

BEST PRACTICES AND STANDARDS FOR E-LEARNING

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Abstract

As we move into the 21st century where there is increasing globalization and competition between organizations, countries must educate all citizens so that they can participate fully in the workforce and be productive. Additionally, the educational benchmark for obtaining employment is increasing where to get meaningful employment one needs at least an undergraduate degree. Hence, many individuals will have to be educated and upgraded to obtain gainful employment. One method to reach all citizens in a country to educate and train them is to use E-learning delivery. E-learning can be implemented in a blended format where there is a mixture of E-learning at a distance and face to face delivery. Or E-learning can be implemented totally at a distance where students can learn from anywhere and at anytime using information and communication technologies (ICT). Educators and trainers need to design learning materials for delivery on these emerging technologies so that students can learn from anywhere and at anytime. However, to promote success in E-learning, it is important to follow best practices and standards for the design and delivery of learning materials. When designing E-learning materials, proper learning principles must be followed so that learners' experience quality learning and the instruction caters for students' individual needs. Also, best practices and standards must be followed when delivering E-learning to students. This paper will contribute to the E-learning field by presenting research results of studies that were completed to identify best practices and standards for E-learning and review research studies on the importance of establishing and following standards and best practices in E-learning.

Keywords: E-learning, distance education, best practices, standards, learning objects

Introduction

There is significant growth in E-learning enrolment in education around the world. Recent data from the United States indicated that over 5.6 million students were taking at least one online course during the fall 2009 term which is an increase of nearly one million students over the number reported the previous year (Allen & Seaman, 2010). Also, the twenty-one percent growth rate for online enrollments far exceeds the less than two percent growth of the overall higher education student population. Hence, for most educational institutions, E-learning is not an option and professors and teachers must adapt to this mode of delivery. The rapid growth of E-learning in education is because of the many benefits to both the students and educational organizations. The most important benefit is that the younger and upcoming generations of students are comfortable using information and communication technology (ICT) and they already own the technology. These students can use their existing technologies to access E-learning materials from anywhere and at anytime. They also use emerging technologies that will allow them to learn in a virtual environment using Second Life and other 3D Virtual worlds (Salmon, 2009). Another benefit of E-learning is for students who have limitations for travel because of disability, family obligations, affordability, and the remoteness of their communities. E-learning also provides equal educational opportunity for all since students and citizens can access learning materials using ICT from anywhere and anytime. With the recent proliferation of mobile technologies, students can access learning materials on mobile technologies (Ally, 2009; Looi, et al. 2010). Students will be able to use the technology from anywhere to communicate with experts in the field hence, obtaining the latest information from the experts (Howard et al., 2009). As a result, educators and trainers must design learning materials for delivery and provide support on any technology so that students can use a variety of technologies to learn from anywhere or anytime (Ally, 2009; Jeng et al., 2010). This is also true for employees in organizations since organizations are using the blended approach to train employees (Lee, 2010).

As the use of E-learning in education and training continues to grow there must be standards established so that the quality of the design and delivery are high to promote learning and transfer. Bento and White (2010) described a quality assurance instrument that they used for online learning. They reported that specifying standards benefit both the teacher and the students. For the teacher, there is

clearer alignment of course and unit learning objectives with assessment instruments and instructional materials. For the students, there are specifications of instructor's expectations and grading policy. In addition to maintaining high quality, standards allow for consistency in design and delivery. Students will use the standards to set expectations and to monitor how they are doing in the learning process. Best practices can also contribute significantly to E-learning by implementing what was done in successful E-learning projects in both design and delivery. Establishing standards and best practices for face-to-face education organizations that are planning to implementing E-learning is critical for the success of the E-learning initiatives in these organizations.

