Chapter 15
Stimulating Learners
Motivation in a Web-Based E-Learning System

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ABSTRACT
The authors of this chapter designed and implemented new functions such as: a new ranking function, automatic interface change function, vibration function, room light control function and sound emission function in order to improve the performance of their Web-based e-learning system. By using these new functions, the proposed e-learning system can increase learner's efficiency by stimulating learner’s motivation. The experimental results showed that the implemented system has better performance than previous systems.

INTRODUCTION
Distance learning is an alternative approach to provide qualified education and generate revenues. This approach is beneficial for both the students and the universities because many students that are unable to take face-to-face classes can study and get their degrees and also the universities can reduce the educational cost. During last decade, due to the opportunities provided by the Internet, more and more people are taking advantage of distance learning courses and enormous research efforts have
been dedicated to the development of distance learning systems. Also, many large projects such as Arizona Regents University, Blackboard and WebCT, CALAT Project (1998), CALsurf (2000), California Virtual University, Globewide Network Academy, IU Online and Distance Education, Kentucky Virtual Campus, MindEdge (Online Education), Michigan State University (Virtual University), Ohio Learning Network, Oregon’s One-Stop for Distance Education, Pennsylvania State University (World Campus), The Open University, The University of the Air, University of Florida Distance Learning, University of Illinois Online, University of Wisconsin-Platteville Distance Learning Center, WIDE University (1997), WebCAI (1999) have been established. However, in these systems the e-learning completion rate is low. One of the reasons is the low study desire when the learner studies learning materials. Therefore, it is very important to stimulate learner’s motivation during the study.

There are several Web-based e-learning systems that consider the learner’s capability and understanding (Kuwabara et al., 2000; Tamaki et al., 2000; Katayama et al., 1999; Nakabayashi et al., 1999). In Kuwabara et al. (2000) and Tamaki et al. (2000), the authors present the MESIA system. The system is able to keep the teacher operating cost low and to offer fine education by the cooperation of Computer Assisted Instruction (CAI) and teacher. The system is able to recognize the learners who need assistance, but its main purpose is to support the teacher, not the learners. In (Koyama et al., 2001; 2002) and (Barolli et al., 2004; 2005), we proposed and evaluated an agent based distance learning system to deliver appropriate studying materials to learners.

In order to offer a suitable and efficient study for learners, in our previous work (Barolli et al., 2006), we proposed a Web-based distance learning system in order to increase learner’s efficiency. The proposed system has three subsystems: learning subsystem, learner supporting subsystem and teacher supporting subsystem.

The purpose of this system is to increase the e-learning completion rate by stimulate learner’s motivation. We evaluated this system by several experiments and surveys and have shown that our previous system by using learner’s study history, encourage function, ranking function, and self-determination of the study materials can increase the learning efficiency. However, the previous system needed some other functions to improve the performance. For this reason, we designed and implemented new functions in our system such as: interface changing function, new ranking function and learner’s learning situation checking function.

This chapter is organized as follows. Firstly, we introduce the previous system structure. Next, we present the design and implementation of new functions. In following, we evaluate the proposed system. After that, we discuss and compare the functions of the proposed system with other e-learning systems. Finally, we give some conclusions and future work.

SYSTEM STRUCTURE

The system structure is shown in Figure 1. The proposed system has three subsystems: learning subsystem, learner supporting subsystem and teacher supporting subsystem. The learning subsystem includes the studying materials, examination exercises, and some functions to stimulate learner’s motivation. The learner supporting subsystem supports the learners when they have problems during the study. In this subsystem are implemented some interaction functions. The teacher supporting subsystem has some function to get the learning situation of learners and to give hints from the teacher to improve the learning efficiency.