

## Basic analysis of design of mobile APP Service in University Libraries in the 4G

### Era

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*Abstract: In the 4G era, mobile library services are the most important expansion of the traditional library services. In order to enhance reader service and experience, this paper proposed some new ideas in the content design of mobile phone APP for library services, providing online query of reading rooms, real-time score ranking system for real-name users in the school, various query functions based on the big data, etc.*

*Keywords: mobile library; mobile app; service innovation.*

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### 1. INTRODUCTION

According to the statistics of the official website of the Ministry of Industry and Information Technology of China (as of August 2017), there were nearly 900 million 4G users in China, and the mobile network is in a 4G era [1]. With the sustained price reduction and popularization of large-screen 4G mobile phones, it is increasingly accepted by the public to inquire, read literature and various books by the mobile phone anytime and anywhere. Currently, Chaoxing company has cooperated with libraries of domestic universities to launch the Chaoxing mobile APP. At present, more than 700 libraries in china have cooperated with it, while the number is still growing. There are two main types of content services : 1) The social open source services are provided without logging in the school library. There are bookshelves, open courses, audio-books and phone-shaking function for fast searching, as well as the addition of any topic of interest to the function panel. Basically, it provides a good platform for reading books and news on mobile phones. These functions are available on many reading APPs. 2) It is required to use your account and password to log in the school library services, including library catalog search, academic resources, videos, newspapers, etc. The latter relies entirely on the existing OPAC (On-line Public Access Catalogue) of the physical library of the university to conduct online library collections, inquiry and downloading of the academic resources. This part is the real service for the library readers, the effect depends on the levels of existing software and hardware of the library and the awareness of the reader service.

The Chaoxing mobile App is essentially a mobile service interface which accesses to the university digital libraries. However, sometimes it does not meet requirements of the special reader service and management needs, as a result, many university libraries have also developed their own mobile APP

or WeChat service platform for their school teachers and students [2-3]. There are also the cases that the Chaoxing mobile APP and the School mobile APP coexist. This paper only discusses the ideas of the service function and content design of the college library mobile APP.

## **2. THE REALIZATION OF BASIC FUNCTIONS AND CONTENT OF MOBILE APP**

Mobile library has become the most important expanding way to digital libraries [4-5]. Based on the satisfaction survey of users from the chaoxing digital library[6], and the author's talk and discussion to some teachers and students in the reading room in recent years, the mobile phone APP should have the following basic functions.

### **2.1 APP login problem**

For teachers and students on campus, students and teachers should use their student ID and staff ID to log in the system by real-name respectively. The system provides mobile phone binding and SMS service which recovers the password. For off-campus users, they can log in with the guest account. Users can access to certain resources by permission. For example, in-campus users are allowed to download the paid subscription periodicals of the library, while off-campus users are only allowed to query something.

The APP client can track and feedback user's browsing footprint to the server, and can instantly display the user access status at the current time and some time period, and store it in the server database, while prepares data for the big data processing.

### **2.2 Basic functions such as library catalog searching**

The mobile client connects to the campus OPAC system and provides basic collection query functions. This is the most basic function that readers agree on [7]. Most mobile APPs have this function. Others include online inquiries for various newspapers and magazines, inquiries about various collections of video resources, and online viewing. The service experience of this kind of service depends on the service of the physical library itself. For example, if a student wants to check the award-winning video of the Nobel Prize winner Tu Youyou, while the library does not have a collection, this reduces the user experience, if there is, but it cannot be viewed online on the mobile APP, it also reduces the user experience.

### **2.3 Online inquiry of the number of readers in reading rooms of the library**

The physical library can provide data to the OPAC server in real time according to the readers' campus ID card status in each reading room for mobile APP access. This work is easy to achieve technically, but not every library can do such an elaborate work. This can improve the popularity of the library and readers experience, especially among college students.

