1

Introduction to Teaching and Learning in Online Environments

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INTRODUCTION

This chapter explores the basic concepts and the current landscape of teaching and learning in online environments.

DEFINITION OF TERMS

Distance education is the delivery of content using technology (Seaman, Allen, & Seaman, 2018). Learning takes place when the learner and the teacher are geographically separated (Layton, 2017). The Sloan Consortium (Allen & Seaman, 2018) defines online learning in terms of the proportion of content delivered online. When 80% or more of the content is online, it is an online course. When 30% to 79% is online, the course is hybrid or blended. When 1% to 29% of the content is online, the course is web facilitated, and when no part of the course is online, it is a traditional class. Web-based learning means using the World Wide Web as the teaching and learning strategy. There is a reduction in time and space barriers to learning, and learning can take place anytime and anywhere.

HISTORICAL PERSPECTIVE OF TEACHING WITH TECHNOLOGY

The practice of teaching and learning at a distance is not new to education. Paper-based distance curricula in which the learner enrolled in a university and received learning packages in the mail have been available

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for some time. Early correspondence courses included interaction with the instructor through telephone calls and mail. Television also provided a medium for teaching and learning at a distance. Students in remote areas could use the television to obtain learning content. In the late 1960s, Schramm (1962) conducted studies that compared instructional television (ITV) with classroom instruction and summarized the results of more than 400 empirical studies. The findings of his research revealed no significant difference between learning from a television or in a classroom.

As distance education progressed from correspondence courses to online learning, opportunities for interpersonal interaction also increased. Videoconferencing made it possible for learners and faculty members to interact in real time. With the emergence of the Internet, particularly email and the World Wide Web, it became possible to promote high degrees of interaction using mainstream technology and cost-effective learning environments.

Following Schramm's (1962) conclusions that there was no significant difference in learning between the traditional classroom and televised learning, researchers compared classroom instruction to other methods of distance education. Numerous studies comparing traditional classroom-based instruction with technology-supported instruction have found no significant difference in critical educational variables, such as learning outcomes. Wetzel, Radtke, and Stern (1994) summarized the results of comparative studies conducted through the mid-1990s and found no significant differences in learning outcomes between the two learning environments. Thomas Russell (1998) at North Carolina State University studied hundreds of sources of written material about distance education and concluded that the learning outcomes of students in the traditional classroom are similar to those of students in distance technology classes. This was termed the *no-significant-differences phenomenon*.

The American Federation of Teachers and the National Education Association commissioned the Institute of Higher Education Policy to conduct a review of the current research on the effectiveness of distance education (Merisotis & Phipps, 1999). Merisotis and Phipps (1999) reviewed studies published in the 1990s and presented "What's the Difference: A Review of Contemporary Research on the Effectiveness of Distance Learning in Education." The findings were that online students tend to perform as effectively as traditional students. Online students had similar learning experiences and were as satisfied with their learning

experiences as were traditional classroom learners. The authors noted several shortcomings in the original research: lack of control for extraneous variables, lack of randomization of subjects, questionable validity and reliability of instruments used to measure student outcome and attitude, and no control for reactive effects, such as the impact of motivation and interest, because taking a course online is a novelty. The authors suggest that because of these shortcomings, the study was inconclusive. The question—what is the best way to teach students—prevailed (Merisotis & Phipps, 1999).

This led to the investigation of other variables, such as overall course satisfaction, course organization, and attainment of class objectives. Leasure, Davis, and Thievon (2000) looked at these variables in traditional lecture and distance-based instruction and reported no significant differences. Allen, Bourhis, Burrell, and Mabry (2002) conducted a meta-analysis and found no differences in satisfaction levels but found a slight preference for traditional face-to-face courses over distance-based education courses.

Researchers began to move beyond comparative studies and into other methods, such as discourse analysis and in-depth interviews. These methods have provided theoretical frameworks for practice. Billings (2000) suggested a model that focuses on the best practices that included technology, faculty, students, and outcomes. The author developed examples of evidence for the best practices in the model. For example, evidence for the technology best practice is infrastructure that includes access to the Internet, course management software, user support, and appropriate hardware and software.

While the guiding principles of quality practice were under development, universities were struggling with what Noble (1998) calls automation. According to Noble, "automation—the distribution of digitized course material online, without the participation of professors who develop such material—is often justified as an inevitable part of the new 'knowledge-based' society" (Noble, 1998, p. 1). The University of California at Los Angeles (UCLA) instituted the Instructional Enhancement Initiative, which mandated that all arts and sciences courses have a web-based delivery component. The university collaborated with private corporations and formed its own for-profit company (Noble, 1998). Noble says, "It is by no accident that the high-tech transformation of higher education is being initiated and implemented from the top down, either without any student and faculty involvement in the decision-making or

despite it" (Noble, 1998, p. 2). Although faculty members and students were opposed to the initiative, UCLA administrators continued with their plans (Noble, 1998). Further, Noble cites a reason for the decision to continue—the fear of being left behind in an academic trend he calls "the commercialism of higher education" (Noble, 1998). The function of the university is to teach, and universities are developing their courseware into marketable, sellable products in hopes of getting "a piece of the commercial action for their institutions or themselves, as vendors in their own right of software and content" (Noble, 1998, p. 5). The concern of faculty members is the quality of education. They view web-based instruction as commoditizing education, and the fear was that the quality of instruction will be compromised by automation.

