Using On-Line Museum Exhibits in Education

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Abstract. How well do virtual museums (i.e., those with Web-based exhibits and Web accessible databases), support educational uses at varying levels of knowledge acquisition? Teachers' and students' activity logs and responses to utility surveys will be used to address this question, and to make useful recommendations to the museum Web-development community.

Background:

In 1969, E.Everett wrote that "Computerized information systems that encompass the full spectrum of museum resources will create the opportunity of restructuring the museum environment itself. … [and museums] must be prepared to … marshal and disseminate information pertaining to [their] collections." Since the advent of the Internet, museums have been placing informational materials on the Web at a current rate of nearly 1 per day (Bowen, 2005). One question is: is this very large digital information resource being used effectively, particularly in our education systems? Typical educational activities range from reading through answering questions, problem solving, gathering specific assigned information (i.e., project work) or *free-choice learning* (Haley Goldman and Dierking, 2005). The emphasis on different activities is set by the knowledge level of the student. Alexander (2000; 2003) describes learning stages in which initial *acclimation* to a discipline is characterized by the use of "surface-level strategies" and later *competence* is associated with both surface and "deep processing strategies" like posing questions. Our question is how well do virtual museums support these activities?

Museums are a known source of quality educational materials, often accessed through field trips. These activities can be extended into the virtual world. For example, students can explore the tombs at the Valley of the Kings in Egypt at http://www.thebanmappingproject.com/ or they can gather information about some topic, such as *whales* by visiting (some of) the 2.3 million sites found by Google.com

(Jan.13, '06, search string: *whale museum*). Although many museum sites include a "teachers" page, most of the information given is based on interaction with the physical museum. This leaves the question of how can/does a teacher best include the digital material in the curriculum?

Virtual museum materials can be classified according to their support for learning activities (Nordbotten, 2005). (See Table 1). This classification can be fruitful as a basis to test Web-exhibit utility within formal education environments.

Table 1. Museum Exhibit Type to Educational Activity

Activity level	Museum's Web Information	User's Educational Task
1	**Museum ⇒ user** Museum-defined exhibit: information dissemination	Knowledge Acquisition (e.g., reading)
2 & 3	**Museum ⇔ user** Museum-defined, interactive exhibit: (e.g., games, simulations)	Developing Competence Active learning: (e.g., problem solving, experimenting, Querying or hypothesizing)
4	**Museum(s) ⇐ user** Museum database/archive User-defined information gathering	Knowledge Development Assigned and Free-choice learning

Our project is focused on testing the above questions. Our method is to use a laboratory setting for a set of experiments with the following framework:

1. A set of sites for each exhibit category selected from award winning sites from the "Best of the Web" http://www.archimuse.com/mw2006/best/index.html
2. User subjects from 2 categories – teacher-in-training and student
3. An information task set for each case – 2*3 cases

Data collection includes task performance with action log and a follow-up 'utility' survey to determine teachers' and students' perceptions of the virtual museum resources. We believe that this study will provide useful recommendations to the museum Web-site development community.

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