

Designing and Implementing e-Learning Courses: A Comparative Analysis of Policy Guidelines from Nine Professional Organizations

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Abstract—Many universities around the world are utilizing or planning to utilize e-learning formats in their programs to reduce the average per-student cost. Although cost-saving is very much desired, many institutions are also concerned about the quality of their e-learning courses. This study aims to synthesize the literature about the various policy guidelines to help faculty design and implement e-learning courses. Documents from nine professional organizations were analyzed. These documents were carefully screened to identify the main themes and corresponding sub-themes. We then describe the similarities and differences among these documents. We found a large extent of agreement among the documents on 11 key areas that should be considered in order to maximize the success of an e-learning course. However, the documents were vague in providing concrete suggestions regarding areas such as how to promote student-student interaction, online discussion group size, and review of e-learning courses. We found three major disagreements among the various documents with regard to: addressing various student learning style, requirement for student online collaboration, and reward for faculty who use e-learning. Finally, we suggest several strategies that could help overcome the fuzziness related to maximizing student-student interaction, and the review of e-learning courses.

Index Terms—E-learning, online learning, guidelines, design, policy.

I. INTRODUCTION

The rapid development and utilization of information and communication technologies (ICT) such as social and Web 2.0 tools have transformed the way in which many professors offer their courses. Some have opted for e-learning, while some for blended learning courses.

The focus of this paper is e-learning, which is defined as a course in which 80 percent or more of its course content is delivered through the Internet [1]. Essentially, the notion of e-learning is about providing people access to formal education at their own pace and time, as well as lowering the average overall per-student cost - an increasingly desired wish for many educational institutes in the face of today's budget cuts and constraints.

For example, a report published by the Thomas B. Fordham Institute attempted to describe "the size and range of the critical cost drivers for online schools in comparison to traditional brick-and-mortar schools" [2]. The reports

analyzed virtual schools, where all instruction takes place online, and blended-learning schools, in which students "attend brick-and-mortar schools where they alternate between online and in-person instruction" [2]. Based on interviews with 50 experts and vendors in the field and on information collected from public documents, the report estimated that the average per-student costs of e-learning, blended-learning, and traditional brick-and-mortar schools were \$6,400, \$8,900, and \$10,000 respectively.

Clearly, the use of e-learning appears to reduce the average per-student cost the most. While the cost-saving is indeed impressive, a key question that also needs to be addressed is: Are the learning outcomes in e-learning comparable to face-to-face learning? A recent study found that most chief academic officers (77%) rated the learning outcomes for e-learning as good as or better than those for face-to-face instruction [1].

But the positive learning outcomes in e-learning do not happen automatically simply because an online component is added to it. We believe that maximizing the success of e-learning requires careful consideration of many important issues such as institutional support and the provision of adequate interaction and feedback.

II. AIMS OF THE PRESENT STUDY

Several professional organizations have attempted to articulate the various guidelines for designing and implementing e-learning courses. It may be worthwhile to note that Hirumi [3] also conducted a review of e-learning guidelines. However, the review was limited to only six organizations located mainly in the USA and was done about eight years ago. Our current study aims to provide an updated synthesis, as well as expand the scope of the review by analyzing a greater number of professional organizations. Documents from nine professional organizations from countries such as Australia, Canada, Europe, and USA were examined. The following research questions guided the present study:

- 1) What main themes or issues are discussed in the various policy guidelines?
- 2) What are the similarities and differences among the guidelines?
- 3) What are the limitations or gaps found in the guidelines?

III. E-LEARNING POLICY GUIDELINES

Based on a preliminary review of the literature, relevant policy guidelines were identified and selected for analysis.