Online courses and programs grew from 1999 to 2001 through grants awarded by the Department of Education called Learning Anytime Anywhere Partnerships (LAAP) for innovative distance learning projects that included partnerships. With funding from President Bill Clinton's Fund for the Improvement of Postsecondary Education, LAAP received $10 million in 1999, $23.3 million in 2000, and $30 million in 2001. Even with the phasing out of the program, the emphasis on partnerships in projects continued to grow (Carnevale, 2001).

What Is an Online Course?

The original purpose of the web was to communicate and share information. The development of the web dramatically changed the methods of communication and sharing information and ultimately changed the practice of education. Online learning is instructor moderated, instructor taught, and instructor mentored, yet student self-directed. An online learning environment can comprise large discussion groups, small group discussions, individual activities, group activities, and various levels of interaction between and among students, faculty, and the content. Content dissemination includes a variety of strategies, including video casting, audiotaping, films, and links to the web, charts, graphs, statistical data, formulas, and case studies. Interaction can be synchronous (real time) or asynchronous (delayed). Synchronous interaction means having a live discussion online, where the faculty facilitator and students can hear and/or see each other in real time. Asynchronous communication entails leaving messages at specific posting sites that others in the learning environment can read at their convenience, such as discussion boards, blogs, and wikis.

Online learning environments comprise individual courses, groups of courses, and entire programs. The degree of Internet use in a course ranges from supplementing classroom learning to courses/programs that are completely online. Online learners can attend traditional universities, such as Pennsylvania State University (www.worldcampus.psu.edu), or virtual universities, such as California Virtual University (www.cvc.edu). In addition to online courses and programs, online journals are available that focus on teaching and learning online, such as the *Online Learning Journal.* There are professional organizations that provide resources for online teaching and learning, such as EDUCAUSE (www.educause.edu) and the Online Learning Consortium (onlinelearningconsortium.org). Some courses can be taken online free of charge at websites such as Coursera (www.coursera.org).

Why Take a Course Online?

There are several reasons for taking a course online. One is that our students are digital natives. They grew up using smartphones, laptops, and tablets and viewing YouTube videos and playing games. Social media is an integral part of their communication and interactions. Online learning is an extension of day-to-day activities to learning activities. The second is the flexibility and pace of learning in online environments. Students can work, have families, continue with their home lives, and be able to learn anytime and anywhere. The third reason is the impact of technology on learning. Online learning environments allow for the use of technology to enhance learning that is creative with the ability to include learning strategies to meet differing learning styles.

There are both advantages and disadvantages to online learning. The advantages are:

- Accessible 24 hours a day and 7 days a week
- Accessible anywhere with Internet access
- Learning is student centered
- Access to resources and links on the Internet
- Opportunities for high-quality interactive dialogue

The disadvantages are:

- Need to be computer literate
- System failures

- Need hardware and software
- Learning style of student may not match online learning

Who Is Learning Online?

Student enrollment in distance learning classes has increased for the 14th year. This accounts for 15% of students taking only online courses and 17% of students taking some courses online. A recent meta-analysis by the U.S. Department of Education found that students perform better in online learning environments. A key contributor to success is the flexibility of learning online. The student can determine the time and place to learn (Seaman et al., 2018). Students think that online learning is as good as or better than traditional classroom learning (Schaffhauser, 2018).

Where Are Learners Learning?

Students are learning in fully online programs in which they take all the courses in the program online, in programs in which they take some courses online and some courses in traditional classrooms, and in blended courses in which some of the course is online and some is in a face-to-face setting.

Learning online also takes place in environments that are nontraditional. The foundational theory of education and the processes of teaching are the same in these settings as in traditional environments. What changes is the structure of the learning environment. A need for a change in structure stems in part from the cost of education and employment opportunities. About 60% of employment positions require education beyond high school (Young, 2018). Tuition is rising, and this cost can be a barrier to enrolling and graduating from a degree program. These have led to alternative structures in education. One is competency-based learning, which focuses on the mastery of academic and performance skills. Learning is personalized and individualized and self-paced and is evaluated through performance. The learner earns recognition or credit by performance that validates mastery. Descriptions of some of the alternative structures follow.

Coursera is an organization that offers quality online courses that are accessible and affordable.

