ISSN 2706-6827 Vol. 3, Issue 11: 99-103, DOI: 10.25236/IJFS.2021.031116

Problems and Countermeasures of Innovative Resources Construction and Service in University Digital Library

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Abstract: *We should promote the construction and service of digital library resources in order to make further progress, being faced with the characteristics of users' personalized requirement, subject diversification and mobile service. This paper analyzes the problems of the construction and service of digital library resources in universities at present, puts forward the countermeasures of platforms, resources and service innovation and rethinks how to improve users experience, facilitate social resource integration and take advantage of Internet platform.*

Keywords: *Digital library, Innovation, Resource, Construction, Service*

1. Introduction

Digital library is a dynamic digital information resource system, which is composed of four basic elements: information resources, information needs, information personnel and information facilities. The core of the system is information resources. In the era of Internet, digital library has changed the traditional resource service and learning reading mode. Through the Internet of things, cloud computing and big data platform, it has broken through the framework of Library as a "book collection institution" and "information service and social education institution", and provided services for mobile learning, ubiquitous learning, fragmented learning and other learning methods. There are information service network sites based on the Internet, such as Google Digital Library, 5730 library, SuperStar digital library, etc., and they are developing towards mobile digital library, ubiquitous library, mobile library, smart library, etc. Mobile information terminals are more abundant, readers' information needs are more diverse, and information resources and environment are gradually integrated [1].From the source channel analysis, there are introduced commercial resources, such as SuperStar, CNKI, VIP, etc. There are also characteristic resources built by colleges and universities, or digital resources generated by digitization of paper resources. From the content of resources, there are professional resources and comprehensive information resources. In terms of resource types, there are books, periodicals, newspapers, videos, pictures, papers, etc. From the perspective of system platform, different types of databases and various resource platforms put forward higher requirements for resource construction and service.

2. Problems in the Resource Construction and Service of University Digital Library

2.1. The Utilization Efficiency of Information Resources is not High

All kinds of information resources in Colleges and universities are mainly distributed in the information management center and the library, mainly by the college portal and the library home page as the entrance to retrieve and query related resources. Most of the search engines of digital library take the traditional keyword search as the main way. Although they meet the needs of users to a certain extent, because the meaning of keywords and their real semantics is not at the same level, the query results are often only literal additive matching, rather than the information they really need, which eventually leads to low accuracy [2].From the perspective of resource itself, the utilization efficiency is not high, and various resource databases are searched separately, which can not achieve unified cross database retrieval and is inconvenient to use and operate. The classification navigation is not obvious enough, there is no distinction between resource platform or category, so it is difficult to find. Some resources update slowly, which reduces the resource access. The personalized application of resources is not clear

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enough, and can not be pushed or customized according to the individual needs of users.

2.2. The Construction Quality of Some Resources is not High

The content of some professional teaching resources is not rich enough, and the continuous updating is slow. Content teaching is not targeted, simple and repetitive. The construction of some resources is not standardized, which affects the use effect. The maintenance of continuous updating is insufficient, and the implementation of regular updating is not in place. There are not many excellent self built resources in some universities. The volume is huge, but some of them are of low quality. There are more outsourcing resources and less self construction resources. There are more public resources but less professional teaching resources. There are more non characteristic resources and less characteristic resources. The resource system is not perfect, the content distribution is not prominent, and the characteristic resources are not prominent, which directly affect the overall quality and application efficiency of resources. The supporting management mechanism of resource construction and service is not in place, which is mainly manifested in the lack of unified assessment and evaluation standards for resource application, and the self-made standards of colleges and universities are not scientific and comprehensive. The supporting reward and punishment mechanism is not perfect, sometimes not in place, it is difficult to form a long-term stable management talent team. Personnel training is not institutionalized, and personnel flow affects the function.

2.3. The Resource Service Mode is Relatively Single

Most of the resources services of university digital libraries are mainly based on learners` independent retrieval, and the features of push service, mobile service and personalized service are not prominent enough. The resources service is still "people looking for resources", rather than "resources looking for people". The participants of digital library resource service are limited to one library, and they have not broken through the wall of library collection resource service to build a borderless digital library. From paper library to composite library, and then to digital library, the role of library has not changed from resource provider to service provider. The openness of resource service is not enough, and the "information island" and "resource gap" of digital library have not been broken. Excellent university resources are difficult to produce social benefits.