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These e-learning policy guidelines came from the following organizations:

- 1) *Guiding Principles for Distance Teaching and Learning* [4], developed by the American Distance Education Consortium. ADEC is a non-profit distance education consortium that consists of about 65 state universities and colleges that aims to serve students from domestic, international communities, as well as K-12 schools and corporate or business organizations. Typical methods of distance education employed by ADEC include audio and video conferencing, as well as internet based learning environments.
- 2) *Benchmarks for Technology Supported Teaching and Learning* [5], developed by the Australasian Council on open, distance and e-learning. The main purpose of ACODE is to improve policy in open and e-learning in the Australasian higher education sector.
- 3) *Interregional Guidelines for the Evaluation of Distance Education Programs (Online Learning)* [6], developed by the Council of Regional Accrediting Commissions in the USA to help institutions plan and assess the quality of their online learning courses. The development of the *Guidelines* were actually based on two documents: a 2006 report prepared by the U.S. General Accounting Office, *Evidence of Quality in Distance Education Drawn from Interviews with the Accreditation Community*, and the *Best Practice Strategies to promote Academic Integrity in Online Education*, prepared by the Western Interstate Commission for Higher Education Cooperative for Educational Technologies (Middle States Commission on Higher Education, 2011).
- 4) *Distance Education: Guidelines for Good Practice* [7], prepared by the Higher Education Program and Policy Council of the American Federation of Teachers (AFT). This guidelines report was written in 2000 after surveying 200 members of AFT distance education practitioners, as well as the literature on distance education. The 200 practitioners had taught distance education courses in every major academic subjects and delivery mode, the largest mode being internet-based.
- 5) *Open and Distance Learning Quality Council Standards* [8], developed by the Open & Distance Learning Quality Council in the UK. The objective of ODLQC is to identify and improve quality of teaching and learning in all open or distance education setting, including blended learning and e-learning courses.
- 6) *Quality On the Line: Benchmarks for Success in Internet-based Distance Education* [9], prepared by the Institute of Higher Education Policy in the USA. Specifically, the Institute was approached by two commissioning organizations, the National Education Association, and Blackboard Inc. to compile the benchmarks through a comprehensive literature search, and then examine the extent to which six universities incorporated the benchmarks in their Internet-based distance courses.
- 7) *Quality Guidelines for Technology-Assisted Distance Education* [10], prepared by FuturEd Consulting Education Futurists and the Community Association for Community Education with funds from the Office of

Learning Technologies of Human Resources Development Canada.

- 8) *Guidelines for the Implementation of Effective E-learning Courses based on Collaboration* [11], funded with support from the European Commission. The document provides practical help for educators to execute effective e-learning courses based on collaboration with an emphasis on the design and implementation aspects. The document was a result of work carried out by a number of universities including Italy, France, Germany, and Finland.
- 9) *Best Practice Strategies to Promote Academic Integrity in Online Education* [12], produced by WCET (WICHE Cooperative for Educational Technologies) in the USA. WICHE stands for the Western Interstate Commission for Higher Education in the USA. The development of this best practice document was the combined effort of WCET, the UT TeleCampus of the University of Texas System, and the Instructional Technology Council. Its main purpose is to strength the academic integrity of e-learning courses, as well as to reduce incidences of student cheating.

The analysis of the nine documents was guided by the research questions. First, the documents were carefully examined to identify the main themes and sub-themes (if any), using the constant-comparative approach [13]. Second, we attempted to clarify the similarities and differences among the various policy documents. Third, we identified gaps in these guidelines. The results of our analysis are presented in the following sections.

IV. MAIN THEMES AND SUB-THEMES

TABLE I: THEMES AND SUB-THEMES IDENTIFIED

| Theme | Sub-theme |
|----------------------------------|---|
| Instructional design | <ul style="list-style-type: none"> • Learning objectives • Course expectation/information • Instructional strategy • Use of media & learning styles • Student-student interaction • Student collaboration • Student-instructor interaction |
| Student support | <ul style="list-style-type: none"> • Mentoring/counseling support (e.g., to help students persist and complete course) • Administrative support • Library access • Technical support • Student ICT training • E-learning orientation |
| Faculty support | <ul style="list-style-type: none"> • Technical support • e-learning platform & pedagogy training |
| Feedback | <ul style="list-style-type: none"> • Faculty feedback |
| Institutional support | <ul style="list-style-type: none"> • Reliability of the e-learning delivery system • Alignment with institution's mission • Periodic review of e-learning courses/programs • Institution reward for faculty |
| Academic integrity in e-learning | <ul style="list-style-type: none"> • Academic honesty information • Anti-cheating (e.g., plagiarism detection service) • Electronic security measures |

