Research on the Construction of Personalized Service System in the Library of Higher Vocational College Based on the Environment of Internet of Things

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Abstract. Traditional library service system in higher vocational school, who is on the limitation of laws and regulations policy and the technology, makes the whole library's service scope and object in contain state to a certain extent. Based on Internet of Things (IOT) library personalized service system is the urgent demand of the construction of higher vocational school library service system. This article first analyzes the necessity of the construction of higher vocational school library personalized service system. It uses the mathematical model to analyze the integration advantages between IOT and higher vocational school library service system. On this basis, it puts forward the optimization construction mode for library personalized service system based on IOT. So as to, it provides certain practice guidance for the research of this theory field and the construction of library practice service system.

Introduction

Due to the high speed development of information technology, it has not only changed the previous traditional knowledge dissemination way, also has an imperceptible impact on the whole academic environment. At the same time, the digital development of personalized service system has been extended. Personalized service system is the organic combination of comprehensive knowledge system [1]. It contains the computer hardware, service software, network facilities, information database, information system and administrators, ect. The construction of personalized service system has greatly increased the knowledge coverage and convenient storage and read function.

The necessity analysis of the construction of higher vocational school library personalized service system

a. The sketch of personalized service system

Personalized service system mainly refers to time and space, mode, content, the three aspects' personalized. It has relatively obvious pertinence, subjective initiative, interactivity of frequent communication, usability of simple operation, convenient flexibility, rich connotation knowledge characteristics. In the personalized service system implementation process, it not only can largely realize the individual rigid demand of service object, also can lead service object to get on the health demand road [2]. At the same time, it cultivates positive development of personalized, and can let all the service object be able to get their maximized requirements. So the development of personalized service from the beginning has been loved by majority users. Along with the social constantly development of information technology and Internet network's forward rapid advance, personalized service system has become the new mainstream service system in social.

b. The necessity of the construction of higher vocational school library personalized service system

Constructing the library of higher vocational school personalized service system can make the library service no longer be subject to the restriction of time and concision. It effectively uses this Internet characteristic, which can make the whole library service get reasonable knowledge information search and access to information at any time and place [3]. Meeting the professional

students' personalized information demand, its mainly reason is that the personalized service system can effectively use itself in the process of servicing students. It also is the service personalized advantage and reflects the characteristics of the interactive, which lets the vocational school students make interactive communication in the course of studying vocational technology. Library personalized service can be used as assistant teaching and has a positive role in promoting the innovation of learning mechanism. At last, it effectively improves vocational school students' learning efficiency. In the learning process, vocational school students whose know of the entire collection of books, in virtually increase the utilization rate of library and the use value of resources.

c. Literature overview of higher vocational school library personalized service system

The simple process of the digital library development is, first, is to established the books database of digital library, in order to carry out the management of books, also for resource management, but not consider for the readers, then from the demand perspective of readers, considering the environmental and spatial factors, changed from a single book data storage to readers, provied readers with digital library and information service, but it is just realized the association between digital library and users, only a single service orientation. To the later stage development is the bidirectional communication between digital library and the readers, namely the relationship between the two-way interactive.

The integration advantage analysis of IOT and higher vocational school library service

IOT is a hot topic in the world today. With the continuous rapid development, it creates positive conditions for the construction of higher vocational school library personalized service system. IOT is the fusion of information network in the field of network technology, information technology and physics system's control technology, automation technology. Higher vocational school library service system brings in IOT character[4].

And it is consistent with personality service core, such as the library's number information source has n parent series $\{y_1\}$, $\{y_2\}$, …, $\{y_n\}$ (n≠2), and m sub IOT influence degree sequence$\{x_1\}$, $\{x_2\}$, …, $\{x_m\}$ (m≠1). So each sub sequence has correlation [r_{11}, r_{12}, …, r_{1m}] with the number information source $\{y_1\}$.Each sub IOT influence degree sequence has correlation[r_{21}, r_{22}, …, r_{2m}]with the number information source $\{y_2\}$.Similarly, each sub IOT influence degree sequence has correlation[r_{n1}, r_{n2}, …, r_{nm}]with the number information source $\{y_n\}$. Making r_{ij} (i=1, 2, …, n; j=1, 2, …, m) have the proper arrangement. It can get correlation matrix of IOT and personalized service system. According to the correlation matrix, it not only can be used as the foundation of the advantage analysis, at the same time, it can be used as the theoretical basis for the construction of higher vocational school library personalized service system's decision-making. If the associated matrix R can meet:

$$\begin{bmatrix} r_{1i} \\ r_{2i} \\ \cdots \\ r_{mi} \end{bmatrix} > \begin{bmatrix} r_{1j} \\ r_{2j} \\ \cdots \\ r_{3j} \end{bmatrix} \quad (\forall i, j \in 1,2,\ldots, n, i \neq \quad (1)$$

