

EFFECTIVE PRINCIPLES IN DESIGNING E-COURSE IN LIGHT OF LEARNING THEORIES

Muhammad K. AFIFI
Associate Professor of E. Learning Technology
University of Dammam, Saudi ARABIA

Saad S. ALAMRI
Dean of E-learning and Distance Education
University of Dammam
SAUDI ARABIA

ABSTRACT

The researchers conducted an exploratory study to determine the design quality of some E-courses delivered via the web to a number of colleagues at the university. Results revealed a number of shortcomings in the design of these courses, mostly due to the absence of effective principles in the design of these E-courses, especially principles of pedagogy in relation to learning theories.

So, this study seeks to identify effective principles in the design of courses for internet-based learning in the light of current learning theories, by answering the following question: What are the most effective principles when designing E-learning courses in the light of current learning theories? After an extensive review and analysis of the literature and previous studies relating to quality standards for the instructional design of E-courses delivered via the web, in particular, and quality standards for E-learning, in general, the results of this study revealed a number of principles for course design in E-learning. These are: identifying learning and performance outcomes; identifying methods and strategies of learning; designing learning activities; providing feedback and motivating the learner and determining the context and impact of learning. In the light of the findings of this study, with reference to the literature, we present a set of recommendations and pedagogical implications for professionals working in course design in E-learning at University of Dammam.

Keywords: E-Learning, E-Course, Instructional Design, Learning Theories, University of Dammam.

INTRODUCTION

E-learning has made a major shift in patterns of teaching and learning in the 21st century. E-learning provides the opportunity to absorb massive amounts of information, which is difficult to measure. Moreover, E-learning provides interactive features in the learning process, i.e., the ability to interact beyond the one-way knowledge transfer of content between people that is normally involved in the learning process (Garrison & Anderson, 2006, p. 26). In such an environment, learners can interact with the content and educational resources, with the teacher and with each other; whether the E-learning environment is based on computers or on electronic networks.

E-learning has transformed learning concepts, including: a transition from teacher-centered to learner-centered approaches, from the content to the process, from content-oriented to task-oriented, from individual effort to team effort, from printed materials to multimedia and from focusing on the facts to focusing on the problems. Because of the importance of E-learning and the spread of its applications in many Arabic and international universities, attention has increased recently on improving and ensuring its quality. Ensuring and emphasising the quality in E-learning has become an additional new challenge for E-learning in our university and ignoring this challenge means that we might produce programs and E-course materials that lack quality and excellence.

Establishing quality in E-learning is a very important issue for any academic program or course of study. If quality is a prerequisite for the success of the learning process in general, then quality becomes a necessary issue for E-learning in particular. Surely, the success of this learning system depends greatly on its commitment to international quality standards in the field of E-learning, standards for the design and development of distance learning courses and standards for the technology used, which all relate to the quality of the E-learning program.

THE STUDY PROBLEM

A lot of previous studies, in the related literature, have explained that E-learning is not just about putting traditional content on a web site, it is also about a new mix of sources and interactivity supporting the performance of students and well-designed learning activities, that all depend on the instructional design of the distance E-courses. Moreover, there is a shift in the future outlook for E-learning, from a content-oriented approach to a knowledge-generation approach.

The future of E-courses, in the light of comprehensive quality standards, is not only to improve the quality of online learning and facilitate learning and sharing of resources, but also to enhance the usefulness of E-courses and the acceptance of potential new developments in technology (Hsu, Yeh & Yen, 2009). We conducted an exploratory study to determine the quality of the design of some E-courses, delivered via the web, to a number of our colleagues at our university.

