

Conclusion

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7 Conclusion

Experts in the areas of ethnology research, museum education, school education, multimedia, computer and the Internet have co-worked closely together on the first approach to developing Global Digital Museum (GDM) between 1995 and 1999.

GDM is a virtual museum on the Internet, which enables global search and edit of museum multimedia contents for exchanging among the users over the Internet in a single user interface. It aims developing virtual classroom on the Internet by combining advantages of museum education and technologies of the Internet and multimedia. Museum education provides any visitors with learning chances by direct access to their own interested subjects spontaneously and at their own pace in the museum exhibition space. However it has some serious limitations in such as time and location. The visitors can not freely enter into the exhibition space at anytime, either any site. It is the Internet to supplement the limitations, by those users can enjoy the benefits of the virtual museum classroom. From GDM collaborative work by the experts of ethnology research, museum exhibition, museum education, interactive multimedia education, and computer and the Internet technologies, we can conclude that GDM offers a promising approach for developing the new paradigm of museum education, or museum information service.

We defined key requirements and issues for developing GDM, which were cross-cultural information service, novel use of conventional education materials, framework and tools for making teaching materials, multimedia publishing, single interface to global museum contents, search quality and quantity, on-line contents editing and interactive user interface. The main technical issues we addressed in this project were unified access to heterogeneous and distributed multimedia contents of museum, and interactive use of the contents on World Wide Web. We proposed concept of GDM, the system and network architecture, the data model and user interface to meet the requirements and issues, and implemented the prototype system on the Internet. We applied it to real museum artifact information, which was collected by ethnological researcher and curators at National Museum of Ethnology and the British Museum. We converted them into multimedia format based on the open standard technology and made use of Human Relation Areas Files (HRAF) index for the global search and on-line editing. We evaluated four areas of the GDM prototype such as functionality, user interface, contents and performance by constructing GDM evaluation web site for the testers in Japan, UK and USA. We found positive and negative responses to our GDM prototype.

Positive responses were fell into three categories such as the user's ability to create and manipulate the content, multiple museum access by unified interface, and content of the GDM. The main technical complaints fell into two categories such as speed and access to the system. And another negative response was found at the interface because it was difficult to understand the overall structure of the system. From the evaluations, we are pleased to say that our GDM concept and our mainly addressed functionalities such as global search in the unified interface and on-line editing, and high quality content were well accepted. These can also be said by other evaluations in a classroom that were made by involving some school children and schoolteachers on site in only Japan.

Because the problems with the system performance are purely technical issues, it can be improved by updating the technology. Meanwhile, improvement of user interface is not regarded as simple technical issue, but it is intrinsic problem of the GDM concept. User interface is the first meeting with GDM for the users, and perception of GDM by them depends on the user interface. It should be improved by highly sophisticated skill of man-machine interaction that is based on steady concept of GDM or virtual global classroom on the Internet. We also need to increase tools of collaborative creation works, especially annotation tools on the Internet for making participation to the GDM cyberspace pleasant.

For developing GDM concept as a real global approach to museum education, there are several issues to be addressed by all the people who share the GDM concept and approach in the areas of museum, education, and computer and the Internet technologies. They are open standard system architecture, global indexing and search mechanism, standard user interface, and standard educational tools from the technical point of view. In our first approach to GDM, we used HRAF index as global indexing system assigned to all the artifacts used in creating the multimedia contents and it demonstrated its advantages in this usage. However, GDM requires broader range of coverage indexing system more than ethnology, and it must be well accepted by both experts of museum and education. Openness in the system configuration and search mechanisms must be highly prioritized for extension of GDM concept. We may need more experiences and experiments of improvement of the educational tools on the Internet as the traditional educational materials have been done. Educational tools and the content must be highly sophisticated and must keep high quality when they are delivered. However, our experiences in content handling on the Internet, in general sense, is not enough, yet, even though we know that content with high quality is most critical. We need to study and establish standard GDM curriculum, which is systemized museum content and interactive manipulation, which are sophisticatedly integrated. Open standard based approach to GDM could expand the members of museum and end-users, and the larger the members increase, the larger content reservoir grows.

In looking to the future of social cultural changes and educational system transformation, there will be a growing role for museums as agencies of cultural education. Development of network infrastructure such as the Internet pushes people toward strong demand for broadening of their cultural and international horizons, soon. From these observations, GDM concept and approach needs to be developed for a promising approach to the new era of society and education by continuing working closely together between multidisciplinary domain experts.

