Instructional Delivery and Learning Outcomes in Distance Learning

Bosede Aworuwa
Texas A&M University - Texarkana, USA

Robert Owen
Texas A&M University - Texarkana, USA

INTRODUCTION

Distance learning describes a wide range of instructional-learning activities, instructional delivery modalities, and learner interactions characterized by some distance between the teacher and the learner, and mediated by a variety of technological tools (Schlosser & Simonson, 2002; Tiene & Ingram, 2001). Learners can interact with instruction at any time and in any place, such as the workplace, school, a community center, or in their homes (Presby, 2004; Simonson, Smaldino, Albright & Zvacek, 2003). The tools available for the delivery and access of learning materials contribute in large measure to the kind of experiences that learners have with distance learning.

Distance learning employs any different combination of telecommunication systems. These can include cable, satellite, two-way interactive fiber networks, desktop video conferencing, and the Internet. Components of online learning environments, such as a computer interface, provide access to data in variety of format (text, graphics, videos, or multimedia). Online communication tools facilitate student-student, student-teacher interaction. Course management software contains evaluation tools to assess and monitor students' progress, as well as tools to provide support to learners (Tiene & Ingram, 2001). Each combination of these technologies provides pedagogical opportunity or obstacle that can affect outcomes of learning. The technologies present the opportunity to deliver instruction in different modalities synchronously or asynchronously. Synchronous instruction and learning can take place through live face-to-face instruction, interactive broadcast media, and communication forums of the Internet. Asynchronously, instruction, and learning can take place through the World Wide Web and pre-recorded audio and video.

A QUASI-CONTINUUM OF DISTANCE LEARNING INSTRUCTIONAL MODELS AND LEARNING OUTCOMES

Instruction offered to distance learners today fall into a range of modalities that can be classified into a kind of continuum (for lack of better description). On one end of the continuum is the traditional face-to-face instruction delivered by a live instructor, including one delivered to students in other locations through distance media such as the interactive television. On the other end of the continuum is the completely *automated instruction* in which the machine takes the place of a live instructor to provide learners with dynamic interaction with course content. In between these two extremes are *hybrids* or blended models in which face-to-face instruction is combined with the use of various online tools. These include the information assistance model in which the Web is used as a placeholder for course syllabi and other class information; Web-assisted or Web-enhanced instruction in which some of the course activities are carried out with the aid of the online tools such as e-mail, discussion boards, and listservs; and full online instruction in which students' interaction with each other, course materials, and the instructor is totally through online means.

As we move from left to right of this continuum, certain educational outcomes might be lost or gained. For an insight into educational outcomes that might be lost or gained, the authors propose that educators begin to revisit some basic ideas of *cognitive* and

affective domains of educational outcomes that have been discussed for many years, but seem to have fallen out of discussion in recent times. We do not assert that these ideas are the "correct" ones, but that they might be a starting point to a discussion of educational outcomes in the era of distance learning instructional delivery. Although some researchers have taken issue with the idea of a hierarchical structure of educational outcomes, the present authors propose that thinking in terms of a hierarchical structure to learning, where there can be "higher-order" and "lower-order" outcomes, might be a useful way to begin thinking about what might be gained or lost as we change the structure of course delivery.

Cognitive and Affective Domains as Hierarchies of Learning Outcomes

The most well known of these has been Taxonomies of Educational Objectives (A Committee of College and University Examiners, 1956). Part I of the taxonomies—also known as the "Bloom's Taxonomy" (after Benjamin Bloom, one of the authors of the taxonomy)—refers to a set of cognitive learning objectives. The idea of a taxonomy implies that these objectives lie on a continuous, cumulative, hierarchical continuum, with the major steps in the hierarchy being knowledge, comprehension, application, analysis, synthesis, and evaluation. Even though the idea of an ordered, cumulative hierarchy has resulted in much controversy and criticism with regard to validity, it has had enough appeal, at least on face validity, to form the basis of discussion for the outcomes of learning in many educational settings (e.g., Clabaugh, Forges & Clabaugh 1995; Green, 1997; Stearns & Crespy, 1995; Furst, 1981).

Part II of the taxonomies of educational objectives (Krathwohl, Bloom & Masia, 1964), written several years later and largely ignored in the literature, focuses on the "affective domain" of learning consisting of receiving (attending), responding, valuing, organization, and characterization by a value. As with Bloom's Taxonomy (of the *cognitive outcomes of learning*), the affective taxonomy proposes a cumulative, linear ordering that could be subjected to the same philosophical arguments regarding validity. Indeed, the Part II authors themselves raised this issue in noting that it is difficult to place some of the sub-elements above or below others. Nonetheless, the taxonomy of the *affective outcomes of learning,* like the cognitive taxonomy, has value in evoking discussion of such issues in learning and how it could function in a hierarchical manner, regardless of its validity as a model in the whole.

As shown in Table 1, while outcomes in both the cognitive and affective domains are possible with each delivery mode on the continuum, there is always a trade off in what may be gained or lost. When moving from left to right of the continuum, certain instructional delivery modes tend to promote higher-order or lower-order learning outcomes in the cognitive and affective domains. With an online discussion forum that is part of Web-enhanced instruction, for example, it is possible to teach to the higher end of cognitive learning outcomes such as analysis, synthesis, and evaluation. Asynchronous communication (through discussion forum) can engage learners in critical, creative, and complex thinking, depending on the topic and the nature of the task or problem posed by the instructor. Asking learners to assess messages by other participants fosters evaluative skills (Jonassen, 2000), which is at the top end of Bloom's Taxonomy. However, nothing in an *automated online environment* can replicate the instant smile or nod of a professor indicating approval or encouragement, or an inflection in his or her voice emphasizing the importance of the topic (affective domain).

The present authors argue that it is possible to mimic the richness of a traditional in-class experience when we move to online course applications, but we also argue that we need to know exactly what may be lost (or gained) with respect to educational outcomes. If we know what the educational outcomes of a dynamic class discussion are, then we might be able to program these outcomes into an instructional material posted online for mass distribution. The programming may be expensive in up-front costs, but the trade-off is that we can provide time and place utility to students, and can distribute this pre-programmed instruction across a large number of students for a very long time.

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