Other benefits of establishing standards and best practices in E-learning are these can be used as orientation for team members and changing the attitudes of teachers and professors towards E-learning. In addition, best practices for students should be identified so that these can be communicated to all students taking E-learning courses to promote learning, retention, and transfer. This paper will present research that were conducted to identify best practices in E-learning and distance education and discuss standards and best practices that must be followed when designing and delivering E-learning in education and training. The paper will start by providing background information on standards and best practices in E-learning. The background section will review research studies and scholarly papers on standards and best practices in E-learning and distance education. This will be followed by a section on summary of research studies that were conducted by the author and examples of standards for E-learning and distance education. The final section of the paper will conclude what was learned and make recommendations for future development and research.

Background

Because of the increasing use of E-learning in education and training, standards and best practices must be established so that the E-learning programs can be successfully implemented. In E-learning systems, the role of the teacher will change to facilitator. In blended systems where both traditional face-to-face teaching and E-learning are being used, the teacher will play a dual role. The teacher will be teaching face-to-face as well as being a tutor. In organizations where only E-learning is being used, the role of teacher will be a facilitator of learning. As a result, we will need a new generation of teachers who are comfortable using the technology in education (Martinez, 2010). Ally (2000) conducted a study to identify the best practices of tutors in distance education. Subjects in the study were experienced tutors in a distance education university. The research study identified the following best practices for E-learning and distance education teachers whose role is that of a tutor.

Role of the Teacher in E-learning

When making the shift from traditional classroom based delivery to online distance education, the teacher role will change drastically to function effectively in the online environment (Ally, 2000). The teacher will take on the role of a tutor and become a facilitator of learning by managing, coaching, supporting, and advising students. In E-learning the student and teacher are not physically present in the same location. As a result, tutor has to use strategies to compensate for the lack of face-to-face contact. Depending on the geographic distribution of students, the tutor can use synchronous or asynchronous communication tools to provide support to students.

The E-learning tutor has to facilitate learning by role modeling behavior and attitudes that promote learning, encourage dialogues, and use of appropriate interpersonal skills. In face-to-face contact between the tutor and students, there are many nonverbal cues and gestures that help in the communication process. In E-learning delivery the tutor needs to compensate for the lack of nonverbal cues by appropriate modeling and using excellent distance interpersonal skills.

An effective E-learning tutor must recognize that students have different learning styles when learning and some students prefer to use certain style over others (Ally & Fahy, 2005; Fahy & Ally, 2005). As a result, the tutor must use techniques and learning activities that will satisfy and develop the different learning styles.

The tutor has to provide timely feedback to students so that they can be motivated to learn and take any corrective action during learning. Since there is minimal contact in E-learning, students should be motivated on an on-going basis. The tutor has to contact students on a timely basis to make sure they are active in the course. Motivating students can be done by re-assuring students what they are learning is beneficial and then challenging students by suggesting additional learning materials. This is important especially for students who are working ahead in the course. Strategies to allow students to feel comfortable and show enthusiasm about the course materials is necessary in online delivery.

In addition to being a facilitator of learning, the E-learning tutor should be an expert in the field. The tutor must have the content expertise to answer students' questions and solve content problems at any time during the learning session. The tutor will have to solve content problems by keeping up to date in the field, interpreting students' questions, communicate at the level of the student, provide remedial activities, and conduct follow up on help provided.

Best Practice for Tutors in E-learning

Table 1 list the best practices of tutors involved in E-learning and distance education based on the study conducted by Ally (2000).

