The multimedia challenge of open university digital library

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Abstract: Open university is a distance education for adults with the help of modern information technology. As a type of library, digital library is the document information center of the open university. The application of multimedia in the construction of digital library is the concrete expression of the trend of digital and information technology. Starting from the general situation of digital library in open university, this paper analyzes the further strengthening of the application of multimedia in digital library, hoping to be helpful for the later work.

Keywords: Open university; digital library; multimedia challenge

The application of multimedia and the development of information technology are new opportunities for strengthening library construction and management. In the era of knowledge economy, the traditional ways of obtaining information do not meet the needs of users, so it is more necessary to realize the extension of the traditional literature resources by means of the shortcut of the network, and to enrich the information resources by means of digitalization and networking of the literature resources, which also expands the value meaning of literature resources. Under the multimedia application, the open university's digital library has facilitated the reader's search together with the inquiry by the richer form.

1. Open university digital library

Digital library is a new form in the development and application of information technology. It belongs to a kind of library, and has been also known as digital document resource bank. The digital library is an online service platform based on the open software and hardware, which realizes the digital transformation of all kinds of literature materials by the combination of technology and products. In essence, digital library is a platform to provide reading service for readers by means of information technology facilities and network platform after the digitalization of various literature resources.

Service is an important part of the value of the library, which is often taken as the standard to evaluate the quality of the digital library. The open university is a universal and lifelong educational institution for adults that includes both academic and non-academic education. The academic education of open university, which is a combination of junior college, undergraduate course and graduate education, shows some other points such as long-distance, decentralization, stratification and various forms. The open university has absorbed a large number of working adults and has different learning rules, learning motivation and behavior habits from the learners of ordinary universities. In the aspect of document information resources service, the digital library will emphasize the functions of remote service, individual service, hierarchical service and multi-form service, which is shown as **Figure 1**.
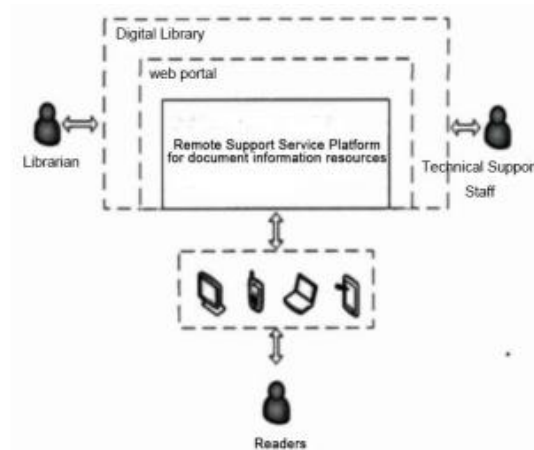
Figure 1. The service mode structure of Digital Library

At the present stage, the technology of mobile service and knowledge service, which are widely existed in people's life, has promoted the technical development of digital library. The digital library of open university should absorb the advanced information technology and new idea in the development process, continuously perfect the service mode, satisfy the objective demand of open university.

2. Multimedia of open university digital library

2.1 Multimedia information storage and its management mechanism

The storage and management mechanism of multimedia information reflect the management quality of multimedia information in digital library to a certain extent. Multimedia is a comprehensive composite model, that integrates graphics, text, sound and image, and shows the characteristics of large amount of data and different length of information, which will increase the corresponding storage and management difficulties, object-relational database systems, distributed database systems. Moreover, object-oriented database systems have been created. Each type of database type has different advantages and disadvantages. Specifically, the distributed database is a combination of multimedia information stored on multiple computers in different geographic locations across the Internet into a single data set, as shown in **Figure 2**. However, to promote multimedia information storage and management mechanism perfect multimedia information broadcast, demonstration, retrieval technology, is the direction that needs to be strengthened.
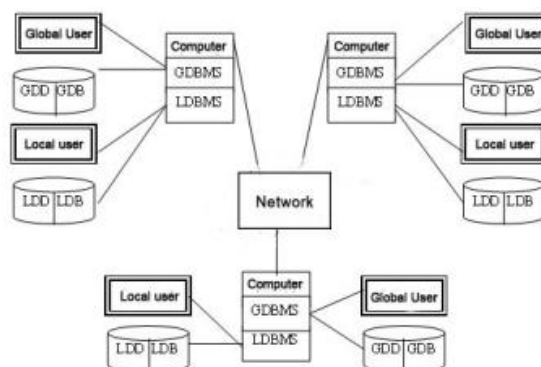

Figure 2. Distributed database

At present, the storage management of multimedia information is to support multimedia by extending the original relational database, and to simulate unformatted data content by introducing abstract data model or semantic model. In the course of decomposition, a single media database is established, such as the stylistic database, the numerical database, the audio-visual database and so on. At the same time, we insist on the object-oriented principle to ensure that the same object's media characteristics can be smoothly mapped between the related databases, so as to build an

effective multimedia database. The storage and management mechanism of multimedia information are the key link in the construction of digital library, and the effective construction of database model and query language system should be carried out step by step based on the inherent continuity of multimedia information.

2.2 Integration and synchronization of multimedia information

The integration and synchronization of multimedia information are embodied in two ways. One is the relevance and coordination of all kinds of media information in the same object while the other is how the multimedia information of many computers on the same Internet is processed after being integrated.

For the former, multimedia information will be stored by using file name management mode. Through the construction of a database to optimize multimedia content association, it will be integrated into a whole, then, the transmission speed is determined by using the specific broadcast time of multimedia, so as to achieve the effect of synchronous broadcast and synchronous display. This is an important way to browse multimedia, but the overall effect of interactive content retrieval is not satisfactory. Intelligent agents, a software robot with autonomous information processing capabilities, has been used successfully in digital libraries. In order to realize the integration and synchronization of multimedia information, we can make use of the advantages of Agent technology, develop the software management mode into a dynamic management mode, and complete the interactive retrieval process between man and machine.

For the latter, the object-oriented database interface technology is usually used to provide the standardized query language and the related database interface, and then complete the effective access of multiple database servers. The multimedia database has certain complexity and particularity, so the database interface technology in the application will also receive some restrictions and still needs to be further expanded and perfected.

2.3 Multimedia information retrieval

Multimedia information retrieval is the process of searching and acquiring multimedia information by information users. According to the needs of users themselves, they can enter multimedia information such as the image, sound features through the system. For example, if users query a book, it is necessary to enter the title, author's name, call number, or cover color, works recording and other retrieval information.

The content of multimedia information is not only the retrieval of information content features, but also has strong technical difficulties. In theory, similarity matching algorithm and audio-visual understanding technology can be used to find the final result of the query as users gradually narrow down the query.

As the main body of information resources, digital library is an important technical facility accompanying the development of national knowledge economy, which fully reflects the trend of national informatization and gradually becomes a hot project of national participation in cultural competition. The digital library, has constructed the orderly information space and the information resources sharing state, and has developed toward the more specialized and scientific direction.

3. Conclusion

Open university is a way of distance education, and digital library, as an important component of open university, should meet the needs of the construction of open university. The innovation of advanced technology and the development of open university bring new challenges to digital library. Digital library and multimedia complement each other, which shows the extensive application of multimedia has promoted the realization of digital library, and really reflected the value of digital library.

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