Designing and Developing Online and Distance Courses

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INTRODUCTION

The fifth annual report on online education in the United States revealed that nearly 3.5 million college students enrolled in at least one online course in Fall 2006 (Allen & Seaman, 2007). The Peak Group estimates 1 million K-12 online course enrollments in 2007 (NACOL, 2007). In addition, online courses are continuing to expand in terms of both numeric enrollment records and institutions' long-term strategies for meeting the needs of online courses. Because of the common use of computers and information technologies in education, especially the Web, distance courses and online courses have become two interchangeable terms. With the rapid growth of online courses and online programs, how to design and develop effective online or distance courses has attracted increasing attention from all sectors of education, corporate, and industry.

Online teaching and learning is different from traditional teaching and learning (Harmon & Jones, 2001). In addition, many online course designers and developers, such as the majority of faculty members in higher education, have little or no formal training in instructional design and learning theories (Perrin, 2004) and many of them will attempt to transfer traditional classroom teaching to online teaching (Johnson & Aragon, 2003a). Therefore, guidelines on how to design and develop online and distance courses are needed.

BACKGROUND

There has been a wealth of writings on how to design and deliver online and distance courses. The literature related to online and distance course design can be roughly classified into three categories: 1) models and frameworks for online and distance course design; 2) critical factors impacting students' online learning; and 3) practical guidelines for how to design online and distance courses.

The first category consists of instructional design models and frameworks for online course designers. These models and frameworks usually contain a combination of a set of instructional design principles for analyzing the content and learners (Johnson & Arogan, 2003b; Swan, Shea, Fredericksen, Pickett, & Pelz, 2000), promoting online interaction and a sense of social presence (Moallem, 2003; Northrup, 2001). Online interaction refers to the dialogue(s) and communication between and/or among physically-separated participants (learners and instructors) in online learning environments with the support of educational technology (Moore, 1989). Social presence is viewed as directly impacting the development of community and collaboration in online courses (Swan, Garrison & Richardson, in press) and is defined as "the degree to which a person is perceived as 'real' in mediated communication" (Gunawardena & Zittle, 1997, p. 8). More broadly, a sense of presence refers to a sense of "being in and belonging in" (Shin, 2002, p. 22) a course and a feeling of "involvement, warmth, and immediacy" (Danchak, Walther & Swan, 2001, p 1) from physically-separated participants while interacting with each other in online learning environments. Generally speaking, this category provides procedures and steps in the process of online course design and strategies for integrating effective instructional principles and learning theories into the course design. However, most of the models require instructional design knowledge background to comprehend and implement.

The second category consists of studies that provide an overview of critical factors impacting students' learning and learning experiences in online learning environments. Major critical factors are online interaction (Moore, 1989), social presence (Shin, 2002; Tu, 2000), online community building (Stepich & Ertmer,

2003), and the role of online instructors (Berge, 1995). Other factors such as access to computer and Internet and learner support and service are also important for a successful online course (Fresen, 2005; Sloan-C, 2002). In summary, the second category provides a knowledge base, which tells what online course designers should focus on and why they should focus on them. However, because there are so many factors that impact students' learning in an online course and each instructor or course designer will have his or her own context, instructors or course designers still need to make their own decisions as which factors they should focus on and how to achieve the focus.

The third category consists of practical guidelines for online course development. These guidelines were either based on research or anecdotal information or practioners' experiences. With the prevalence of online courses, some states, organizations, and institutions have created their own general guidelines for online course development. For example, the Indiana Higher Education Telecommunication System (IHETS) (http://www.ihets.org) lists the Faculty Benchmarks and Principles for online course design. The Minnesota State University Mankato (http://www.mnsu.edu) posts its own guidelines for online course development. In reviewing these guidelines, we found that most guidelines are too general to provide solutions for real course design challenges. In addition, most guidelines are for the purpose of evaluation rather than directing the design process.

In addition to the difference between online and traditional teaching and the lack of appropriate instructional background for many online course instructors and designers, there is a lack of content-based instructional or pedagogical support for teaching at a distance (Yang & Richardson, 2005). This is particularly true for online course instructors and designers in sciences, technology, and engineering. As online and distance education has penetrated into different programs and disciplines, applicable guidelines, which do not require extensive background of instructional design background, are needed to guide the course design and development in order to capture the unique characteristics of the Web or Internet (Gibson, 1996). Thus, the purpose of this article is to provide four guiding design principles, which can be followed across disciplines, from the perspective of distance and online education.

STEPS TO DESIGN ONLINE AND DISTANCE COURSES

Who will be taught? To design and develop an effective distance course, instructors and course designers have to know first who the course will be designed for. Knowing as much as possible who your students will be is critical because this will help you decide not only how you are going to organize different teaching and learning activities but also what kind of supplemental resources and web sites you need to provide (Dick, Carey & Carey, 2000). In fact, distance education provides the potential of more opportunities for more knowledge seekers because it has no fixed time and space requirements. Therefore, online and distance courses may have the most varied students in terms of entry level knowledge, academic background and preparation, technology skills, learning styles or preferences, motivation, ages, ethnicities, culture, and so on. All these students' elements will impact their learning and learning experiences in online and distance courses. For example, students with or without advanced mathematics background or preparation (e.g., calculus or linear algebra) may take an introductory statistic course together. This is why online course instructors and designers have to collect students' information before they start to design and develop an online or distance course in order to accommodate different students' needs.

There are different ways to collect such students' or potential students' information. First, if similar courses were offered in the past, then instructors or course designers can refer to students enrolled in those courses. Instructors and course designers can also administer an informal survey to gather some potential students' information.

What will be taught? A second important step online instructors and course designers have to go through is to analyze the subject content and learning objectives they want to achieve. One could speculate that different major critical factors (e.g., online interaction and sense of presence), which impact learning and motivation to learn, may behave differently in online versus traditional environments and may also behave differently across disciplines as learning tasks (Bloom, 1984) differ. For example, different learning tasks in disciplines as diverse as Engineering, Business, and Education may call for different online instructional methods or strategies (Feisel et al., 2002) to achieve appropriate