Table 1: Best Practices of Tutors in E-learning

<p><u>Facilitate Learning</u></p> <ul style="list-style-type: none"> • Contact students at the start of the course • Use proper oral communication skills • Use proper written communication skills • Interpret course materials for students • Role model behaviour and attitudes that promote learning • Encourage dialogues and discussions between tutor and students and between students • Use active learning strategies • Promote critical thinking • Resolve conflicts constructively <p><u>Motivate Learners</u></p> <ul style="list-style-type: none"> • Contact students on an on-going basis as required • Emphasize practical application of learning materials • Re-assure students as required • Challenge students by suggesting additional learning activities • Make students feel comfortable when interacting with the tutor • Show enthusiasm about the course materials <p><u>Help Students with Content Problems</u></p> <ul style="list-style-type: none"> • Keep up to date in the field • Show high subject matter expertise • Use appropriate research skills to find related course information • Listen effectively to learners • Interpret learners questions • Communication at the level of the learner • Provide the information to answer the learner question • Provide remediation to help learners • Suggest remediation activities to help learners • Provide supplemental resources for learners to achieve the course objectives • Check to ensure the learner questions have been answered <p><u>Address Personal Problems</u></p> <ul style="list-style-type: none"> • Provide an open environment for learners express their personal problems • Contact learners if a personal problem is recognized • Assess learners' personal problems • Provide appropriate intervention for basic personal problems • Refer students for appropriate help on complex personal problems 	<p><u>Formative Evaluation of Learning Materials</u></p> <ul style="list-style-type: none"> • Record changes for learning materials • Record improvements needed in the delivery process • Keep a weekly journal on the progress of the course <p><u>Evaluate Learners Performance</u></p> <ul style="list-style-type: none"> • Develop evaluation instruments • Administer evaluation instruments <p><u>Delivery Management</u></p> <ul style="list-style-type: none"> • Use effective time management when interacting with students • Persuade learners to pace themselves • Develop a process to manage the delivery • Explore different methods for delivery <p><u>Manage the Learning Process</u></p> <ul style="list-style-type: none"> • Contact learners on a timely basis • Provide appropriate feedback • Adapt to the learner needs • Allow for flexibility for unanticipated problems <p><u>Administrative Functions</u></p> <ul style="list-style-type: none"> • Input learners' marks into information system • Obtain appropriate professional development to perform job effectively • Interact with supervisors on the course • Interact with administrative support on course support • Organize information and documents for ease of retrieval • Print out reports • Access information from information systems • Review documents and reports • Track learners' progress • Use the organization information system to access and input information • Keep up-to-date with the organization policies related to course development and delivery <p><u>Address Technical Problems</u></p> <ul style="list-style-type: none"> • Refer students to appropriate resources to solve technical problems • Provide a sympathetic ear to learners' technical problems • Solve minor technical problems <p><u>Use Delivery Technology</u></p> <ul style="list-style-type: none"> • Use the basic features of a computer • Use a web browser to access the internet • Use e-mail to interact with students and staff • Use technology to deliver instruction • Use social software
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Model for Developing E-learning Materials

Because of globalization, it is important that educators and trainers must use good design strategies to develop E-learning materials for successful learning that will meet the needs of students around the world. The teacher should consider language skills, technology capability, time zone difference, local context, etc. when developing E-learning materials. Liu et al. (2010) studied cultural difference of students from different parts of the world taking MBA courses. They reported that students saw the cultural differences as being positive since they were open to ideas from different cultures. However, they reported cultural differences in learning style where one culture was more learner centered while other cultures were more teacher centered where they relied more on the teacher for information. Also, when designing E-learning materials it is important to follow proven instructional design models that cover all dimensions of learning. There are many models available (Dick, Carey, & Carey, 2004; Gagne et al, 2004) but a comprehensive and well accepted model for E-learning is the framework developed by Badrul Khan (Figure 1). The framework consists of eight dimensions (Khan 2005, 2007). The pedagogical dimension of E-learning in Badrul Khan's framework refers to teaching and learning. This dimension addresses issues concerning content analysis, audience analysis, goal analysis, media analysis, design approach, organization and methods and strategies of e-learning environments. The technological dimension of the framework examines issues of technology infrastructure in e-learning environments including infrastructure planning, hardware and software. The interface design refers to the overall look and feel of E-learning materials and covers page and site design, content design, navigation, and usability testing. The evaluation for E-learning includes both assessment of learners and evaluation of the instruction and learning environment. The management of E-learning refers to the maintenance of learning environment and distribution of information. The resource support dimension of the framework examines the online support and resources required to foster meaningful learning environments. The ethical considerations of E-learning relate to social and political influence, cultural diversity, bias, geographical diversity, learner diversity, information accessibility, etiquette, and the legal issues. The institutional dimension is concerned with issues of administrative affairs, academic affairs and student services related to e-learning.

