Chapter 2.2
E–Learning Environment

Mizue Kayama
Senshu University, Japan

Toshio Okamoto
University of Electro-Communications, Japan

OVERVIEW OF E-LEARNING

Nowadays, the concept/system of *e-learning* (or *eLearning*) is widespread with the advent and prevalence of the Internet. Via the Internet, people can communicate with each other at anytime and from anywhere. People can also share, rebuild, stock, and reuse various kinds of information. Here, it is clear that e-learning gets citizenship in the educational society instead of CAI (computer-assisted instruction) and CMI (computer-managed instruction). As a response to society's advance, it is necessary to construct a new learning ecology, such as a learning organization or a learning community. To date, the need for an understanding of e-learning issues has not been met by a coherent set of principles for examining past work and plotting fruitful directions. Obviously, it would be difficult to document the many seeds sown now.

The e-learning environment is cataloged as follows (Okamoto, 2000):

- Individual learning environment with learning materials
- Group learning/collaborative learning environment with some shared tools/applications
- Classroom learning (lecturing)

This learning ecology has the mixed mode of either synchronous or asynchronous by using any teaching/learning contents and audio/visual devices, such as videoconference and other communications tools.

e-Learning is a learning/education/training style that uses information technologies. In the past, this type of learning/education/training was called various names, like "distance learning," "distance education," "cyber learning," "virtual learning," "Web-based training (WBT)," "Web-based learning (WBL)," "online learning," and so on. Nowadays, e-learning is innovated by using the latest information technologies, including WWW technology for e-learning course deliv-

ery, movie/speech compression technology for e-learning content production, and the learning technology standards (SC36, 2004), like LOM (learning object metadata), SCORM (sharable content object reference model), and collaborative technology, for keeping the interoperability of e-learning systems/contents/courses.

The main advantages of e-learning are, as is well known, from "to any place, at any time" attributes. Often, the free education aspect also appears, although much of the educational software offered today is not free, and many educational institutions offer e-learning programs at a price. Plain, text-based course materials are not enough anymore. The recent increases in bandwidth made more avenues of expression possible, images on the Internet are commonplace, soundtracks and videos are used with growing frequency, and other (multi- and mixed) media types evolved (animation, simulation, collaboration, etc.).

Before now, based on learner modeling, adaptation of teaching strategies and intelligent user adaptation in intelligent tutoring system (ITS) were developed. More recently, the field of adaptive hypermedia (De Bra et al., 1999) emerged, at the crossroads of hypertext/hypermedia and user modeling. Adaptive presentation of the educational material can mean one or more of the following: providing prerequisite, additional, or comparative explanations; conditionally including fragments and stretch-text; providing explanation variants; reordering information; etc. Adaptive navigation support can mean one or more of the following: direct guidance, sorting of links, links annotation (Brusilovsky, 1999), link hiding, link disabling, link removal, and map adaptation. Another main advantage of the Internet is that it favors collaborative work, which, in turn, favors learning (Dillenboug, 1999).

Moreover, we regard e-learning as meaningful self-development of an environment for lifelong learning. The recent technological changes are influencing our society, and people are asked to acquire new knowledge all the time. The oppor-tunities to take education with high quality have to be provided for all sorts of people who have different backgrounds, different abilities and knowledge, and various needs. E-Learning is one answer to the rigidity of the present Web-based courses and courseware.

THE DESIGN OF AN E-LEARNING ENVIRONMENT

When we think modality of computerization on education, it is generally categorized as follows:

1. Self-study entity through electronic information media-based materials and courseware
2. Learning entity, with electronic information media (e.g., computer) as learning/problem-solving/representing/knowledge-transmitting tools
3. Learning entity about information and communication technology, social problems, and so forth.
4. Computerizing entity of education

The relationships among those entities should be compensated for mutually, and an e-learning cycle can be developed. The idea here is in line with building the environment for "anybody" to learn something from "anywhere" and at "anytime" in the e-society. There are two purposes for this expansion: on one hand to enlarge the study opportunity, and on the other, to develop people's new competencies.

When we build an e-learning environment, at least three issues should be considered (Okamoto, 2000). The first is the pedagogical goal representing ability and knowledge as learning objectives. The second is the subject contents. The third is the learning forms, defined by seven learning environments:

5 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/learning-environment/27428

Related Content

Cost-Effectiveness
Saul Fisher (2009). *Encyclopedia of Distance Learning, Second Edition (pp. 498-504).*
www.irma-international.org/chapter/cost-effectiveness/11799

Interactive E-Learning
Claude Ghaouiand W.A. Janvier (2004). *International Journal of Distance Education Technologies (pp. 26-35).*
www.irma-international.org/article/interactive-learning/1634

An XML-Based Approach to Multimedia Software Engineering for Distance Learning
Timothy Arndt, Shi-Kuo Chang, Angela Guercioand Paolo Maresca (2003). *International Journal of Distance Education Technologies (pp. 40-62).*
www.irma-international.org/article/xml-based-approach-multimedia-software/1603

Supporting the Implementation of Online Learning
Daniel W. Surryand David C. Ensminger (2009). *Encyclopedia of Distance Learning, Second Edition (pp. 1994-1999).*
www.irma-international.org/chapter/supporting-implementation-online-learning/12021

Bluetooth Scatternet Using an Ad Hoc Bridge Node Routing Protocal for Outdoor Distance Education
Yao-Chung Chang, M. T. Lin, Han-Chieh Chaoand Jiann-Liang Chen (2007). *Future Directions in Distance Learning and Communication Technologies (pp. 76-93).*
www.irma-international.org/chapter/bluetooth-scatternet-using-hoc-bridge/18746