3. Countermeasures to Strengthen the Resources Construction and Service of University Digital Library

3.1. Establish a Unified Resource Service Platform to Realize the Optimization and Integration of Resources

The requirements of integrated information integrity and knowledge systematization of digital library resources are not only the requirements of users, but also the requirements of digital library construction. There are more and more types and quantities of information resources in digital library. Heterogeneous resources across platforms and systems restrict the sharing and effective utilization of resources. For example, a large number of heterogeneous resources exist in the form of bibliography, index and independent database. Only resource links and source descriptions are given. Users can only obtain resources separately when using resources. The connection between resources is not clear. In the digital library, the integration of information resources can establish the connection between different carriers and types of information resources, effectively communicate information and resources, and make the knowledge structure more complete [3].

3.1.1. Integrated Resource Platform

It is necessary to establish an information resource system with teaching resources as the core and public resources as the basis, establish a unified resource portal platform for teachers and students, and realize the comprehensive integration and cross database retrieval of multiple resources. Integrate different multimedia format resources. Integrate self built resources and outsourcing resources. At the same time, the system platform provides open interface, which supports direct data synchronization, WebService, LDAP, CALIS system authentication, etc.

3.1.2. Promote Functional Application

The basic functions of resource integration are as follows: first, to search all resources in the hospital

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according to the key words, including digital library, portal website, subject website, teaching and research section website, Online courses, multimedia resource database and other resources, and to support the classified search and secondary search of resources. The second is resource display, which is convenient for teachers and students to provide all kinds of information resources customized by disciplines or individuals, and support all kinds of sorting of resources, with friendly interface, convenient customization, intuitive resource display and distinctive personalized characteristics. The third is resource publishing, which establishes and publishes a special database built according to the needs of colleges and universities. It supports user-defined fields, publishing of various types of resources and index of associated resources.

3.2. Strengthen the Construction of Characteristic Resources and Expand the Information Resource System

The digital library should establish an information resource system based on public resources, with professional resources as the main body, and with Self-established resources as the characteristics. On the basis of the unified resource service platform, the professional resource service platform is established to provide professional resources and information services for teachers and students in Colleges and universities.

3.2.1. The Construction of Subject Website

Relying on the information portal platform and using the dynamic collection function of the system, we can integrate various kinds of information such as subject resources, teaching and scientific research, teaching staff, etc. to build a subject website with rich content, reliable sources, and teaching characteristics to provide the most direct information services for major construction and teaching. Give full play to the teaching assistance and support role of various disciplines and professional websites.

3.2.2. Online Course Construction

In order to improve the effect of teaching and education, ideological and political cases are designed and integrated into the course. According to the specialty and curriculum, we will carry out the construction of supporting online courses for compulsory courses, optional courses and self-study courses, covering the main curriculum system of colleges and universities. According to the professional adjustment and curriculum changes, further enrich and improve the existing online courses. Develop optional courses and self-study courses supporting online courses. Eliminate some unsuitable online courses. Standardize the application of online courses, organize various forms of activities such as discussion and exchange, online Q & A and homework exercises, and give full play to the resource sharing and teaching interaction functions of online courses.

3.2.3. Teaching Video Database Construction

Relying on the audio-visual teaching materials database of colleges and universities, a digital teaching video database with complete classification, convenient retrieval and clear authority will be built, which mainly includes: first, the existing public distribution of TV teaching materials. The second is the video resources such as all kinds of TV teaching films and academic lectures shot by colleges and universities. Third, all kinds of teaching video materials downloaded from public websites. To provide visual teaching resources for teachers and students in Colleges and universities, and give full play to the role of demonstration teaching and popularization of teaching video.

3.2.4. Special Website Construction

According to the professional hot spots or the needs of teachers and students, the construction of all kinds of special websites, such as a university to make full use of the advantages of red resources, the establishment of a "red journey" special education website, to do a good job in traditional education, firm ideals and beliefs to provide resource services. We should strengthen the construction and application of the original resource database in Colleges and universities, highlight the originality of resources and the characteristics of colleges and universities, and give full play to the role of resource sharing and teaching service. At the same time, the application of information resources should be reported regularly to promote the in-depth application of information resources.

