

Chapter II

Collaborative E-Learning System and E-Pedagogy: Learning Resource Infrastructure for Distributed Knowledge Sharing

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ABSTRACT

This chapter describes collaborative e-learning system and e-pedagogy with Learning Resource Infrastructure for distributed knowledge sharing. In the background section, we start to discuss the design of e-learning environment, collaborative learning and pedagogical framework, and pedagogical considerations of collaborative learning. Next, we introduce RAPSODY-EX that is a collaborative learning and knowledge management system, with meaning of RAPSODY-EX in learning resource infrastructure system, and knowledge market. Then the schema of RAPSODY-EX is described with these topics, agent's roles in Learning Resource Infrastructure, schema and functions of learning resource, collaborative memory, and function of RAPSODY-EX. In addition, we give examples of knowledge management in RAPSODY-EX. Finally, the standardization of collaborative technology in WG2, ISO/IEC-JTC/SC36, as a future trend, is portrayed.

INTRODUCTION

As a response to the society advance, it is necessary to construct a new learning ecology such as learning organization and 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 catalogued 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 and learning contents, audio-visual devices such as video-conference and communications tools.

E-Learning is a learning, education style using information technologies. In past days, this type of learning, education was called in varied names, such as “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. For instance, WWW technology for e-learning course delivery, movie and speech compression technology for e-learning contents production and the learning technology standards (SC36, 2004), like as learning object metadata (LOM), sharable content object reference model (SCORM) and collaborative technology, for keeping interoperability of e-learning systems.

The main advantages of e-learning are, as is well known, from and to any place, at any time attributes. Often, the free education aspect also

appears, although much of the offered educational software 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 very recent increases in bandwidth made more expression ways possible, images on the Internet are commonplace, sound tracks and videos are used with growing frequency, other (multi or mixed) media types evolved (animation, simulation, collaboration etc.).

Before now, based on learner modeling, adapting 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, conditional inclusion of fragments, 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, 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, e-learning finds a justification in the life-long learning concept. The recent technological changes are influencing our society, and each member of this society must acquire new knowledge all the time. Education has to be provided for all sorts of people. People who have different backgrounds, different knowledge levels and various cognitive styles are equally entitled to receive their education. An e-learning is one answer to the rigidity of the present Web-based courses and courseware.

The educational environment is changing from traditional classroom teaching ecology to the adaptive individual and collaborative learning one by development of Internet, mobile and wire-

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