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Research on Promoting Reading in University Libraries in the Era of Artificial Intelligence

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Abstract: With the rapid development of artificial intelligence technology, the reading promotion services of libraries are facing new opportunities and challenges. It is necessary to transform from traditional modes to intelligent modes in order to meet the diversified and personalized reading needs of readers. This article takes demand-oriented approach and explores the implementation path of promoting reading in university libraries in the era of artificial intelligence from four aspects: intelligent resource construction, intelligent information platform construction, training of reading promotion personnel, and creation of intelligent reading promotion services. The aim is to provide reference and inspiration for improving the level and quality of reading promotion services in university libraries.

1. Introduction

Artificial Intelligence refers to machines or systems created by humans that have a certain degree of intelligence, which can perceive, understand, learn and execute various tasks.

The development and application of artificial intelligence has had a profound impact on human society and has also brought new changes to reading habits and reading needs.

AI reading refers to the use of artificial intelligence technology to provide personalized, customized and interactive reading services for readers, meeting the diverse reading needs of readers in different scenarios.

AI reading has the following characteristics:

(1) The reading content is automatically generated or optimized by the machine, with real-time, dynamic and diverse features;

(2) The reading method is intelligently recommended or matched by the machine based on the reader's characteristics and preferences, with convenience, flexibility and personalization;

(3) The reading process involves intelligent interaction or collaboration between the machine and the reader, with participation, interaction and creativity.

As an important support for higher education and scientific research, university libraries have an important mission to cultivate innovative talents, disseminate advanced culture, and serve social development.

In the era of artificial intelligence, university libraries should actively adapt to changes in the reading environment, fully utilize artificial intelligence technology, innovate reading promotion services, improve the quality and efficiency of reading services, and meet the needs of readers with

different types, levels, and demands.

Carrying out AI-powered reading promotion is of great theoretical significance and practical value for promoting the digital transformation of university libraries, enhancing their core competitiveness, and increasing their social influence[1-3].

This article takes demand as the guide, case studies as support, and problems as the driver, using research methods such as literature analysis, comparative analysis, and empirical analysis. It explores the implementation path of AI-powered reading promotion in university libraries in the era of artificial intelligence from four aspects: intelligent resource construction, intelligent information platform construction, reader promotion personnel training, and intelligent reading promotion service creation. Based on relevant practices at home and abroad, corresponding suggestions and countermeasures are proposed (Fang, Wang, & Wang, 2021).

2. Intelligentization Resource Construction

Intelligentization resource construction is the foundation and core of a smart library, and an important guarantee for innovative reading promotion services. Intelligent resource construction mainly includes the following aspects:

(1) Resource digitalization.

Resource digitalization refers to transforming literature information on paper or other carriers into digital format for storage, transmission, retrieval, and use in network environments.

Due to rapid technological advancements, resource digitalization has become increasingly popular among various organizations and institutions. This trend has brought with it a host of benefits, including improved efficiency and security in resource preservation. Digital storage allows resources to be scanned, indexed, and stored securely, reducing the need for cumbersome physical storage space, and minimizing risks associated with loss, damage, or theft.

Moreover, resource digitalization has the potential to exponentially expand the scope and influence of resource dissemination. Digital platforms offer easy access and distribution of resources to a wider audience compared to physical storage. Consequently, libraries can extend their reach in meeting the diverse reading needs of readers, such as providing resources in different languages and catering to specific subject areas.

Furthermore, digital resources offer readers greater personalization, as digital platforms enable the customization of reading preferences and user profiles. This results in the provision of personalized content suggestions and recommendations, which ultimately leads to a better and more satisfying reading experience for users.

In summary, resource digitalization is a vital component of modern library services, offering numerous advantages beyond the preservation and dissemination of vital materials. It revolutionizes the way people access and use resources, enabling libraries to enhance their services by providing comprehensive, personalized, and accessible digital resources to their users.

University libraries should strengthen the digital construction of valuable and meaningful resources, such as characteristic collections, academic achievements of faculty and students, and local cultural heritage. They should form a digital resource database with their own characteristics and advantages to provide rich content support for reading promotion (Zhang, 2019).

(2) Resource Intelligentization

Resource intelligentization refers to utilizing artificial intelligence technology to analyze, process, optimize, and mine digital resources to improve their quality and value, and provide readers with more accurate, efficient, and convenient reading services.

Resource intelligentization mainly includes the following aspects: First, using natural language processing, machine learning, and other technologies for semantic analysis, knowledge extraction,

knowledge representation, constructing knowledge graphs to achieve a deep understanding and organization of resources. Second, using data mining, recommendation systems, and other technologies to classify, cluster, associate digital resources, to implement intelligent recommendations and personalized services. Third, using image recognition, speech recognition, machine translation, and other technologies for recognition, conversion, generation operations on digital resources, to achieve multimedia presentation and multilingual support for resources (Zhang, 2019)[4-6].

