to convey curriculum to distance learners. Technology and delivery is responsible for all technical perspectives of system technology, improvements and service delivery facilitations. This component also follows the instructional strategies set to implement the curriculum and involves E-learning Technology Development. The third stream is governance and finance, which is a bridge between technology and materials development and relates to overall

administration of the system in terms of human resources, procurement, and avails services needed by the other two parts. The attributes of Funnel Model indicates its operations. It emphasizes that E-learning is more than technology, and two components are core: materials development and instructional design. Much depends on governance and finance for the issues of procurement and the general administration of the E-learning project. Although the aim for developing the E-learning is to either manage teaching content and to deliver it, again without the technical support of technology the content cannot be delivered and managed. This model differs from the other existing E-learning models because it provides for the integration of the three elements that are core to a functional E-learning system.

9 CONCLUSIONS

The varieties of available models for implementing E-learning have consistently ignored the basic elements of implementing standardized E-learning system. This has led to uncoordinated and rather ineffective implementation strategies, and resulted into waste of valuable resources and poor learning. The outcome of any strategy is dependent on its implementation. This model integrates the three elements (pedagogy, technology and governance) of strategy implementation and ensures that each component contributes maximally to the realization of E-learning objectives. The model is flexible, adaptable, and applicable to all institutions and to all concepts because it is requirement driven. The model consists of three coordinated components deemed necessary for establishing demand based E-learning system. These components are materials development and instructional design which is the first strategy to be performed followed by role of governance and finance as well as functions and responsibilities of technology and delivery. These elements are complementary since the model is designed in hierarchical order in the sense that the completion of stage is followed by the next and they are again interrelated.

REFERENCE

- [1]. Luca, j. (2009). an e-learning solution to creating work-related skills and competencies for the knowledge-based economy. Catherine McLaughlin, 14-1.
- [2]. Committee (2010). e-learning strategy implementation plan. information services e-learning committee, 22, 09, 10, 1-16.
- [3]. Fayed G.S.D., H., Jihad., M., Alja'am, Samir, A.S., & Hosam, E. (2006). e-learning model based on semantic web technology. international journal of computing & information sciences, 4(2), 63 - 71.
- [4]. George, R. 2011. Fostering generic skills through participatory learning strategies. International Journal of Fundamental Psychology and Social Sciences, 1(1), 14-16
- [5]. Pauline Roberts, D. M. (2012). Implementation of the E-learning lifecycle model to develop reflection in pre-service teachers. Ascilite 1-5.
- [6]. Rhona, S.G.A.R.F. (2006). Implementing a university e-learning strategy: levers for change within academic

- schools. *Research in learning technology*, 14(2), 135–151. W.-K. Chen, *Linear Networks and Systems*. Belmont, Calif.: Wadsworth, pp. 123-135, 1993. (Book style)
- [7]. Nada, D. (2005). pedagogical models for e-learning: a theory-based design framework. *international journal of technology in teaching and learning*, 6(3), 25-44.
- [8]. Mark, B. A. (2005). Strategic e-learning implementation. *Educational Technology and Society*, 8 (4), 1-8.
- [9]. Ferdos2, M. F. C. F. (2004). The mutual impact of educational and information technologies: building pedagogy of e-learning. *Journal of Information Technology Impact*, 4(1), 15-26.
- [10]. Nichols, M., & Anderson, B. (2005). Strategic e-learning implementation. *Educational Technology and Society*, 8 (4), 1-8.
- [11]. Clyde w. holsapple† & Anita Lee-post, (2006). Defining, assessing, and promoting e-learning success: an information systems perspective. *Decision Sciences Journal of Innovative Education*, 5(2), 3-9
- [12]. Hanke k., Owoc M., (2006). Methodology of developing online lectures, *Proceedings of E-education Conference*.
- [13]. Singh, H. (2000). Learning content management systems: New Technologies for New Learning Approaches.
- [14]. Firdiyeyek, Y. (1999, January). Web-based courseware tools: where is the pedagogy? (Online) *Educational Technology*, 39(1), 29–34. Available at: <http://www.elearningmag.com/issues/>
- [15]. J.S. Bridle, "Probabilistic Interpretation of Feedforward Classification Network Outputs, with Relationships to Statistical Pattern Recognition," *Neurocomputing—Algorithms, Architectures and Applications*, F. Fogelman-Soulie and J. Hérault, eds., NATO ASI Series F68, Berlin: Springer-Verlag, pp. 227-236, 1989. (Book style with paper title and editor)