MOOCs are massive open online courses. They are new pathways to higher education. Students register for an online course without

enrolling in a university or a program. MOOCs are accessible online and are cost-effective. MOOCs connect learners globally who learn and share in online environments. EdX is yet another platform that offers free courses but charges for certificates (Skiba, 2017).

Badges and microcredentials are indicators of achievement of learning. For example, EDUCAUSE awards badges when a learner completes a program.

Stackable degrees are certificate programs that when completed can be added to other certificates so that a degree program can be developed.

Who Is Teaching Online?

Although students are enrolling in online courses and administrators support online learning, faculty attitude of teaching and learning online has not significantly changed. About 9% of faculty educators surveyed by Inside Higher Ed (Jaschik & Lederman, 2014) strongly agreed that students have an equivalent learning experience online, and 83% responded that online courses are of a lower quality than traditional courses. About 33% responded that they have taught an online class.

How Do Students Learn?

Chickering and Ehrman (1996) used the American Association for Higher Education (AAHE) Principles for Good Practice to develop best practices to teach students in online environments and developed a paper called "Implementing the Seven Principles: Technology as Lever." The following points are the best practices and examples:

1. *Good practice encourages contact between students and faculty.* Students and faculty exchange thoughts and ideas more effectively and safely in online environments than in the traditional classroom. Communication becomes more intimate, protected, and connected online than in face-to-face interaction.
2. *Good practice develops reciprocity and cooperation among students.* Technology provides opportunities for interaction in online learning environments. Students can share their knowledge and experiences in small groups, in study groups, during group problem-solving exercises, and in activities related to learning content. For example, the learning content may be epidemiology and the epidemiologic triangle: the agent, the host, and the environment. Online students

can complete an assignment on the epidemiology of West Nile virus, describe how the infection occurs, and suggest strategies to prevent it from occurring.

3. *Good practice uses active learning techniques*.
   The technology included in online learning systems provides opportunity for active learning. For example, students in an online community health nursing course are given an exercise to assess a community. Student directions include obtaining census and vital statistics data. Students then view a windshield survey video (made by the faculty). The exercise is to use both of these sources of information to formulate a summary of the key points about the community. The group posts the summary in a public discussion forum for all groups to read.
4. *Good practice gives prompt feedback*.
   Technology provides many opportunities for feedback, both synchronous (real time) and asynchronous (time delayed) and via email. Defining "prompt" feedback in the course directions or in the syllabus enhances clarity. For example, the instructor might post the following message: "I will read all postings on the discussion board and post a comment to the group at the end of the week," or the faculty might post "I will answer all emails within 3 working days."
5. *Good practice emphasizes time on task*.
   Time is critical, and using time wisely is important. Online courses save the students commuting time and parking costs. Students can learn anywhere—at home, at work, or virtually anywhere there is an Internet connection. A rule of thumb to determine the number of hours a week that students will spend on an online course is to double or triple the number of course credits. For example, a student enrolled in a 3-credit course can expect to spend 6 to 9 hours each week working on the course.
6. *Good practice communicates high expectations*.
   Some students register for online courses because they think it will be easier than traditional courses. They soon find out that this is a fallacy. Clearly communicate expectations to students. If students are not performing at the expected level, the faculty should contact the student, describe observed behavior, and delineate expected behavior. For example, if the faculty reads a student post with comments like "I agree" or "Great idea," the faculty should contact this student. The message that "I have read your postings and see that in some you clearly express your ideas and use the literature to support your ideas, but in other postings your comments are less substantiated" or

"I read that you have excellent ideas and would like to see you share these more with your peers" is shared.

7. *Good practice respects diverse talents and ways of learning.* The advantage of online courses is the many resources available to accommodate a variety of learning styles. For example, for the visual learners, use PowerPoint, charts, and graphs. For audio learners, use podcasts. For readers, add notes. Links to YouTube videos and a plethora of websites can add value to the content.

Ten years after Chickering and Ehrman principles, Lewis and Abdul-Hamid (2006) updated the principles based on their quantitative study and suggested the following best practices. They are:

1. Foster interaction.
2. Provide feedback.
3. Facilitate learning.
4. Maintain enthusiasm and organization.

The first three (interaction, feedback, and active learning) remained as best practices over the years. Maintaining enthusiasm and organization is an additional best practice.

SUMMARY

Online learning environments have morphed into academia as acceptable methods for achieving academic goals in flexible and creative learning environments. Students are motivated and independent, and faculty members have changed roles from being the sage-on-the-stage (classroom teaching) to guides-on-the-side (online teaching). When considering the research findings over the past several decades along with societal changes and demand for accessible learning, it becomes evident that learning online is heading in a direction that will drive demand. As new generations grow up learning online, educators will continue to face the challenge of keeping students engaged through active learning and feedback that facilitates the learning process.

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