Findings revealed a number of shortcomings in the design of these courses, including:

- **Inadequacy of these systems to meet the learning needs and characteristics of learners.**
- **The lack of real interactivity in their e-courses.**
- **The lack of employing synchronous and asynchronous communication tools in a way that would achieve interactivity.**
- **The absence of support and immediate feedback to learners during the learning process.**
- **Navigational difficulties and poor design of web pages, which lead to intellectual exhaustion for the learner.**
- **Unclear paths that limit the freedom of the learner to correctly navigate through information.**
- **The inclusion of some GIF images and snapshots that "developers" like regardless of their relevance to the topic.**
- **A fragmented view of both context and content.**
- **Grammatical errors and misspellings.**

Based on the above and the need to pay attention to effective principles in the design of E-courses, as referred to in the literature, and taking into account aspects of teaching practice as well as the global trend towards achieving quality in this kind of learning, the current study seeks to answer the following question: *What are the most effective principles when designing E-courses in the light of current theories of learning?*

STUDY TERMS

These Are Definitions of The Procedural Terms Used In This Study

- **E-Learning:** E-learning means a style of learning based on the needs and abilities of the learner and the use of electronic media on the internet, used synchronously or asynchronously to provide E-content (lectures, tutorials, discussions, exercises and tests), and the management of this, whether from inside classrooms at the University or from outside through a university portal, to support and facilitate learning at anytime, anywhere.
- **E-Course:** E-Course, in the current study, means a course that uses electronic activities and instructional materials and is delivered through a learning management system (LMS). The production process of this E-course is subject to a set of criteria, including analysis, design, development, application and evaluation.
- **Instructional Design:** The concept of "Instructional Design" or an "Instructional Design System" refers to a systematic process utilising the principles of teaching and learning to construct a more effective instructional experience. Instructional design follows a systematic process starting from its design, production and application to the evaluation of learning, to increase its effectiveness and efficiency.

THE IMPORTANCE OF THE STUDY

- An attempt to establish a knowledgebase in this field at the University of Dammam that might benefit researchers and staff practitioners who are interested and the instructional designers who are responsible for designing E-courses, or who are planning to offer e-learning or virtual programs via the internet.
- Identifying effective principles in the design of E-courses contributes to the standards of E-courses developed at the University of Dammam, in the light of rapid technological developments and modern global trends.

LITERATURE REVIEW

The theoretical framework of this study concentrates on the identification of effective principles for designing E-courses, whether it is face-to-face or via distance learning. Therefore, the theoretical framework is twofold: 1) the concept of E-education and E-learning and its objectives and different patterns and 2) designing E-learning courses in the light of current theories of learning.

The Concept of E-Learning, Its Objectives And Patterns

Definitions of E-learning have varied and developed over recent years. Brown and Voltz (2005) defined E-learning as: teaching and learning which are delivered, supported and enhanced by using technology and digital media.

E-learning may include many patterns, such as face-to-face, distance learning or a mixed education model. Khan (2005) defined E-learning as an innovative method for delivering a facilitated learning environment, which is characterised by good design, interactivity and centered on the learner, to any individual anywhere and at any time, by taking advantage of the properties available in many digital technologies with suitable learning materials for open and flexible learning environments. Lee and Lee (2008) claim that E-learning represents an information system based on the World Wide Web to provide learning and training to the learner in a flexible way.

Others focus on the concept of E-learning and its tools, so they have defined it as the completion of official and non-official learning activities and training, and processes, communities and events using electronic multimedia, such as intranet, internet, extranet, audio/video, interactive TV, CD-ROM, DVD, TV, cellular phones and many other technologies (Hussin, Bunyarit & Hussein,2009; SorebO et al., 2009).

E-learning provides many advantages for students. For example, students have the opportunity to take the decision to engage in learning and to make decisions on issues such as the speed of learning, and the intensity of the topic learned; it depends on the student, as each student is personally responsible for his/her learning. The learning system becomes learner-centered and curricula can be organised according to the qualifications and responsibilities of students.

In addition, the interaction between learners will increase as students can conduct group discussions among themselves about real problems via chat rooms or instructional forums. Upadhyay (2006) and Yucel (2006) mention other learning advantages and features offered by an online learning environment, such as:

- **Individualisation of learning.**
- **Flexibility in activities' schedule.**
- **Learning anywhere and at any time.**
- **Freedom of professors to communicate with students.**
- **Participation in the learning community via the network.**
- **Controlled learning, as providing learning materials via the internet makes it easy for the learner to navigate and choose his/her appropriate sequence.**
- **Includes many diverse learning media that enhance learning.**
- **Provides a social learning environment available through online discussions, where interaction with other learners is available via electronic discussion lists.**
- **Provide opportunities for students for better learning.**
- **Leaves a positive impact in various learning situations.**
- **Provides opportunities for learner-centered learning, which is consistent with the learning philosophies and theories of modern learning.**
- **Provide a tool for the development of meta-cognitive aspects of learning and the development of problem-solving skills, and provides a serious constructive learning environment.**
- **Provides various opportunities for achieving different goals of teaching and learning.**
- **Provides a great variety of sources of information in various formats that helps to dissolve or minimise differences between students.**

According to Tsai and Machado (2006) and Kook (2007), E-learning environments vary according to the autonomy offered to learners. There are, in this regard, three types of environment: On-Line Learning, Blended Learning and Enhanced Learning.