Figure 1: Badrul Khan Framework for Mobile Learning (included with permission)



Designing E-learning Materials using Learning Objects

Another good practice to follow when developing E-learning materials is to develop the materials as learning objects and store the objects in electronic repositories for access anytime from anywhere using any computer technology (Ally, 2004; Varlamis & Apostolakis, 2006). A learning object is any digital or non-digital entity that may be used for learning, education, or training (IEEE, 2002). Another definition of a learning object is any digital resource that can be reused to support learning. Ally (2004) defines a learning object as any digital resource that can be used to achieve a specific learning outcome. The three key words in these widely accepted definitions are digital, reusable, and learning outcome. Learning objects must be in a digital format to facilitate storage in a digital repository that can be searched and retrieved electronically. Learning objects must be designed so that they can be reused in different lessons or courses and different instructional interventions or situations. A learning object must be tied to a specific learning outcome so that appropriate content and assessment can be included in the learning object and the appropriate delivery medium can be identified for the learning object. The overall goal of using learning objects is to promote learning and improve performance. Hence, it is important to know how students learn in order to design learning objects that are effective and that are designed properly and efficiently with the learner in focus. Learning objects should be developed with the learner in focus since the purpose of learning objects is promote learning and allow students to apply what they learn in real life settings and in creative ways. Students will access the learning objects at any time for just in time learning. The teacher will benefit from the use of learning objects since the teacher will be able to access the learning object to develop courses and lessons at any time and from any location. The following are best practices to follow when developing learning objects for E-learning.

- Learning objects should be independent and standalone so that teachers can revise a learning object without affecting other objects (Wiley 2000).
- Learning objects should be reusable so that teachers can use learning objects in multiple contexts and multiple lessons or courses. Learning objects must be designed with multiple users in mind and must be tested with multiple users before they are placed in the repository. The readability level and language must be appropriate for different audiences and the presentation of the information and learning activities must be appropriate for different styles of learners.
- Teachers must be able to customize learning objects to meet the needs of learners.
- Learning objects should be scalable so that they can build on each other to form learning sequence.
- Teachers should be able to customize lessons or courses by linking learning objects for just in time development and delivery of learning materials. They must be able to combine learning objects to build larger units of instruction. The learning objects should be linkable to form instructional events for a lesson or course.
- Learning objects must be designed so that they can be re-used many times without becoming obsolete (Barritt, 2002). This requires that learning objects be updated constantly as the content changes.
- Teachers and students must be able to access learning objects using a variety of technology (Hamel & Ryan-Jones, 2002). This will allow anyone from anywhere to access the learning objects in the repository.

Best Practices for Moderating Discussions in E-learning

An effective method for the tutor to interact with students and for the students to interact with each other in E-learning is to conduct synchronous and asynchronous discussion sessions using information and communication technologies (ICT). Organizations that are using the blended education approach are increasingly using ICT to improve access to education, to encourage student social interaction, and to encourage lifelong learning (Casanovas, 2010). The synchronous discussion sessions are conducted in real time so that students get immediate feedback and they can respond to the tutor and other students immediately. Examples of ICT for synchronous discussions include two-way audio and video conferencing, online chat, telephone, mobile phones, etc. In asynchronous communication there is a delay in response between the tutor and the students and between students. ICT for asynchronous

communication include email, computer conferencing, podcasts, etc. Communication with ICT helps to bridge the distance in E-learning and can provide a supportive learning environment that facilitates cooperation and collaboration rather than competition. If discussions are facilitated and implemented properly, there could be tremendous benefits to both learners and tutors. The moderator of the discussion session has to manage the interaction between learners and provide content expertise in the conference. Ally (2001) conducted a study to identify the best practices of distance education tutors when moderating computer conferences in an online environment. In the study he interviewed a group of experience conference moderators to elicit best practices when moderating conferences. Yeh (2010) studied the online discussion behavior of pre-service teachers and reported 13 important online behaviors and 3 commonly used online behaviors. The commonly used behaviours include constructing a positive atmosphere, providing opinions for group assignments, and providing reminders of assignment-related work. The behaviours reported by Yeh are similar to the behaviours identified in Ally study. Best practices for discussion moderators in E-learning are as follows.