(3) Resource Sharing Resource sharing refers to the interconnection of digital resources between one's own library and those of other libraries or institutions through network platforms, which enables cross-database searches, interlibrary loans, document delivery, and other functions to expand the scope and benefits of resource utilization and provide readers with a richer and more comprehensive range of reading choices. University libraries should actively participate in national, provincial, or regional digital library consortia or cooperative projects, such as the National Library Document Delivery System, CALIS Union Catalog System, etc., to achieve information exchange and business cooperation with other libraries or institutions, promote complementary advantages and common development of digital resources (Liu, 2020).

3. Intelligentizing Information Platform

A smart information platform is the core and soul of a smart library, and an important carrier for promoting innovative reading services.

The smart information platform mainly includes the following aspects:

(1) Platform integration.

Platform integration refers to the organic integration of various information systems and application software in the library, forming a unified information service entrance and achieving integrated management of internal operations and external services.

Platform integration can improve the information level of the library, simplify the operation process for readers, and enhance their user experience.

In simplest terms, platform integration in libraries usually involves the seamless integration of various information systems and application software into a unified platform that provides a single point of entry for information services. This means that internal operations and external services can be managed and accessed on the same platform, reducing the need for multiple logins and tedious work that goes along with it[7-9].

The integration of various library services can lead to numerous benefits for both the library staff and their readers. One of the most significant benefits of platform integration is the ability to improve the library's overall information level. By integrating different systems, the library can provide comprehensive and consistent information to readers in a smooth and efficient manner.

In addition, platform integration also facilitates a simplified operation process for readers, providing them with a seamless and unified experience when accessing library resources. Readers can now easily access different resources and services on the same platform without the need to navigate multiple platforms or switch between different interfaces.

Perhaps the most significant benefit of platform integration is the enhancement of the user experience. By providing readers with a single point of entry to a host of services, readers can enjoy a more personalized and convenient experience when accessing resources. Staff can also take advantage of platform integration to streamline their operations, reduce the workload associated with managing multiple systems, and improve the library's overall efficiency.

In conclusion, platform integration has revolutionized the way libraries operate, providing a more streamlined and unified experience for readers and staff alike. It simplifies processes, improves

information dissemination, and ultimately enhances the user experience.

University libraries should establish a smart library platform with resource discovery systems as the core, seamlessly integrating the library portal website, integrated management system, digital resource library, e-reading room, self-service system, etc., to achieve all-round retrieval and utilization of both physical and digital resources, and provide readers with one-stop reading services (Wang, 2020).

(2) Platform Intelligentization

As technological advances continue, libraries are turning to artificial intelligence (AI) to improve the functionality and performance of their platforms. This process is known as platform intelligentization. By implementing platform intelligentization, libraries can offer more intelligent and user-friendly reading services for their patrons.

AI algorithms can analyze the preferences and needs of readers and provide personalized recommendations, search results, and content suggestions that match their interests. This can enhance the user experience and encourage readers to explore new resources that they might otherwise have been unaware of.

Moreover, platform intelligentization can also improve the overall efficiency of library operations. For instance, routine tasks such as book returns or overdue notifications can be automated, thereby allowing staff to save time and dedicate their efforts to more complex tasks such as collection development or research support. This can lead to a streamlined workflow and quicker response times for readers.

AI can also be used to optimize the search functionality of library platforms. Techniques such as natural language processing (NLP) can be implemented to analyze queries and provide more accurate results, reducing the time and effort required for users to find the information they are looking for.

Implementation of AI algorithms can also lead to improved performance and functionality of the library's platform. They can identify and rectify errors, reduce the risk of data breaches, and provide real-time insights into platform usage and trends. This can help libraries to better understand their users and improve the overall platform experience.

In summary, platform intelligentization has the potential to significantly enhance the functionality and performance of library platforms, providing more intelligent and user-friendly services for readers while also improving the efficiency and effectiveness of library operations.

Platform intelligentization mainly includes the following aspects: firstly, using natural language processing, machine learning, and other technologies to understand the semantic and intent of user queries, improving the accuracy and recall rate of retrieval; secondly, analyzing and predicting user behavior with data mining, recommendation systems, etc., providing personalized and customized reading recommendations and consulting services; thirdly, optimizing and improving user interaction with image recognition, speech recognition, machine translation, and other technologies, providing multimedia and multilingual reading support (Wang, 2020).

(3) Platform Openness Platform openness refers to the interconnection of libraries with other platforms, achieving data sharing and business collaboration, and providing readers with richer and more diverse reading services.

University libraries should actively participate in information construction and cooperative projects inside and outside the university, such as education and teaching information platforms, scientific research management information platforms, digital humanities platforms, digital museum platforms, etc., achieve data exchange and business docking with other platforms, and expand the content and scope of reading services (Wang, 2020)[10].

4. Cultivating Reading Promoters

Reading promoters are an important resource and force in smart libraries and an important subject for promoting innovative reading services.

The cultivation of reading promoters mainly includes the following aspects:

(1) Basic literacy.

Reading promoters should have good reading habits, high-level reading literacy, familiarization with library collections, communication skills and service capabilities, patience and enthusiasm, etc., in order to effectively guide and motivate readers to read, and improve readers' interest and ability in reading. (Wang, 2017).

