Chapter XVII

From GeogDL to PAPER: The Evolution of an Educational Digital Library

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Abstract

This chapter traces the evolution of GeogDL, a digital library of geography examination resources. The initial version of the system was evaluated with a group of secondary school student design partners through the use of scenario-based design and claims analysis to identify areas of refinement. The findings from this study led to the development of a second-generation system with a redesigned user interface and a new module named PAPER (Personalized Adaptive Pathways for Examination Resources) that provides mock exams and personalized recommendations of examination questions. A second study involving teacher design partners generated positive feedback that generally concurred with the goals and features of PAPER. Implications for the future development of GeogDL are also discussed in the context of these studies.
Introduction

Students in Singapore undergo four or five years of secondary-level education after which they take the Singapore-Cambridge General Certificate of Education “Ordinary” (GCE “O”) Level examination. This is an annual national examination covering a variety of subjects such as mathematics, the sciences, and humanities, among others. Students are then admitted to various higher-level educational institutions, such as junior colleges and polytechnics, depending on the results obtained.

The learning of geography at the secondary-level is predominantly textbook-based supplemented with resources such as Web sites, CD-ROMs, and physical models. In addition, a popular approach to examination revision involves students working on past-year GCE “O” level geography examination questions and perusing their solutions. With these, students are able to see examples of the types of questions typically covered in the geography examination, look at possible solutions, judge the relative importance of certain topics, and even spot “trends” in the types of questions asked.

Though pedagogically debatable, past-year examination solutions when properly used with existing teaching materials can be a useful educational resource. For example, teachers could first author acceptable solutions and supplement them with related topics for students to explore. The GeogDL project (Chua, Goh, Lim, Liu, & Ang, 2002) adopts this approach to geography education through a Web-based digital library application containing past-year examination questions and solutions supplemented with additional geographical content.

This chapter describes GeogDL, its usage, architecture and evolution through two studies involving system developers, design partners and usability-trained evaluators. The chapter concludes with findings and implications for education-oriented digital libraries.

GeogDL: Initial Design

The first version of GeogDL was built above G-Portal (Lim et al., 2002), a digital library providing services over geospatial Web content. Past-year examination questions are created as separate G-Portal projects. Each project consists of Web resources such as solutions and related supplementary material for further exploration. Resources may be further organized into layers depending on the needs of the teacher.
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