- **On-Line Learning:** the learning environment in On-Line Learning is characterised by an instructional design provided entirely via the internet.
- **Blended Learning:** the learning environment facilitates learning through an integrated method. Traditional classroom learning, with a combination of teaching and face-to-face interaction in full or part-time education, is combined with face-to-face teaching and learning via the internet.
- **Enhanced Learning:** this refers to the use of the network by learners to download course assignments and the use of different sources of information that help learners to understand the topics they are learning.

Designing E-Courses In The Light Of Current Theories Of Learning

Researchers suggest that educational materials that are designed effectively facilitate students to achieve the desired knowledge results, and the effective design of E-learning materials, based on instructional design processes, reflect or reduce the lack of face-to-face learning. What distinguishes E-learning from traditional education is that the principles of instructional design have to be taken into consideration (Brown & Voltz, 2005, p. 1).

Educational theories can provide explicit guidance for e-learning design, on how to help people to learn. Furthermore, theories of learning also offer a set of rules or guidelines that can be used for making decisions when designing learning activities, resources and developing e-courses. It is known that these methods are, to a greater or lesser extent, effective in facilitating learning under certain conditions and they can help in the organisation of the components of a course (Sicilia et al., 2011). It should be noted that most learning theories have had an impact on the emerging field of instructional design. Literature indicates that this field grew out of the psychological sciences; the theories of learning (cognitive, behavioral and constructivism) are the foundations for the field of instructional design.

Behavioral sciences have contributed to the establishment and development of the field of instructional design. Learning strategies have formed a model for the instructional designer designing formats to deliver content, through their concepts, principles and procedures, or through the provision of factual information to assist in engineering and organising an external learning environment to help the learner to learn.

Behavioral learning theory deals with the apparent behavior of the learner, which is subject to observation and measurement regardless of the mental processes behind this behavior. Behavioral theory focuses on the principles of behavioral reinforcement, immediate feedback, specific steps in application and small or fragmented learning tasks (Mergle, 1998).

Theories of cognitive knowledge have contributed through its famous scholars, like Bruner, who researched the conditions associated with the process of learning concepts and problem solving. He is one of the first to have tried to reform the curriculum by clarifying the importance of the relationship between former and later learning.

In addition to his ideas about the spiral curriculum, which is the idea that the process of education begins with teaching simple ideas first, then gradually revisiting them to make the link between the former and new learning. The expansionary theory of "Ragilout" deals with organising subject content on an expanded level, specifically, organising a set of concepts, principles, procedures, facts or information, which is the module content or curriculum to be taught during a year, season or month. This theory emerged from concepts of cognitive theory in psychology, which believe that learning is done totally, not partially, as described by the Gestalt school, and the concept of "Ozoubil" about the development of organisation, as well as many other learning principles and theories (Mergle, 1998).

Advocates of cognitive-perceptual theory are concerned about the mental processes in the mind of the learner, which cause his behavior, whilst cognitive theory focusses on non-observed behavior and on processes and concepts, such as attention, perception, motivation, the transfer of learning and individual differences between learners.

Constructivist theorists believe that the individual knowledge-building process results from personal interpretation of the experiences undergone by the individual and that learning is an active process or social construct. Its supporters believe that learning is a participatory process, based on social dialogue, in the cognitive development of the individual and this is reliant on social and cultural contexts, as meaning is constructed through negotiation and dialogue based on multiple perspectives. So, constructivist theory focuses on building knowledge, not just on receiving it, and on self-control, active learning, collaborative learning, guided discovery, plurality of views and contemplative thinking (Smith & Ragan, 1999; Mergle, 1998). Constructive learning theory emphasises that the learning environment presents situations and experiences related to learning, information sources, knowledge tools, communication tools and scaffolding that helps students to acquire an integrated set of cognitive skills (Jonassen, 1999). At the same time, meaningful learning, built on the theory of constructive learning, emphasises active learning, a focus on the issue of situational learning and on the approach of objective-based learning (Jonassen, 2002).

