Research on the Construction of Characteristic Database in University Libraries- Taking Library of Jianghan University as an Example

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Abstract. This paper summarized the norms and principles that should be followed in the construction of characteristic database. In addition to analyzing the existing problems during that database construction in university libraries, this paper proposed some effective solutions based on the case of the Library of Jianghan University. Furthermore, the author put forward that it is necessary to carry out remarkable marketing campaigns and continuous maintenance to make sure the database construction can work well and be upgraded sustainably.

1. Introduction
Characteristic resources are foundation and precondition for libraries’ cooperation and co-sharing. By reorganizing the dispersed documents into an order system, a characteristic database helps to fully exploit the resources potential value and implement the literature and documents resources preservation conveniently and safely. The full-text-search-and-download functions via internet or intranet protocols can solidly support fully sharing information resources. A great number of self-built characteristic libraries have been set up so far over the country. A particular statistic reports that there has been 2,082 such kind of databases in colleges and universities by the end of year 2015.

Figure 1. Top 10 provinces of colleges and universities self-built characteristic databases in 2015
2. The Significance of the Characteristic Database Construction in University Libraries

2.1. By Characteristic Database, University Libraries are able to Serve Local Culture and Regional Economic Development.
University libraries should not only take responsibilities of serving campus education and scientific research, but also fully play their social functions of delivering contributions to the development of local communities. As one of the important local culture carriers, University libraries are requested to make great contributions to local culture research, relying on their own advantages in geography, academic resources, technology and human resources. Naturally University libraries are supposed to conduct the most valuable and most urgent local culture resources protections, which inevitably lead to creating several of databases with regional characteristics.

2.2. By Characteristic Database, University Libraries with Characteristic Databases can Provides High Quality Services for both Instructors and Undergraduates during Campus Teaching and Scientific Research.
Based on users’ demand investigation, university libraries can proactively carry out in-depth screening, reorganizing, exploring and research that focus on literature resources of a special subject. With modern information technology, they can also either push to users the special academic related resources, frontier research, hot topics, outlook of academic development, or adapt database features about a particular subject or an academic field and then generate relevant summarize, academic reports, document index and excerpts to those who may concerned. Also, it is really count and meaningful for university libraries with the characteristic database to grant advanced knowledge management services concentrated on some key majors, subjects and national level scientific research projects.

2.3. The Construction Practice of Jianghan University Library
The Library of Jianghan University has implemented the on-going construction of characteristic database since 2002, completed database listed as below.

"Bank of Jianghan University Publications". It is not only an academic treasure house that collects, displays and stores the collection of writings authored by faculty of the school, alumni and all kinds of people enthusiastic about the development of the university, but also an important exhibition to hold academic exchanges and research activities, with the purpose of fully demonstrating the academic achievements of Jianghan University.

"Car Resource Database." It is a characteristic database that has been created in accordance with the overall requirements of the construction of literature information resources in China, and following the metadata criterion of CALIS's special database. Located in Chedu, Wuhan, Jianghan’s library has collected plenty of literature information related to the automobile industry through various channels, based on regional industrial brand. The main contents cover the industry trends, automobile culture, statistical analysis, vehicle knowledge, standards and regulations, academic research, second-hand car market and related websites. The system provides a variety of retrieval approaches and supporting services for the online users, including retrieval, browse, navigation and full text, which could greatly promote the development and utilization of automotive resources within the region, country and even across the world.

"Excellent Art Gallery." It has collected and displayed those excellent works by Art School and Modern Art School of Jianghan, which facilitating the art majors development of this university.

3. The Norms and Principles during the Characteristic Database Establishment

3.1. Normalization and Standardization of Database Inputs
"Accuracy, completeness and standardization of data" are the most important factors to the quality of database construction. Meanwhile, they are the vulnerable to manual operation mistakes. As a demonstration project, CALIS characteristic database has a unified technical standard, which in a certain extent guided the university libraries database establishment. It is one of the most important aspects when establishing the "Library of Excellent Teacher Works" of Jianghan because the
specification, type and resolution of works may vary from different teachers, which means it’s required for staffs modestly seeking advice from professionals during the production process. Thus the pictures of various formats and dimensions can be unified with their original shape undistorted and demonstrated clearly to everyone as possible.