3.3. Promote the Application of Information Resources and Innovate Resource Service Mode

Digital library resources have the characteristics of digitization, networking and multimedia. With the help of mobile terminals, mobile learning can be realized. For example, the digital resources of the

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national digital library are providing massive knowledge information to readers through the Internet, mobile communication network, radio and television network and other channels, as well as touch screen, smart phone, digital TV and other terminals. The service forms include remote resource access, integrated retrieval, online consultation, mobile services, etc. [4].The construction of digital library should be service-oriented, user-centered, innovative service concept, innovative service mode, meet the needs of different types of users, carry out "menu subscription", "push service", "quality book recommendation" and other service activities, so that teachers and students can obtain the required information resources without leaving home.

3.3.1. Learning Push Service

Learning push service is a new way of service in the Internet era, and also meets the personalized learning needs of readers. Learning push service combines mobile communication, cloud computing and other technologies, can adapt to the changes of readers and mobile learning environment, and can quickly obtain learning resources with high matching degree with readers, which is also a necessary way to ensure the sustainable development of mobile digital library. The learning push service of mobile digital library can track readers` browsing behavior, analyze the interests and preferences of the readers, complete the integration, matching and processing of learning resources based on various push modes such as mobile terminal, network log and multimedia resources, and push the results to the mobile terminal. Learning push service can be roughly divided into four steps: readers` login, building demand model, learning resource matching and readers` feedback and suggestions, which is a cycle updating process [5].

3.3.2. Mobile Learning Service

Through mobile phone and mobile terminals such as iPad, we can build App library on the Internet mobile phone library, or establish WeChat official account to expand the digital library resource service. The main functions of WeChat public platform are group sending and push of information, automatic reply of information and subscription of QR code information. WeChat public platform gives more organizations and individuals the right to act as information publishers, promotes the prosperity of we media activities, and realizes the process of self-organization and self transmission of information. At the same time, sharing ability is enhanced in the process of communication, and the sharing mode formed in WeChat circle of friends is the most obvious embodiment. This service focuses on the acquisition of resources, so that users can easily and quickly obtain various resources of the library through mobile terminals, including books, periodicals, audio and video and various information services, such as book recommendation [6].

3.3.3. Personalized Service

It provides personalized information resource service platform for teachers and students, and can systematically and uniformly manage customized and self created literature resources to meet personalized information needs. With the support of Internet of things and big data, the service mode of digital library is more personalized, which can provide services such as self-service, mobile phone service, RSS subscription, 3G customization, PDA/PPC customization, mobile e-mail customization, etc. With the help of sensor information, the management system can automatically identify and perceive the current position of users and the research topics they are concerned about, and can combine the information behavior tendency of users in the virtual environment with that in the physical library environment, build a personalized preference model for users, and provide personalized related services to users in time. For example, automatically push relevant information resources and dynamic information for users, and build personal digital library [7].

4. Eflection on the Resource Construction and Service of University Digital Library

The construction and service of university digital library resources should be organized and implemented by the University in accordance with the idea of overall planning, serving teaching, opening and sharing, and paying attention to efficiency. The participation of the library, professional departments, teachers and students should be widely mobilized, and the professional characteristic resources should be built independently. With the support of Internet of things, cloud platform, big data, virtual reality and other technologies, explore the development of mobile digital library, ubiquitous library, mobile library and smart library. First, we should constantly improve the user experience, firmly establish the concept of service first, and focus on the application of digital library resources construction through data analysis. Second, it is necessary to integrate systematically, build and share together,

ISSN 2706-6827 Vol. 3, Issue 11: 99-103, DOI: 10.25236/IJFS.2021.031116

conform to standards and norms, integrate university resources, social resources and enterprise resources, make full use of cultural institutions such as libraries, museums, art galleries, cultural centers and mass art centers to integrate resources, combine offline cultural resources with digital cultural resources, and give full play to social benefits of resources. Third, we should make good use of the Internet platform, actively promote open sharing, make full use of WeChat, Microblog, App and other we media, actively launch push service, mobile service and personalized service mode, and constantly innovate the construction and service of digital library resources.

Acknowledgements

This work was financially supported by the project of University Computer Foundation Teaching Team Supported by Zhuhai College of Science and Technology (Grant No. kcsz2020003).

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