Instructional design is often described as a selective field whose principles are derived from different theories. The majority of instructional designers prefer to integrate principles from all the theories mentioned into a single model (Alessie & Trollip, 2002, p. 17). This selective nature distinguishes the field of instructional design. It is better not to rely on one theory in designing an E-course; each theory contributes something different. An instructional designer can benefit from the principles of all the various learning theories in order to achieve the learning objectives, meet the needs of learners and take into account the characteristics of the knowledge to be acquired. Decision-making when designing a course for E-learning must be based on a good understanding of learning and how it occurs, and knowing the factors that lead to successful learning (Clark, 2002). Many researchers emphasise the importance of learning theories and methods when designing an E-learning environment (Chen & You, 2001). The integration of learning theories in practice is a vital factor for the successful management of an E-learning environment.

Many researchers address the various aspects that must be taken into account when designing learning via the internet. These aspects include: content, learning styles, interactive design and multimedia applications. Tung (2003) indicates that the content of the curriculum, the participation of students, educational interaction and technical support all have a positive impact on the outcomes of learning via the internet.

Moreover, Waterhouse and Rogers (2004) address other factors that influence the instructional design process, such as: ensuring that the teacher and students have a clear understanding of how the E-course works, keeping the learner informed through e-mail messages, protecting privacy, encouraging the instructor and students to participate in discussions and making learning software available for learners.

Other researchers focus on those cognitive aspects that should be taken into account in E-learning environments which will result in improving the learning effectiveness of these environments. Vovides et al. (2007) found that, when designing effective E-learning environments, it is necessary to consider the diversity of learners with respect to their methods of learning, knowledge, culture, skills and self-regulation (p. 64). Kalyuga (2007) stresses the necessity of building the learner's cognitive load and providing sources. The environment must respond actively to the student's input by processing the learning materials in order to encourage deep cognitive processes, which will lead to meaningful learning (Kalyuga, 2007). Hsu et al. (2009) emphasise the importance of introducing standards of instructional design for internet-based learning, to reinforce meaningful learning, integrate cognitive skills, achieve effective management of internet learning and enable the exchange of real-life experiences between learners. Zaharias and Poulymena (2008) highlight the elements that are considered as a basis for the design of synchronous E-learning: design interactive content, support navigation, enhance the visual design, provide guidance and support to the learner, ensure ease of use, enhance learning capacity and increase the motivation of the learner. These elements cover all processes in the design of E-learning.

RESULTS

Answering the Study Question "What Are the Most Effective Principles When Designing E-Courses in The Light of Current Theories Of Learning?"

To answer the study question, we reviewed the relevant literature and previous studies relating to quality standards, in particular, those for the instructional design of E-courses delivered via the internet and, more generally, quality standards for E-learning. We analysed these to identify effective guidelines for the design of E-courses based on current theories of learning. Results of the analysis revealed a number of principles, to be reviewed as follows:

- Identifying learning outcomes.
- Identifying learning methods and strategies.
- Designing learning activities.
- Feedback.
- Stimulating the learner.
- Determining the context of learning.

It should be noted that these areas are intertwined and dependent on each other but, effectively, they all have an impact on the final production of an E-course. Also, we should emphasise that these principles are only concerned with the design of an E-course and are not meant to be applied in other fields like teaching, creating a learning management system to launch the E-course or for evaluating teaching staff.

Identification of Learning And Performance Outcomes.

Determining clear performance objectives, from the beginning, encourages learners to focus on the important elements of the course content.

When designing E-learning courses, or any type of learning, learning and performance outcomes should be clearly identified. Instructional designers can work effectively to better meet the learners' requirements relating to learning or performance outcomes, by understanding the specific requirements of that learning.