- Welcome students to the discussion forum and arrange for students to introduce themselves.
- Establish ground rules and guidelines for the discussion.
- Inform students of the schedule of the discussion.
- Role model good discussion behaviour.
- Use strategies that allow students to present their ideas and receive feedback from other students.
- Encourage participation in the discussions.
- Respond to students' questions in a timely manner.
- Summarize the discussion to bring closure to the discussion.
- End discussions at the right time and appropriately.

Best Practices for Students in E-learning

Students will benefit from E-learning because they are comfortable using ICT on a daily basis (Ward et al., 2010); however, it is important to identify best practices of E-learning students so that these can be communicated to students during orientation (Frydenberg, 2002). This is critical especially for students who are experiencing E-learning for the first time. According to Olgren (1995), students use a variety of cognitive strategies when learning in a self-paced course. Students tend to self-regulate themselves during learning so that they learn independently and monitor themselves so that they are successful learners (Shih et al., 2010). Research results reported by Lukaitis and Davey (2010) suggest that if an innovative technology is to be implemented it is vital that new learning skills are developed in the target learners.

A variety of strategies can be used by E-learning students to make sure that they are successful in their courses. Ally (2002) conducted a study to identify learning strategies as well as other strategies learners' use when studying at a distance. Subjects involved in the study were distance education students enrolled in a university. Subjects were asked to identify the learning strategies they use during the learning process that make them effective distance education students. As the students verbalized the strategies, each one was written on index card and placed on a blank wall so that students could see the identified strategies. After each index card was placed on the wall, the students were asked to confirm whether they use the strategy when they learn in the distance education mode. If the strategy was not worded properly, it was changed to reflect the consensus of the group. If a duplicate strategy was identified, it was discarded. This process was repeated until no more strategies were identified. Table 2 lists of best practice learning strategies identified by the distance education students. Training programs that are based on these best practices should be developed to orient students before they start experiencing E-learning delivery. Also, most of these best practices are important for the 21st century

student and worker. It is recommended that all students take the course on how to be a successful E-learning student.

