Applying GIS to Develop a Web-Based Spatial-Person-Temporal History Educational System

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Abstract

Developing interactive history learning materials to facilitate historical thinking is one of the challenges in history teaching and learning. This study developed a web-based history educational system, which has used the acronym HES-SPATO (History Educational System based on SPATO), to increase the understandability of history learning materials. SPATO (Spatial, Person, Action/Attribute, and Temporal Object) was designed to integrate the indispensable elements of history events such as space, person, action/attribute, and time. HES-SPATO also applied temporal logic to reason the temporal relationships between history events. Furthermore, it employed the GIS concept of information layers to develop the student interface. The findings of the experiments indicated that the use of HES-SPATO was effective in enhancing students' history learning. The participants also showed positive attitudes toward the HES-SPATO system in terms of the perceived ease of use, perceived usefulness, attitude to use, intention to use, recall of web sites, and perceived usefulness of assistant tools. Although many functionalities have been added to the HES-SPATO system, there was no significant difference in system efficiency between HES-SPATO and the comparative system. These experimental results also guide the direction of future research.

Keyword：applications in subject areas, distance education and telelearning, human-computer interface, multimedia/hypermedia systems