Abstract

Adaptive educational hypermedia (AEH) is a learning tool that offers personalized and adaptation learning. This aims to adapt learning content and flow to student's needs. Adaptation and personalization in AEH are produced from interaction among the main models of AEH, including learner model, pedagogic model, domain model, adaptation model, and presentation model (interface to students). Domain model in AEH organizes knowledge space, which contains a network of concept or topics and hyperspace, in which adaptation and personalization are offered to students.

This final project has developed a knowledge map, which is a prototype tool for managing and visualizing domain model. There are two methods implemented. The first method is cognitively-oriented, by which concepts learned in a course are organized in a network of concepts. With this first method, student can get a visualization of the network and explore the concepts. The main drawback of this method is that students may get lost after doing deep exploration. The second method is mixed cognitively-oriented and pedagogically-oriented method. By using this method, a course is organized in a hirerachical structure of topics in various levels. By integrating the two methods, the lack of the cognitively-oriented method can be diminished. To guide students to reach certain topics, a greedy algorithm has been implemented.

To examine the performance of the two methods, a quantitative experiment has been conducted. It involved 30 undergradutate students in Computer Science, Telkom University. The parameters tested were impressions, learnability, and helpfulness. The experiments results show that the visualization of the mixed method is more impressive than the other method, as it helps students to understand learning materials more than that of the cognitively-oriented method. Furthermore, the mixed method is more learnable, as students find it easier to gain a whole view of learning materials organised by this method rather than those organised by the cognitively-oriented method. Finally, The experiment results show that the use of path-of-topic and friends-of-friends functions can assist students in finding suitable topics to be learned.

Keywords : Adaptive Educational Hypermedia, Cognitively-oriented, Mix pedagogic and cognitive oriented, E-Learning