(2) Professional skills. Reading promoters should master the use of library information systems, search skills for digital resources, planning and organization of reading activities, methods and standards for reading evaluation and other professional skills, in order to effectively utilize the library's information platform and resources, carry out rich and diverse reading activities, and improve the quality and effectiveness of reading services (Wang, 2018).

(3) Innovative awareness. Reading promoters should have innovative awareness and ability, be able to design and implement reading plans and activities that are suitable for different types and levels of readers, apply artificial intelligence technology and big data analysis tools, provide personalized and customized reading services, and enhance the level and influence of reading services (Gao, 2020).

5. The Establishment of intelligentizing Reading Promotion Services.

Intelligent reading promotion services refer to the integration, analysis, recommendation, and evaluation of library reading resources, reading activities, and reading services through the use of technologies such as artificial intelligence, big data, and cloud computing. This provides readers with personalized, customized, and intelligent reading services, enhancing the readers' reading experience and reading effectiveness. The establishment of intelligent reading promotion services mainly includes the following aspects:

(1) Intelligent reading resources.

Intelligent reading resources refer to the deep excavation and optimization organization of paper-based and digital resources in the library through artificial intelligence technology, forming an intelligent reading resource library with semantic relevance and knowledge structure. This provides readers with more extensive, accurate, and efficient retrieval and acquisition of reading resources.

For example, natural language processing technology can be used for content analysis, topic extraction, keyword tagging, etc. on library book resources, thereby achieving semantic understanding and knowledge representation of book content. Machine learning technology can be used to classify, cluster, sort, and manage digital resources in the library, thereby achieving intelligent management and display of digital resources (Zhang, 2019).

(2) Intelligent reading activities.

Intelligent reading activities refer to the intelligent planning, organization, recommendation, and evaluation of reading activities in the library through artificial intelligence technology, providing readers with more diverse, interesting, and effective reading activity participation and experience services.

For example, data mining technology can be used to analyze the reading activity data in the library, thereby discovering users' reading interests, preferences, needs, and the similarities and differences between different types and levels of user groups. Recommender system technology can be used to recommend the most suitable reading activities for users based on their personality traits and behavioral characteristics, as well as other users or communities that may be interested (Liu, 2020).

(3) Intelligent reading services.

Intelligent reading services refer to the intelligent support, assistance, guidance, and feedback of reading services in the library through artificial intelligence technology, providing readers with more convenient, efficient, and caring reading service consultation and help services.

For example, robot technology can be used to provide basic services such as intelligent Q&A, intelligent navigation, and intelligent borrowing and returning for libraries. Knowledge graph technology can be used to provide value-added services such as knowledge discovery, knowledge construction, and knowledge sharing for libraries. Emotion computing technology can be used to provide humane services such as emotion analysis, emotion recognition, and emotion feedback for libraries (Li, 2020).

6. Conclusion

This article examines the theoretical and practical issues of intelligent reading promotion services in university libraries against the backdrop of the AI era.

The article mainly includes the following aspects:

(1) It explains the concept, characteristics, and value of intelligent reading promotion services. It points out that intelligent reading promotion services use technologies such as artificial intelligence, big data, and cloud computing to intelligently integrate, analyze, recommend, and evaluate reading resources, reading activities, and reading services in the library. Thus, it provides personalized, customized, and intelligent reading services for readers, improves their reading experience and reading effectiveness.

(2) It analyzes the demand and challenges of intelligent reading promotion services. It pointed out that intelligent reading promotion services are an inevitable trend for library development in the AI era and an effective way to meet users' diversified, personalized, and intelligent reading needs. But it also faces challenges in technology, resources, management, and talent aspects.

(3) It constructs a model and framework for intelligent reading promotion services. It emphasizes that intelligent reading promotion services should be user-centered, knowledge-oriented, technology-supported, innovation-driven, and collaboration-assured. It should form a comprehensive service system consisting of three levels: intelligent reading resources, intelligent reading activities, and intelligent reading services.

(4) It proposes implementation strategies and suggestions for intelligent reading promotion services. It recommends adhering to the principles of demand orientation, innovation drive, collaborative sharing, and evaluation improvement. It suggests specific measures, including strengthening technical support, optimizing resource integration, innovating activity format, improving service quality, and cultivating talent teams.

The innovation and contribution of this article are mainly reflected in the following aspects:

(1) Based on the research on smart libraries and reading promotion at home and abroad, this article proposes and systematically expounds the novel research topic of intelligent reading promotion services for the first time, which expands the new field of library science theory research.

(2) Based on the analysis of the development trend of libraries and changes in user demand in the AI era, this article constructs a theoretical and practical framework for intelligent reading promotion services that has theoretical guidance significance and practical operationality. It provides a reference idea and method for libraries to carry out intelligent reading promotion services.

(3) Drawing on advanced experiences and cases at home and abroad, this article proposes a series of targeted and feasible implementation strategies and suggestions for intelligent reading promotion services. It provides some reference and inspiration for libraries to improve and optimize their intelligent reading promotion services.

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