Every type of learning and performance outcome has a different learning strategy that depends on the type of knowledge to be acquired (Gagne, 1985). Learning outcomes may relate to acquiring new knowledge, learning basic skills, developing advanced skills or developing expertise. These are briefly discussed below.

- **Information transfer and acquisition of new knowledge: information transfer is the simplest learning task. During information transfer, the role of those participating in the learning is usually negative. Information is provided to them, whether in verbal, written or photographic form, with the intention of transferring knowledge to them. Then, learners are required to retrieve the stored information. Unfortunately, most E-learning courses today do little more than passively transfer the content from its e-learning source to its learning community, regardless of results and without requiring any demonstration of performance. This approach requires new policies in teaching, dissemination of a culture of collaboration and the giving of directions and guidance on the good design of information (McLaren, 2008).**
- **Acquisition of basic skills: basic skills can range from simple things to complex things. When designing E-learning oriented towards the acquisition of basic skills, the content should be fixed or flexible according to the learners and there should be supportive cooperation and oriented facilitation (eLearnity, 2001).**
- **Development of advanced skills: development of advanced skills requires learners to be able to do more than reading the information from the screen or display. It requires building on current levels of knowledge and expertise. Instructional designers must take the learning and performance outcomes into account when creating E-learning, as it is important for the design of E-learning to go beyond just providing static content and standard evaluation. So, learners need the E-course and its content structure to be dynamic and able to adjust to their level of expertise so that, in a cooperative learning environment, learners can exchange knowledge and skills and learn from their peers; in this way, learners can easily develop their advanced skills (eLearnity, 2001).**
- **Progression of developmental experience: progression of developmental experience requires developing the cognitive side, developing personal characteristics and motivating learners. The ability of learners to apply knowledge effectively to solve problems is about adapting their experiences more efficiently. When designing E-learning to achieve objectives that depend on the progression of developmental experiences for this kind of learning and performance outcome, instructional designers of E-learning must provide a dynamic structure to the content and good channels of collaboration that facilitate the learning experience (eLearnity, 2001).**

These four outcomes of learning depend mainly on the application of teaching methods that are effective in facilitating learning.

Teaching Methods and Strategies

Many teachers and instructional designers focus on the technologies and multimedia elements when designing an E-course, which are the most impressive features, with less emphasis on the teaching methods and activities. Designers are often absorbed in creating tools without thinking of how to make better use of these tools to achieve the desired learning and performance outcomes in the E-learning.

Failure to take the right principles into account in the instructional design stage will minimise the effectiveness of information processing and learning. It is not just the delivery method that leads to learning, but designing teaching methodologies that can make all the difference; for example, teaching methods, strategies, tools and ways for delivering information in new styles to enhance learning, which might happen through the use of examples, providing opportunities for training and practice, or simulation (Clark, 2002).

When designing effective E-learning, the literature indicates three teaching methods for the design of good education: learner-based learning; scenario-based learning and problem-based learning. The design of learner-based learning is often achieved through individual practice with feedback, while scenario-based learning and problem-based learning depend on a combination of self-study and collaboration, along with the use of simulations to accelerate the learning process (Clark & Mayer, 2003). This can be explained as follows.

Instructional design based on the learner: this method focusses on the nature of active learning, the unique individual qualities of each learner and on the learner and his experiences rather than on the content. The first step in the design of learning is based on the learner's understanding of how learning takes place. It is important to realise that people do not learn from reading a book or listening to a lecture; learning occurs by accomplishing a mission in which thinking has a major role (Hsi & Gale, 2003, p. 7).

In this approach to learning, learners need more "scaffolding" at the beginning of their education; this scaffolding works as a structural support for knowledge, which enables learners to comfortably build up new knowledge and experience; this scaffolding should be faded out when learners have built up their knowledge. When designing a learner-based E-course, it is important to offer learners support and, at the same time, encourage self-learning. Teaching methods must enhance learning and motivate learners (Hsi & Gale, 2003).

