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Chapter VI

Integrated E-Learning System and Its Practice

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ABSTRACT

In this chapter, we present an intelligent media oriented e-learning system. In this system, we have developed a LMS (Learning Management System), some learning control systems and some learning media, with a flexible framework. It is intended to provide a collaborative workplace to encourage interactions among lecturer/learners. Moreover, we propose an innovative educational method of a cooperative link between a university and an industry for higher education. We analyze these results and the problems we encountered, as well as offer constructive solutions. Furthermore, we have developed some intelligent media such as an analyzer/summarizer by the statistical natural language processing for data log of discussion process to encourage/aware discussion/negotiation between learners and an automatic reporting processor.

INTRODUCTION

One could never predict the explosive growth of the Internet. This growth is so close, tight and wide that everyone feels the power/magic of the information evolution. Education certainly is riding on its waves. The "Internet" is becoming the catch phrase in the world of school education, which makes distance education possible to anyone at anytime and from anywhere. As such, a new learning style called "e-learning" emerged under the new umbrella concept of "Learning Ecology," where the Internet raises the level of communications and collaborations among people via technology.

In retrospect, the traditional computer-assisted instruction (CAI) underpinning e-learning comprised early attempts to realize the environment of individual learning and assure a learner's fundamental competency. However, CAI was a closed system within a certain educational school. Therefore, it did not spread out widely/deeply into society. Nevertheless, it is quite valuable to review the various kinds of results taken from CAI research/development, such as authoring functions, learning support functions, supervising functions, delivering functions and so on.

Nowadays, the concept/system of e-learning is rapidly widespread with the advent and prevalence of the Internet. On one hand, via the Internet, people can communicate with each other at anytime and from anywhere. On the other hand, people can share, rebuild, stock and reuse the various kind of information. Here it is clear that e-learning gets the citizenship in the educational society instead of CAI. As a response to the social advance, it is necessary to construct a new learning society such as individual learning, learning organization and learning community. As mentioned above, we can say that the Internet is a kind of "Treasure Island" of educational resources worldwide, although it includes much harmful information.

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. However, it was not an accident that an early example in Japan was at the University of Electro-Communications, where my colleagues and I were the first, in the end of 1990s, to report on efforts to develop an e-learning system called RAPSODY. From our experience and a few other pioneering efforts in e-learning researches, we attempt to define/catalog the e-learning environment as follows:

- Individual learning environment with learning materials
- Group learning environment such as a collaborative learning
- Classroom learning (lecturing)

This learning ecology has the mixed mode of either synchronous or asynchronous by using any teaching/learning contents, audio/visual devices such as video-conference/meeting, and communications tools such as Chat/e-mail via the Internet.

In this chapter, we start by discussing the relationship between digital technologies and human learning. Secondly, we introduce the framework of "e-learning" in the Internet Era and propose a new learning ecology for broadband communication technologies. Then, we show the integrated e-learning system called RAPSODY, which has the learning management system (LMS) that consists of managing functions of learning materials/curriculum, learners' profile and information, learning log-data and guiding of learning objects. Moreover, we describe our educational practice/experience carried out between our university and companies as a cooperative linkage program. In addition, we introduce the architecture of the collaborative learning platform with knowledge management oriented shared memory in order to support participants' awareness and learning achievement. Finally, we propose the future direction of e-learning ecology and technologies in consideration of educational meanings.