Chapter 19
Structure and Change in E-learning: An Ecological Perspective

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ABSTRACT

This chapter provides a view of e-learning from the perspective of ecological systems with nested levels of structure, organizing principles, and emergent properties for use in accomplishing at least three goals: to evaluate emergent patterns in the development of e-learning; to assess current threats and enablers at any level; and to plan for successful growth within determinate niches. E-learning is structured into four levels: the International/National level; the Institutional level; the Class/Community level; and the Learning Object level. Within each level, and between them, there are organizing principles of integration and differentiation contributing to their stability or decay. Those that the authors have identified include: transactional distance in delivery of learning; industrialization of learning functions; functional equivalence of learning experiences; virtualization of knowledge; technological convergence of learning media; developmental growth of learning systems; and requisite variety in learning strategies. For administrators, practitioners, and faculty whose institutions have an identity within the ecology, the authors introduce the GEMS process to better control the Goals, Engagement, Management and Support of system elements between and across their levels of e-learning structures. Both the broad ecological view upon e-learning -and the specific tools of GEMS useful within it- are applied to existing structures in e-learning, such as open courseware and course management systems, and to e-learning innovations, such as mobile learning, meta-worlds, and virtual gaming.

INTRODUCTION

E-learning is not just the dissemination of instruction through electronic means; it has the potential to transform education, deeply changing it at all levels, bringing both benefits and challenges on an international scale. Changes have been so rapid in even the past few years that the concept of e-learning, representing all forms of electronic
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learning, has developed to get beyond the concept of ‘online learning’ with its implied metaphor of desktop access. E-learning, and the myriad forms of distributed learning that emerge from it, are transforming education with an impact not felt since the development of movable type, some 500 years ago. Just as printing made learning accessible to more than a select few, so does e-learning make learning accessible in an individually defined and virtualized time and space. Going beyond ecology as a metaphor (Garrison and Anderson, 2003; Henning, 2005), this chapter presents ecology as a viable tool for understanding the growth and usefulness of e-learning, providing guidelines for effective practice through the introduction of a practitioner’s tool called GEMS (i.e., Goals, Engagement, Management and Support). The advantages of the ecological approach appear to be twofold: first, enhancing a broad understanding of e-learning across various environments and deeply within specific niches; and second, providing a useful tool to generate testable hypotheses.

BACKGROUND

E-learning is shorthand for electronic learning, and the universal distribution system for it is the World Wide Web. An analysis of two cases below elucidates the ecological relationships created by e-learning, complementing other well-known views of distance learning that capitalize on the systems perspective (Moore and Kearsley, 2005), technology (Spector et al, 2007) and virtual class (Laurillard, 1993).

The first case is MIT OpenCourseWare (MIT, 2009), initiated in 2001 and joined by many other outstanding higher education institutions. As of 2009, more than 1,800 courses are published on the MIT site, while hundreds more are published by associated institutions elsewhere. Faculty members create the content, a virtualized distribution system disseminates their intellectual products, and millions of users in several languages benefit from this encapsulated knowledge for many purposes, some not foreseen when the system was established. Translations of the courses are disseminated in Chinese, Spanish, Portuguese, Thai and Persian, with most users from Asia. Several subsidiary institutions run fully online programs based on OCW. Because this is a nonprofit initiative, there is very little exchange of money in the chain of transactions that go from the creators to the end users, further encouraging the distribution of the courseware. Faculty members as content producers and students as consumers are linked by many intermediate elements, including instructional technologists, virtualized distribution systems, connected institutions in North America and abroad, translators, and local curriculum organizers. Their joint efforts allow millions of users in several languages to use knowledge encapsulated in courses in multivariate ways. This loosely-coupled system is without a central command, with every associated organization having its own goals and clients. Whatever happens in one organization, however, has the potential of influencing others. Several factors influence the growth of this enormous array of organizations: the existence of the common environment of the web; the expectations generated by sharing first-rate knowledge; the myriad relationships created between creators and consumers; and the progressive diversification of programs based on OCW content.

The second case is the University Of Phoenix (UOP), a well-known for-profit institution with more than 180,000 students in the United States and beyond. This university contracts hundreds of adjunct faculty, usually with “real world” experience in their fields. It uses a proprietary course management system (CMS) with tools enhanced for dialogue between instructors and students, and for carrying out teamwork among students in fully online or, less often, face-to-face sessions. UOP courses offer a variety of learning experiences such as electronic assignments, virtual organizations, teamwork, tutorials, peer feedback, and
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