The concept of scaffolding refers to the support function of the teacher for the learner; it is used to describe a large number of learner support mechanisms, whether human support by the teacher or technological support through programs. Regardless of its source, many studies conducted into support strategies have found that effective scaffolding offers learners the support to help them to attain a high level of achievement (Shapiro, 2008). Providing the appropriate level of supported assistance in a learning environment is a challenge for both teachers and instructional designers; students, and freshmen in particular, need different levels and types of support for them to gain knowledge (Dabbagh, 2003). Literature recommends the importance of using scaffolding for learning, in order to give support and information to help learners who might otherwise be indifferent to the task, without delaying their more advanced peers who may not need that support (Afify, 2010).

Instructional Design Based On Scenarios

E-learning is increasingly more effective than traditional learning when it focuses on learning experiences and dynamic interactivity. This is achieved through scenario-based learning that encourages the vitality of learners and provides opportunities for learners to learn, through giving learners relevant exercises, allowing them to make errors and then repeating the tasks so the learners can achieve mastery of their learning. Learning occurs in the right context and social conditions, associated with the concept of perception. This knowledge cannot be fully understood out of its context. Knowledge is produced as a byproduct of performing normal tasks that might commonly be implemented in the process of learning, or through social work environments. In this way, scenario-based-learning is similar to the experimental learning model, which is an idea based on learning that occurs according to performance not from acquiring knowledge and skills (Kindley, 2002).

There must be a reason or motive for conducting a learning activity in order for it to achieve meaningful learning. This focuses on the importance of designing a good script with a clear focus on learning and carefully selected learning activities, to achieve meaningful learning. Learning scenarios are usually provided through stories, role-playing or simulation, among other activities, that play an essential role in helping students to conceptualise the content and understand it. The target audience must be clear and specific when designing effective E-learning, to develop scenarios that will assist in motivating learners (Brown & Voltz, 2005).

Problem-Based Learning: Problem-Based Learning Focuses On Enabling Learners

To solve real problems they might face. This is done by giving learners realistic problems that require them to find the necessary knowledge and apply it appropriately in order to solve the problem. This method encourages critical and analytical thinking, with high level thinking skills. As with scenario-based-learning, learners will need scaffolding which helps with the knowledge load and will improve learning outcomes (Merrill, 2002). This scaffolding comes through instructor guidance and fades when learners achieve competency. It is important that this guidance is provided early in curriculum, because fresh students may spend more time in searching for solutions without achieving real learning (Sweller, 1988). The important key to using this method successfully is in progressing from simple to complex, guiding learners towards achieving independence by helping them to gain experiences from their learning.

Designing Learning Activities And Encouraging Active Participation

It is more likely that learning objectives will be achieved when learners are given the chance to learn new information actively. This requires providing activities that involve learners in frequent interactions and active learning, and providing real opportunities to apply new skills (Al-Saleh, 2005). Similar to other types of instructional design, the creation of effective E-learning depends on presenting students with tasks and learning activities that enable them to conduct experiments, leading them to a new understanding of the learning required and providing active participation in making choices about the tasks the students face in their learning (Brown & Voltz, 2005).

Using games, simulations and activities to maintain learners' motivation, providing meaningful interaction through competitions, tests, etc., and enabling access to a wide range of resources (internet links, simulations, problems, and examples) appropriate to the context of learning, in addition to developing multimedia which helps learners to focus on and learn critical concepts, are all factors that contribute to the effectiveness and positivity of the E-learning environment (Zaharias et al., 2008).

Feedback

A learner needs guidance, instructions and feedback during and after learning. Sufficient time should be given to providing adequate, appropriate and detailed feedback, to enhance and guide learner responses. The effectiveness of E-learning increases if the instructional design provides immediate feedback to reward learning and enables learners to acquire experience and increase their levels of knowledge and skills. There is a wide range of strategies available for feedback, including: responses to specific questions, semi-automated responses by business systems, shared comments in electronic forums, personal responses to e-mail and telephone and other methods provided by the E-learning technology. As well as the importance of the timing of feedback and the effective use of observations, each of these methods, if incorporated into the E-learning design, will enable learners to engage in dialogue and active participation with their peers and teachers, without which the process of instructional design could simply become a plan to broadcast static content (Brown & Voltz, 2005).