Overall, a comparative analysis of the nine policy

documents revealed a total of six main themes and their corresponding sub-themes. The main themes include instructional design, student support, faculty support, feedback, institutional support, and academic integrity in e-learning. The main themes along with their corresponding sub-themes are summarized in Table I.

V. SIMILARITIES AND DIFFERENCES AMONG THE DOCUMENTS

Although all the documents aim to foster the attainment of excellence in e-learning courses, each document may have a different focus and areas of emphasis. Table II presents an overview of the similarities and differences among the documents. This is done by identifying the specific sub-themes that are mentioned by most documents (i.e., 4 or more documents), as opposed to those that are regarded as important only by a few documents (i.e., 3 or fewer documents).

TABLE II: SIMILARITIES AND DIFFERENCES AMONG THE POLICY DOCUMENTS

| Sub-themes mentioned in most documents (4 or more) | Sub-themes mentioned by a few documents (3 or less) |
|--|--|
| <ul style="list-style-type: none"> • Learning objectives • Course expectations/information • Student-student interaction • Student-instructor interaction • Student mentoring/counseling support • Student library access • Student technical support • Faculty technical support • Faculty e-learning platform & pedagogy training • Periodic review of e-learning courses/programs • Anti-cheating measures | <ul style="list-style-type: none"> • Instructional strategy • Use of media & learning styles • Student collaboration • Administrative support for student • Student ICT training • Student e-learning orientation • Faculty feedback • Reliability of the e-learning delivery system • Alignment with institution's mission • Academic honesty information • Electronic security measures • Institution reward for faculty |

It can therefore be seen from Table II that there are strong agreements among most of the policy documents in 11 key sub-themes or areas: the need for clear learning objectives, clear course expectations, student-student as well as student-instructor interaction, student mentoring/counseling support, student remote access to library, extended technical support for both students and faculty, faculty training related to e-learning pedagogy and platform use, periodic review of e-learning courses, and anti-cheating measures.

On the other hand, less commonly mentioned areas include the use of instructional strategy and media, the need for student administrative support, the provision for student collaboration, student ICT training and e-learning orientation, faculty feedback, reliability of the e-learning delivery system, alignment of the e-learning program or course with the institution's mission, provision for academic honesty information and electronic security measures, and institution reward for faculty who use e-learning.

In the following section, we describe some of the main guidelines related to each sub-theme or area identified in Table II.

A. Instructional Design Guidelines

Main guidelines concerning instructional design matters

include:

- *Course expectation/information:* Give learners relevant information about the e-learning courses, including admission requirements, tuition and fees, specific delivery format, books and supplies, technical and proctoring services, types of assignment, and assignment deadlines.
- *Learning objectives:* Provide students with specific and clear (i.e., observable and measurable) learning objectives.
- *Instructional strategy:* Use instructional strategy that fosters learners' active participation, or that engages the learners' cognitive processes [14] such as application (using a procedure in a given context), analysis (breaking material into its component parts and examining how these parts relate to one another and to an overall structure), synthesis (putting things together to form a functional whole, including creating), and evaluation (making judgments based on certain criteria or standards).
- *Use of media & learning styles:* Ensure that the e-learning materials are navigable, complemented by graphics rather than be distracted by them, available in text-only interface option for non-graphical browsers. Use a variety of media to accommodate various student learning styles.
- *Student-student interaction:* Provide synchronous (e.g., chat rooms) and asynchronous (e.g., discussion forums) forms of communication to maximize student interactions. Consider using smaller class size.
- *Student collaboration:* Design activities that require students to share multiple perspectives, negotiate or argue. Structure the activity in phases to scaffold learners (e.g., phase 1: articulate the main problem, phase 2: collect as much information as possible, phase 3: discuss possible solutions). Assign different and clear roles to various students (e.g., one devil advocate, one summarizer).
- *Student-instructor interaction:* Wherever it is feasible, provide opportunities for same-time (and same-place if possible) interchange between student and instructor.