Table 2: Best Practices Strategies for E-learning students

<p><u>Learning Skills</u></p> <ul style="list-style-type: none"> • Organize information and course materials to facilitate learning • Read “outside” course materials that are related to the course topics • Select appropriate assignments topics to relate learning to real life applications • Arrange support system during the learning process • Conduct research to obtain information on the learning topics • Preview course materials to get a sense of course requirements • Reflect on the information in the course • Read quickly to cover the reading materials • Prioritize readings based on the course objectives • Select important material from the course readings • Contact researchers and experts to obtain additional information on course topics • Apply course readings to own professional or personal situations • Synthesize information from readings and discussions • Make connections to “real” life situations • Apply learning to current occupation. • Follow course study guide instructions • Study topics that cause difficulty at a later time • Research additional information on difficult topics • Skim the course materials before the course starts to get a sense of course requirements • Use “academic” or accepted writing style • Conduct internet searches to obtain information for assignments • Select relevant real life situations to apply the assignment questions • Write effectively by following the assignment guidelines • Clarify assignment expectations if required • Write assignments at the appropriate level • Proofread assignments • Share new ideas with non-students (other employees or professionals) • Work with a partner or small group to discuss difficult materials • Contact instructors for help in courses 	<ul style="list-style-type: none"> • Create personal work plan to meet course requirements • Prioritize tasks to complete course requirements • Inform family of course commitments to obtain the time to work on the course • Get “big picture” of course to plan activities to complete the course • Stay focused on the course • Be persistent to complete the course • Keep up with the course work load to prevent being left behind • Set clear expectations and sense of direction when working course • Cope with extenuating circumstances of everyday life • Organize daily activities to work on course • Work ahead of course schedule • Dedicate study time and stick to the time • Set up a comfortable learning environment • Commit to complete the course <p><u>Personal Skills</u></p> <ul style="list-style-type: none"> • Manage stress effectively • Maintain vision and career goals to keep study in focus • Be patient when going through the course • Recognize own learning style • Adapt learning style when learning • Maintain a sense of humor when taking courses • Keep an open mind • Be compassionate to other students • Adapt to the different delivery modes • Be an independent learner • Be disciplined to complete course expectations on time • Be self-motivated to complete course requirements • Plan course activities through the semester • Remain committed to complete course requirements • Have a curiosity to learn • Be focused on course requirements • Be open to new experiences • Practice time management for assignment completion • Set internal goals to make sure course
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<ul style="list-style-type: none"> • Study in a quiet and comfortable learning environment • Contact academic advisor to select courses wisely <p><u>Organization Skills</u></p> <ul style="list-style-type: none"> • Set enough time to complete the course requirements • Allow for flexibility to devote to the course • Coordinate course requirements with employer to make sure there is flexibility to complete the course • Follow the rules and regulations of the school • Practice “forward thinking” to plan for the unexpected • Get a head start in the course • Be self-motivated to complete course activities • Log-on to check e-mail and other materials regularly (daily) • Manage time efficiently • Work independently on course materials • Practice self-disciplined to complete course requirements on time • Set personal learning objectives to meet course requirements • Create comfortable learning environment to complete course requirements • Arrange time away from home responsibilities to work on courses • Coordinate schedule to take multiple courses at the same time 	<p>requirements are completed on time</p> <p><u>Interaction/Interpersonal Skills</u></p> <ul style="list-style-type: none"> • Post conference entries to contribute to discussions • Participate in conferences by reading and responding to other students’ comments • Be confident in ability to contribute to the course • Be succinct in conference postings • Present balanced arguments in conference discussions • Be supportive of fellow students • Use “netiquette” when using e-mail and the internet • Work collaboratively in teams • Learn from others • Communicate effectively though text • Provide constructive feedback to other students • Be willing to share knowledge • Be open to changing one’s views <p><u>Technology Skills</u></p> <ul style="list-style-type: none"> • Use reliable technology when completing course requirements • Use the internet as a research tool • Obtain the expertise required to use the delivery technology • Solve basic technical problems
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Conclusion

To become and remain competitive in the 21st century countries and organizations must use delivery methods such as E-learning and mobile learning to reach all citizens and workers to educate them. The delivery systems must follow good practices and use standards described in this paper to promote success and efficiency in learning. Based on the research studies reported in this paper, it is important to establish standards and best practices for the design and delivery of E-learning materials. This is critical when E-learning is being introduced for the first time in educational institutions and organizations. The establishment and implementation of standards and best practices will make sure that everyone are ready to implement E-learning to provide quality education. Using proven instructional design models such as, Khan (2005, 2007) model will make sure that a comprehensive system is developed for E-learning to meet the needs of learners and organizations. Designing E-learning materials as learning objects and storing in electronic repositories is also an important practice. This practice has the potential to revolutionize the way learning materials are developed for delivery using E-learning methods. A major challenge is how to make learning objects universal since anyone may access the learning objects from anywhere in the world. Another challenge is who is responsible for quality control and accuracy of the information in the learning objects. As the use of learning objects increases and the field matures, intelligent agents should be developed within the learning object system to match and adapt learning objects to meet individual learner needs during the learning process (Richards, 2002). For the teacher,

whose role will be a tutor, best practices on how to tutor and how to moderate discussions should be communicated so that the tutor know what is expected in E-learning. It is also important to communicate best practices of an E-learning student so that the student can use these to be successful learners. More research is needed to determine how students behave in the online learning environment and what strategies can be used to promote learning in light of these behaviours.

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