In formula (1), library's number information source parent sequence $\{y_i\}$, who is relative to others' is the best. From the perspective of current higher vocational school students' characteristics and the function of the library, higher vocational school library personalized service includes two aspects. The first one is that it can provide the corresponding services for the requirements of students in vocational and technical school. That is to say, from the correlation with IOT influence degree sequence x_j (j=1, 2, …, m), the number information source sequence$\{y_i\}$is the optimal sequence of higher vocational school library personalized service system. It can mark as[3]:

$$\{y_i\} > \{y_j\} \quad (j = 1,2,\ldots, n; j \neq i) \quad (2)$$

If there is[10]:

$$\frac{1}{n}\sum_{k=1}^{n} r_{ki} > \frac{1}{n}\sum_{k=1}^{n} r_{kj} \quad (i, j=1,2,\ldots, n; j\neq i) \tag{3}$$

It says the library number information source sequence $\{y_i\}$ is optimal with relationship to sub IOT influence degree sequence $\{x_i\}$ (i=1,2,…,m). It establishes a common management system with school class. For the school students' characteristics and features, it excavates the individual information, which can reflect the subjective initiative of the library service, actively provide students with real-time and obvious intellectual information service. It can mark as[11]:

$$\{y_i\} \succ \{y_j\} \quad (j = 1,2,\ldots, n; j \neq i) \tag{4}$$

If the associated matrix R is the lower triangular matrix, namely[12]:

$$\begin{matrix} r_{1i} & & & & \\ r_{2i} & r_{22} & & & \\ r_{3i} & r_{32} & r_{33} & & \\ \ldots & \ldots & \ldots & & \\ r_{n1} & r_{n2} & r_{n3} & \ldots & r_{nm} \end{matrix} \tag{5}$$

So $[y_1]$ which is relative to the $[y_i]$ (i {2 , 3 , …, n})has the most advantage. That is to say, the integration advantages of IOT and higher vocational school library service system is obvious. Namely, in the IOT environment, it can construct integrity and three-dimensional higher vocational school library personalized service system. It integrates all kinds of teaching resources and service consciousness integration, hardware and software, diversified and comprehensively mining information.

Constructing optimization based on IOT library personalized service system

Higher vocational schools are the important position for professional technology personnel training. The higher vocational schools' library not only shoulders the task of students' knowledge information acquisition, also the auxiliary teaching task. In the deepening modernized education, the construction of university library digitization and the personalized service system is the current important problem for higher vocational schools. The library has knowledge information resources, which is the foundation for the construction of higher vocational school library personalized service system. Higher vocational school library personalized service system based on IOT is the comprehensive circulation of virtual personalized service and entity personalized service [5].

In the digitization, network, information, development today, higher vocational school library staff must change their traditional work ideas. It should improve their service consciousness and service level to be able to effectively provide personalized service for vocational students.

The value of the library is not only the accumulated resources for books, but also contains that make use of the knowledge, the service of library, the users' satisfaction, above all aspects as the mutual reflection.

Empirical research on the construction of personalized service system in the library of Higher Vocational College based on the environment of internet of things

Strategic management involves the culture department needs to carry on the effective planning guide, only the strategic management is correct and effective, to ensure guidance and

specific affairs management level forward in the right way. In the guidance management level, need the effective guidance and support from relevant local government and local library industry associations and other organizations, collect forces to support. While relates to a specific business operation management is the implementation and operation of each grass-roots traditional library. Not only need strategic management in a long run, but also need energetically support form the guidance management level, combined with the strengthening implementation and effective operation of business management level, to ensure the effective functioning of community library, and service for the society and users.

Conclusion

The higher vocational school library should be based on itself condition, keep pace with the times, so as to construct suitable system for library service object. It should meet more teachers' and students' information demand in the work, study and research. Library resources coverage and information content is far from network resources. It implants IOT technology into higher vocational schools library service system to intelligently speculate the required information from the user personal reading habits. The library should play its important role as information media. It can provide positive service for users in the teaching material selection, scientific research data gathering, assistant teaching, etc. At last, with the aid of IOT technology, it constructs the personalized service system to provide powerful guarantee for the higher vocational schools and universities teaching research.

References

[1] Sushan Shen, "IOT system structure and related technology reserch", Journal of Nanjing university of posts and telecommunications, vol.29, no.6, pp.10-11,2009.

[2] Xinning Su, "The research of personalized information recommendation service model on grid environment", Journal of information, vol.26, no.4, pp.58-62, 2007.

[3] Zhen Yan, "The analysis of library personalized information service mode on Web2.0 horizon", Journal of library, vol.32, no.2, pp.76-78, 2010.

[4] Chang Huang, "The development trend of library intelligence science and practice under the network environment", Social sciences academic press, pp.231-235, 2010.

[5] Zhijie WANG, Weiping LI, "Research on the Network Traffic Time Series Modeling and Forecasting Based on Wavelet Decomposition", JCIT: Journal of Convergence Information Technology, Vol. 7, No. 11, pp. 124-131, 2012.