B. Student Support

Main guidelines concerning the means to support students in their e-learning courses include the following:

- *Mentoring/counseling:* Monitor learners' progress in learning and encourage them to complete their courses. Also provide academic and/or program advising.
- *Library access:* Ensure learners have Internet access to the institution's library resources.
- *Technical support:* Throughout the e-learning course, ensure that students have access to 24/7 technical support personnel. If 24/7 hours are not possible, provide at least extended hours beyond the usual 9am-5pm working hours.
- *Student ICT training:* Provide students ICT practice sessions prior to the beginning of the course.
- *E-learning orientation:* Conduct an orientation program to introduce students to the process of learning at a distance, including the use of technologies for learning.

C. Faculty Support

Guidelines related to supporting faculty in the design and implementations of e-learning courses include the following:

- *Technical support*: Ensure that faculty is effectively supported in using the course management system.
- *e-learning platform & pedagogy training*: Provide professional development opportunities that cover e-learning pedagogy, the appropriate use of ICT tools, and technical expertise.

D. Feedback

Guidelines concerning feedback matters in e-learning include the following:

- *Faculty feedback*: Set expectations regarding deadlines for learner assignment completion. Provide constructive feedback to student assignments and questions in a timely manner.

E. Institutional Support

- *Reliability of the e-learning delivery system*: Ensure that the reliability of the technology delivery system is failsafe. Provide for a robust and scalable technical infrastructure. Allocate the necessary resources to maintain and upgrade existing infrastructure.
- *Alignment with institution's mission*: Explain the role of e-learning in the mission statement of the institution. However, decisions about particular courses should be made at the departmental or interdepartmental level.
- *Periodic review of e-learning*: Do routine review and evaluation for evidence of e-learning success or identify areas for improvement. Elements to be reviewed include course content, learning objectives, student achievement, operational procedures, customer satisfaction, and costs.
- *Institution reward for faculty*: Institution should accord positive reinforcement such as promotion, tenure and special funding for faculty to design and implement e-learning courses.

F. Academic Integrity in e-Learning

Guidelines concerning the means to ensure academic integrity in e-learning courses include the following. These guidelines are mostly taken from the *Best Practice Strategies to Promote Academic Integrity in Online Education* document.

- *Academic honesty information*: Define academic integrity and cheating and explain what is considered dishonest behavior. Teach the proper use of citations. Require learners to read and sign an agreement to the institution's integrity policy. Describe the repercussions for academic dishonesty.
- *Anti cheating measures*: Include a lesson on avoiding plagiarism. Use a plagiarism detection software. Keep learners' papers for reference. Inform learners that the instructor has the right to require alternative forms or locations of assessments such as proctoring. Randomize the order of answers for multiple choice questions. Change test items and assignment topics each semester.
- *Electronic security measures*: Secure learner login and password to access assignments and assessments.

At this juncture, it is perhaps worthwhile to mention several main disagreements among guidelines that we found

in our analysis. First, there is disagreement whether the various learning styles of students should be considered at all during the e-learning course delivery. The *Quality Guidelines for Technology-Assisted Distance Learning*, for example, advocates that instructors should use approaches that accommodate students' different learning styles. However, this was rejected by the *Quality On the Line: Benchmarks for Success in Internet-based Distance Education*. The latter document reported that many faculty felt the notion of student learning styles is often platitudes with little empirical basis. Moreover, the effort of attempting to accommodate different learning style is very difficult to accomplish in actual practice.

Second, there is disagreement whether faculty should be rewarded for using e-learning courses. Two documents, *Distance Education: Guidelines for Good Practice* and *Guiding Principles for Distance Learning*, recommend that faculty who design and implement e-learning courses be given recognition and reward including special funding. However, such a recommendation was not considered important by the *Quality On the Line: Benchmarks for Success in Internet-based Distance Education* document. This is mainly due to the perception that e-learning courses should be treated no differently than classroom-based face-to-face teaching.