3.2. Distinctiveness and Practicability of Database
Differentiation is the initial purpose to the construction of characteristic database. The content is the key factor what may differentiate databases. We should collect information resources from multiple dimensions, channels and aspects. The construction of database is supposed to be designed with following characteristics in: (i) local geographic. Such as local cuisine, historical celebrities, dialect heritage, traditional clothing and arts and crafts as well. Those above can be presented as a city brand or proxy. (ii) specialized features. A database marked as dominant majors or subjects may stand for advanced clusters in a specific university or related industrial chain. (iii) Research value. The key of database construction lies in its exclusive uniqueness. Besides that, practicability is the purpose of characteristic database construction. It should make full use of the library collection resources in order to satisfy the reader's requirements to the greatest extent possible. At the initial stage of the construction of database, it should give full consideration and make clear-out division of labor of all kinds of personnel, so the characteristic database can be built up in a convenient and efficient way.

4. The Existing Problems of the Characteristics Database Construction in University Libraries

4.1. The Lack of Unified Technical Standards
As a demonstration project, CALIS characteristic database applied a unified technical standard, which to a certain extent could play a guiding role of how to construct the characteristics literature resources in university libraries. However, due to a lack of authority, that standard only covers its member libraries. And most university libraries adopted different technical standards to build or co-build characteristic databases, which leads to large inconsistence in system infrastructures, programming modes and interface standards, etc. The phenomenon of isolated information island appears as a result.

4.2. Low-Level Content Development and Deficient Functions
The designed function is rather deficient of for some self-developed characteristic database, such as allow the users browse all information through the home page of website while doesn’t support downloading. The collected literature resources have been simply made into an electronic version, catalog or reviews. There is no in-depth excavation, summarizing, organization and processing of resources based on theme, category, etc. And value-added services are not accessible to the users at all. The small -scaled database means the information collection is far away from systematic, integrity and authoritative. Even if the scale is expanded, it only pursues the coverage and ignores the fineness and quality of contents. Although some libraries support advanced search function, the poor performance is disappointing with rather small available searching fields, pretty high latency. Some database that combined with out-sourcing database among the same platform can only redirect to a brief introduction although website helping function has been granted.

4.3. Database Security Issue
During the database construction, the date source is of great importance and imported from various approaches. With the announcement of regulations and policies on intellectual property, digital information sources may possibly involve legal issues. Therefore, database security and data validity must be emphasized over and again.

4.4. Absence of Follow-Ups
Most colleges and universities never follow up once after the characteristic database of their libraries was constructed. Many links are invalid or resources are failed to update, which result in a rather low utilization rate.
5. Solutions

5.1. To Establish a Standardized Database Construction System
The construction of characteristic database in university libraries should adhere to a standardized management, unified standard and complete content system. Meanwhile, a mature information feedback mechanism and quality evaluation system are also required to establishing to improve the effectiveness of building and sharing of database.

5.2. Construction and Use According to Law
China’s Copyright Law stipulates that it is a fair use for the reproduction by libraries for the purposes of the display, or preservation of a copy while if these digitized works are applied in the database and downloaded from the internet, it may infringe the property rights of copyright owner, including the right to reproduction, distribution and dissemination. According to the “Regulation on the Protection of the Right to Network Dissemination of Information”, it is a "fair use" and will not constitute infringement, if it does not obtain economic benefits in direct or indirect ways. During the establishment of "Excellent Art Works Library of Jianghan University", the library staff went to the School of Art and the School of Modern Art respectively for an extensive publicity, pointing out that the purpose of the library construction is to collect and display the art works of teachers and students in the university. Each piece of work has been encrypted through technology so that the intellectual property of teachers’ works can be well protected. Therefore, it has received lots of supports from the college leaders and teachers who have actively submitted their works to the library for the construction of characteristic database.

The established database is also under the protection of copyright law. Various university libraries have taken different methods to protect the copyright of database in the process of opening to the public. The Library of Jianghan University has taken the following methods: (i) Setting IP address restrictions to control the usage scope and prevent out-of-control IP address against downloading the digital resources from the database, which could effectively protect the contents. (ii) Full-text encryption. This method means to open the metadata field of the characteristic database. For the content of full text, it has taken encryption technology to prevent users from copying and pasting. So, the full-text data in the characteristic database can be effectively protected. (iii) Adding a watermark to a photo. This method is mainly used for pictures adopting the technology of adding text or digital watermark on the photos to prove the copyright of the original creator. When establishing the "Excellent Art Works Library of Jianghan University", Jianghan University has added a watermark to each piece of art works that are stored in the library so as to identify the original creator and well protect the copyright of each work of art.

5.3. Implementation of Continuous Maintenance and Propaganda Promotion
It is required to conduct a post-maintenance and management after the characteristic database completed. After implementation, regularly follow-ups to the service condition, active feedback collection from readers and timely updating can deliver a high quality of characteristic database. Meanwhile, more marketing efforts are definitely welcomed to increase the exposure, utilization rate and influence finally.

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