

Chapter 8.3

New Functions for Stimulating Learners' Motivation in a Web-Based e-Learning System

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ABSTRACT

Due to the opportunities provided by the Internet, people are taking advantage of e-learning courses and during the last few years enormous research efforts have been dedicated to the development of e-learning systems. So far, many e-learning systems are proposed and used practically. However, in these systems the e-learning completion

rate is low. One of the reasons is the low study desire and motivation. In our previous work, we implemented an e-learning system that is able to increase the learning efficiency by stimulating learners' motivation. In this work, we designed and implemented new functions such as: interface changing function, new ranking function and learner's learning situation checking function to improve the system performance.

INTRODUCTION

Due to the opportunities provided by the Internet, more and more people are taking advantage of distance learning courses. During the last few years, enormous research efforts have been dedicated to the development of distance learning systems and 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, Tamaki, Yamada, Nakamura, Mistunaga, Konishi, & Amano, 2000; Tamaki, Kuwabara, Yamada, Nakamura, Mistunaga, Konishi, & Amano, 2000; Katayama & Kambayashi, 1999; Nakabayashi, Koike, Maruyama, Touhei, Fukuhara, & Nakamura, 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, Barolli, Tsuda, & Cheng, 2001; Koyama, Barolli,

Cheng, & Shiratori, 2002) and (Barolli & Koyama, 2004; Barolli, & Koyama, 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, Koyama, Durresi, & De Marco, 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 stimulating learners' 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.

In this article, we designed and implemented new functions in our system such as: interface changing function, new ranking function and learner's learning situation checking function.

The article 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.

OUR 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 sup-

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