Third, there is also disagreement whether e-learning courses should emphasize the use of collaboration among students. Student collaboration is different than student interaction. The former typically requires student to work together to produce a common group artifact, while the latter may merely entail student asking each other questions, and responding to these questions, without necessary working together to create a product. At this moment, there is no clear consensus among the documents that a requirement for students to collaborate should be made mandatory. Instead, the *Quality On the Line: Benchmarks for Success in Internet-based Distance Education* document suggests that the decision for collaborative work should be based on several factors including the subject matter, course level, content, and maturity of the students.

VI. LIMITATIONS OF THE POLICY GUIDELINES

Not all the e-learning policy guidelines provided by the professional organizations are specific enough to inform instructors, learners or institutions the exact performance standards that are expected of them. Due to space limitations, we highlight just three examples here.

- Consider using smaller class size to encourage a high degree of student-student interactivity [7]. However, essential questions (e.g., how small a class should be, or what is a possible optimum size to promote a high degree of student interactions), are not answered. Furthermore, we argue that class size may not be such a critical factor in online interactions or discussions. What may be more important is the *discussion* group size.
- Periodic review for evidence of e-learning success or to identify areas for improvement. Questions that could guide instructors (e.g., what exactly do we evaluate) are not addressed.

- Use of media for e-learning. We found that the guidelines concerning the use of media tend to be very limited in scope and depth. Other than recommending that the e-learning materials be navigable, complemented by graphics rather than be distracted by them, and available in text-only interface option for non-graphical browsers, we do not find any more suggestions. What about the use of audio, video, or animation? Under what situation should they be used?

VII. CONCLUSION

In this paper nine documents on designing and implementing e-learning from various professional organizations were reviewed. From our findings, the documents seem to converge on 11 key areas (see Table 2). This suggests that instructors should consider making these 11 key areas mandatory in their design and implementation of e-learning courses.

However, there are several main disagreements and vagueness in the guidelines provided. In this Conclusion section, we suggest several strategies that could help overcome the fuzziness related to maximizing student-student interaction, and the review of e-learning courses.

To maximize the opportunities for student-student interaction we propose three strategies based on our own research as well as other scholars' work:

- Implement the use of ground rule that require students to reply within 24-48 hours [15]. Such a rule helps ensure a consistent, ongoing discussion. Studies have found that replies within 24 hours had a probability (.26 to .68) of eliciting additional responses compared to responses posted after a day of inactivity (.18 to .41) [16].
- Nurture student familiarity early in the course. In two of our studies, we found that most students chose to respond to peers whom they were familiar with [15]. Therefore, since establishing familiarity is important, instructors should focus their attention on helping students know one another prior to any interaction/discussion activity, instead of asking students to do the actual activity immediately, especially if the students are new to one another.
- Use a discussion group size of about 10 participants. We found that groups of about 10 participants achieved significantly more number of higher knowledge construction levels [15]. Smaller groups have access to fewer perspectives compared to groups of 10. As a result, groups of 10 have greater opportunity to identify the differences between perspectives, to consider various opinions, and to negotiate the various meanings of, compared to smaller groups. Too large a group, however, may encourage the problem of lurking or free riding on the part of the participants.

To help review the impact of e-learning courses, we suggest that educators or academic leaders look into the three different levels [17]: macro-level, referring to the evaluation of entire online/blended programs; (b) meso-level, referring to the evaluation of individual online/blended courses; and (c) micro-level evaluation, referring to the evaluation of individual online/blended student's learning.

In this paper, we synthesize the literature about the various policy guidelines to design and implement e-learning courses. We hope that the various guidelines discussed here be useful to instructors who are planning to take the e-learning route. We also hope that other researchers would join in similar efforts to study ways that could help further enhance the quality of e-learning courses.

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