Motivating the Learner

It is important to motivate the learner and attract his/her attention, to concentrate his/her time and effort on the learning task. Intrinsic Motivation is a more effective method, especially with adult learners, which can be accomplished by using the theories of motivational design, such as the theory of "Claire" (1983), which refers to four components, namely: attracting attention, providing content linked to the needs of the learner, enhancing the learner's confidence in his/her ability to succeed and achieving learner satisfaction (Al-Saleh, 2005). There are many variables that increase motivation for learning, for example, making the design process enjoyable and interesting, allowing learners to take decisions related to their learning, providing frequent and varied learning activities and providing clear criteria for learners, in order to increase the effectiveness of the learning process (Zaharias & Poulymena, 2008).

Context of learning

The framework of E-learning resources has a significant impact on the instructional design; learning activities, scenarios and feedback all need to take into account distinctive characteristics of the users, connecting their needs to the technical infrastructure. However, contextual considerations also include the institutional goals of the E-learning program, the roles and skills of instructors, the durability of resources and cultural sensitivities. These need to be considered when designing effective E-learning (Brown & Voltz, 2005).

The design of E-learning needs to consider the impact of different points of view, including how it will affect the learner, the provider, the teacher and the environment. When designing E-learning content, the personal circumstances, self-esteem and mental state of the learner must all be considered. Social influences must also be taken into consideration, including the appropriateness of the learning materials and course content to the learners' cultural environment and ethical values in their society. Another consideration is the environmental impact of the design, such as the use of resources to develop materials and technologies for E-learning, the activities of the people who use or manage the learning materials and their impact on the environment, as well as the need for sensitivity in relation to the local population and how the technology is employed. In other words, addressing the impact of the design requires designers to consider the social and physical context of the learner. Designers need to behave responsibly and morally to ensure their E-learning design is useful for learners, the community and the environment (Brown & Voltz, 2005).

RECOMMENDATIONS AND SUGGESTIONS

In light of the findings of the current study, and the literature review, we offer the following set of recommendations for E-course designers at the University of Dammam:

- It is important to use the following effective principles: identify learning and performance outcomes; identify methods and strategies of learning; design learning activities; provide feedback and learner motivation and determine the learning context and environmental impact.
- Academic institutions that offer E-learning and distance learning as a part of their program should pay adequate attention to developing quality standards for distance learning, especially in the light of growing competition among universities providing this kind of learning.
- Continuously revise the effective principles for designing E-courses and setting standards in the light of current theories of learning.
- Conduct studies to examine the various interactions within E-courses and their impact on student learning and satisfaction with the E-learning environment.
- Conduct comparative studies to compare design variables and their relationship to student learning and satisfaction with the E-learning environment.

CONCLUSION

This study explored the design quality of some E-courses delivered via the web to a number of colleagues at the university. Results revealed a number of shortcomings in the design of these courses, mostly due to the absence of effective principles in the design of these E-courses, especially principles of pedagogy in relation to learning theories. After extensive review and analysis of the literature and previous studies into quality standards for instructional design of E-courses, the results of this study revealed a number of principles necessary for course design in E-learning. These are: identifying learning and performance outcomes; identifying methods and strategies of learning; designing learning activities; providing feedback and motivating learners and determining the context and impact of learning.

We highly recommend that professionals working on course design in E-learning at the University of Dammam apply these effective principles in their instructional design, when designing E-courses, to ensure quality and excellence.

BIODATA and CONTACT ADDRESSES of the AUTHORS



Dr. Mohammed AFIFI is an associate professor of educational technology in college of education at University of Dammam, Saudi Arabia. He holds a PhD in Education from Suiz University, Egypt. He has authored a numerous articles in the field and published extensively in different areas. His research interests vary from applying educational technology in higher education to quality standards and implementations in elearning environments.

Muhammad K. AFIFI
Associate Professor of E. Learning Technology
University of Dammam, Saudi ARABIA
Phone: 00966505756711
Email: mafify@ud.edu.sa



Dr. Saad ALAMRI is an assistant professor of Linguistics in college of education at University of Dammam, Saudi Arabia. He holds a PhD in Linguistics from Essex University, UK. He has published in different areas such as computer-based assessment and educational technology. His research interests vary from applied linguistics to computational linguistics and educational technologies.

Saad S. ALAMRI
Dean of E-learning and Distance Education
University of Dammam
Phone: 00966505756711
Email: salamri@ud.edu.sa

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