

## Global Digital Museum (6) Prototype Evaluation

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### 1. Introduction

The *Global Digital Museum (GDM)* is a virtual museum on the Internet which provides 1) global search of museum contents of multimedia collections across all the participant museums; and 2) user-created collections with multiple annotations and other communication tools [1]. Intended for use by middle school students and teachers, this virtual museum is designed to present the concept and framework of a museum environment which enables users to have access to artifacts, communicate with others users, engage in activities and create and share their own museum collections [2]. We implemented a prototype of GDM, and performed the evaluation of the prototype concentrating on four areas of the prototype: functionality, user interface, contents, and performance. This paper describes the results of the evaluation and analysis of the results.

### 2. GDM Prototype System

GDM is a single and federated virtual global museum and classroom. In the cyberspace of GDM, users can search and access multimedia contents of museums in a single easy user interface. The user can also create their own collections and add annotations to the collections interactively. The GDM is based on distributed server architecture [3], and the contents are stored in the hyper-link database at each of the museum sites [4]. Users can access the contents through one of the GDM servers by using Web browser. Figure 1 shows the configuration of the prototype for evaluation. The GDM servers were located at National Museum of Ethnology in Osaka, Japan, and The British Museum in London, UK. The museum experts in the two museums created the contents so that each museum provides the contents for the same topics, such as Mongolian and Aztec cultures. The multimedia collections amount to 296 text, 374 images, three sound and one video data. Also included in the contents are 63 *stories*, i.e. textbooks for K-12 users, which are composed of the multimedia collections.

### 3. Evaluation

The prototype of GDM was evaluated by forty-six users including school teachers, ethnology researchers, museum curators and museum staff of the National Museum of Ethnology and the British Museum. Fifty-five percent are female. Half are from Japan, 39% are from the US, and the remainders are from the UK. Thirty percent are students, 23% are teachers, and another 23% are museum staff members. The remainders are researchers, office staff members or librarians. The majority of reviewers were age 29-39. Reviewers took their time looking at GDM, learning its

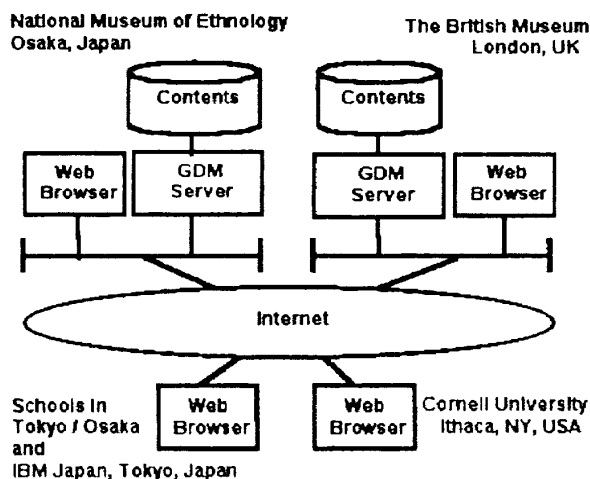


Figure 1: Configuration of GDM prototype

functions along with a scenario of the usage, and responding to a survey. The survey includes 1-5 scale rating items on selection of images, search capability, speed of search, quality of small images, quality of large images, quality of data about the image, usefulness of the data, ease of system use, and online help. Nearly half of all test users spent more than 30 minutes browsing the site, and eighty percent reviewed for more than 15 minutes.

Respondents rated the GDM prototype relatively high for its selection of images, search capability, quality of large images, and the quality and usefulness of data about the images. They were less enthusiastic for the speed of searches, quality of small images, ease of system use, and the on-line help available. In terms of their experience using the site, most respondents agreed that they had a clear sense of what information was available at the site. Just under half felt the site was clearly organized. Only 53% said it was easy to browse the collection. Respondents seemed relatively interested in the prototype. Some 70% said they found the site interesting, and 66% said they would like to spend more time looking at the collection on their own.

In the open-ended comments of the survey, testers were asked to consider various functions and attributes of the prototype or possibilities for improvement.

- *Interesting features*

The feature that was deemed most interesting was the user's ability to create and manipulate the content.

Other features that testers found interesting fell into the categories of multiple museum access, general interface (such as navigation, information organization), content and communication. A number of users liked the content of the GDM, especially the images. Two people mentioned that they thought the communication functions were the most interesting feature.

- *Problems*

The main problems that users identified with GDM had to do with technical aspects of the system. The main technical complaints fell into two categories, speed and access to the system. Another problem category was the interface, which included problems with both the looks of the screens and movement through them.

- *Features to improve/add to make GDM better*

The suggestions about how to improve the GDM system fell into one of four main categories: 1) interface, 2) speed, 3) simplicity and 4) content. One aspect of the interface that a number of people felt needed changing was the frames layout, because splitting screens at times was a little hard on the eyes. One participant expressed his/her frustration at the poor performance of the system. Other users felt that the system was too complex and recommended simplifying it. A number of testers suggested ways to improve the content of GDM. In general, most users felt the system needed to access a richer data pool. Other testers had concerned about the display of the contents, asking for better "image quality," while another user was interested in seeing "coverage of contents on particular themes."

- *Best use of the GDM*

Most people mentioned how access to museum resources could be valuable for learning and education. They saw the GDM as a potentially valuable information access tool for educators to use in the classroom. Other people felt that the best use of GDM was to provide a space in which students could communicate with each other. One user stated that the GDM "allows an exchange of ideas between young students from various countries." Another tester felt the GDM could be useful for "getting a global community talking and working with museum materials." Some participants saw the greatest benefit of GDM arising from the fact that a user could have access to diverse cultural resources. "It would be useful," said one person, "if a large number of institutions contributed a large number of images to it." Finally, a few users said that GDM could be used for personal entertainment.

#### 4. Analysis and Discussion

For the purpose of measuring overall attitude, a new score was computed by the average of individual measures on the characteristics of the GDM prototype. Figure 2 show the overall rating of GDM. On a 1-5 scale, the mean overall attitude was 3.26.

Using the overall measure for comparing means, we

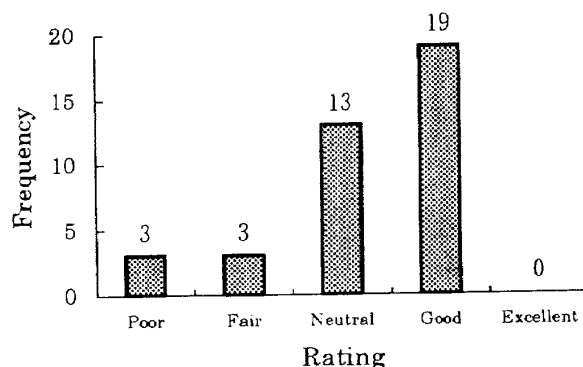


Figure 2: Overall rating of GDM prototype

made the crosstabulation by gender, age, country of residence, level of computer experience, and level of experience with the WWW. There was no statistically significant difference between males and females in their attitude toward the site. While there was a general tendency for older respondents to rate the GDM lower, differences among respondents according to age were not statistically significant. Country of residence (Japan, UK, USA) was not shown to be a significant factor in overall rating. Neither a respondent's level of experience with computers or with the World Wide Web proved to be a significant factor in overall attitude toward the GDM.

#### 5. Conclusion

There are many encouraging points embedded in the findings that suggest that students and teachers will find attractive on-line access to museum holdings and sites that combine holdings or ease the search and organization processes. The ability to create materials and exhibits from multiple sites did receive positive support, too. We believe that the Global Digital Museum offers a promising approach for developing the new paradigm of museum education.

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