Then how to view the case that the attendance rate of libraries is slowing down? Library attendance has always been one of the considerations for expert assessment on libraries. According to relevant information, 70% of the students reading or studying in university library are mainly to prepare for exams [8]. Considering the huge changes brought about by the mobile library in the 4G era, it is normal for the decline of attendance rate of library, because that many readers can access to books or journal resources just at home and in dormitory. Considering the utilization rate of the library, we can not simply rely on the attendance rate, the total hits at each time of on the mobile net library is also an important factor, and the criteria of assessment should also be adjusted. In fact, the role of the reading

room has changed in the era of the 4G mobile library, the original the reading place has changed to reading and studying place. Compared with the classroom, the reading room is quieter for reading and learning. Therefore, the phenomenon of the decline in the attendance rate of the library is normal, and the public resources are released. If the mobile APP provides online inquiry function for the number of readers in reading rooms of the library, then there will be more teachers and students come here to study and read books, thus it can improve the attendance rate.

#### **2.4 Inquiry and download of the academic resource**

All kinds of paid academic journals and all kinds of free trial journals of the library shall be open to the teachers and students. Providing advanced search and download functions is an important guarantee for improving the research environment of the school. Most domestic and foreign paid journals usually use the IP of the paying unit as the login pass. To implement this important function on mobile phone, it is necessary to solve the problem of how to get the mobile phone to obtain the fixed IP address of the campus. If the mobile phone uses school WIFI, then it has obtained the school IP; If the mobile phone is connected to the 4G signal, according to the user's permission, it can connect to the VPN server of the school network center to obtain the current school's fixed IP, and realize the technical cooperation with TOPSEC, but it must be packaged and simple to use. Some teachers complained that the SV independent client would not be set up on the PC, and the computer could not connect to the campus VPN, so the journal resources could not be downloaded remotely. It is hoped to consider this function for user experience.

#### **2.5 Real-time score ranking system for real-name user points on campus**

In order to improve the enthusiasm of teachers and students for reading and learning, and to create a better reading and research environment, schools and libraries should implement a real-time score ranking system for user points and add this function to mobile APP. Due to the real name registration of the teachers and students on campus, the system will grant a certain scores according to the number of online readings of the users, the number of downloads of books or documents, and the frequency to go to the physical reading room. The higher the score, it means the higher the activity of reading books. Each semester, a certain number of top rankings can be awarded, and in the next semester, the score is cleared and recalculated. Regarding reading as a game of upgrading can, on one hand, improve the attendance rate of the library, and on the other hand, encourage students to read and learn. From the perspective of library management, it enables to learn about the online or actual access of various teachers to the library, for example, which reading rooms are doing well, and which resources are rarely patronized, and why is the reason. Then, how to improve it, all these can provide data basis for official decision making to further improve reader service.

#### **2.6 Query function based on the big data**

Mobile APP client and other network can get access to traces and statistics of library resources, combined with the actual number of visitors in the library reading room, etc., the data is integrated and saved to the server to form massive data.

The mobile client should provide basic query capabilities for these big data. First, the managers with high authority can query the various types of data required by the library management, such as attendance rate, teacher library utilization, etc.; second, ordinary readers can query certain

information, such as the top 100 books in the library, as well as ranking by the major field, thus, recommendations of good book can be simple and fun; final, according to the reader's online suggesting message, the query items that are more interesting to students and teachers can be screened and implemented in the new version.

### **3. CONCLUSION**

In addition to the basic functions of the Chaoxing mobile phone APP, the mobile phone APP of the university library has to add new functions according to the characteristics of the university itself. This paper proposes the online inquiry function of the number of readers in reading rooms of the library, so that readers can know the online number of readers in each reading room at any time, which can greatly improve the experience of teachers and students visiting the physical library. However, this requires the library to have a good service sense for readers. When the reader swipes into the reading room, the data can be instantly stored in the OPAC server and the APP access interface is provided. Opening real-time score ranking system of real-name users points in the school and implementing it in the APP can improve students' enthusiasm for reading and learning, improve the attendance rate of the library and the management level. However, this requires the school and the library to pay sufficient attention to it and provide fund support for the reward system; the query function based on the big data should support different user groups in the privilege level to allow them to have basic queries in the aspects that they are interested in. This will make many important library services, such as better book recommendations, efficient and interesting. Queries based on the big data will play a more important role in improving the service experience of readers, however, it needs to be further improved elaborately by the library managers.

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