Explore the Design Method of Library Popular Science Service from Maslow's Theory

Panpan Yi 1, 2, a, *, Lili Ma 1, 2, b, Yi Liu 1, 2, c, and Hong Jiang 1, 2, d

1 National Science Library(Wuhan), Chinese Academy of Sciences, China;
2 Hubel Key Laboratory of Big Data in Science and Technology, China.

a, *yipp@mail.whlib.ac.cn, bmail@mail.whlib.ac.cn, cluyi@mail.whlib.ac.cn,
djianghong@mail.whlib.ac.cn

Abstract. In the new era, China attaches increasing importance to the work of science popularization, proposes to insist on putting science popularization at the same important position as technological innovation, and strengthens the responsibility of science popularization in the whole society. As the social and cultural institution, the library has unshirkable responsibility and obligation. This paper expounds Maslow's Hierarchy of Needs and its relevance to library popular science service, discusses the design concept of library popular science service to meet the multi-level needs, explores and put forward the design method of library popular science service from Maslow's theory. The research aims to provide design ideas and reference basis for the industry.

Keywords: Maslow's Theory; library; user demand; popular science service.

1. Introduction

On September 4, 2022, the General Office of the Communist Party of China Central Committee and the General Office of the State Council issued the "Opinions on Further Strengthening the Popularization of Science and Technology in the New Era", proposing that science popularization is an important foundational work for achieving innovative development, and that science popularization work should be further strengthened, providing a development direction for China's science popularization work in the new era. The demand for collection, borrowing, and reading services for traditional paper books in contemporary libraries has decreased, carrying more functions such as science popularization education, knowledge sharing, cultural exchange, and social services. Utilizing resources such as scientific and technological literature and cultural venues in the library collection, science popularization services are provided to the public to meet their science popularization needs. Libraries have an unshirkable responsibility and obligation.

The importance of science popularization services in the library industry has been increasing year by year. Currently, many libraries in China are actively carrying out science popularization services [3-6], but there are still bottlenecks. The key is the lack of compatibility between library science popularization services and the public, and library science popularization services still have a long way to go. Given the current lack of refinement and sublimation in library science popularization work practice, and the lack of theoretical injection and guidance in science popularization services, this article explores the design path and theoretical methods of library science popularization services, and explores how libraries can make the public more willing to accept the science popularization services they provide? How to more effectively improve public satisfaction? Thus promoting the improvement of public scientific literacy.

2. Maslow's Theory and Library Science Popularization Services

2.1 The Connotation and Development of Maslow's Theory

In 1943, American psychologist Abraham Maslow proposed Maslow's hierarchy of needs theory in "Human Motivation Theory" [7]. This theory is the motivation theory in psychology [8], which
divides human needs into five types: physiological needs, safety needs, social needs (also known as emotional needs), esteem needs, and self actualization needs. The five needs follow a stepwise relationship and motivate individual behavior. In this five stage model of demand, the first four stages are usually referred to as insufficient demand, and the highest stage is called growth demand [9]. Maslow's five stage model has been expanded to eight levels, including cognition, aesthetics [10], and transcending needs [11], with the five stage model being the most widely disseminated.

After decades of development and enrichment, Maslow's hierarchy of needs theory has been widely applied and extended as a guiding methodology in areas such as business operations, marketing, talent management, and post disaster psychological intervention.

2.2 Maslow's Theory and Library Science Popularization Services

The role positioning of contemporary libraries has changed, and providing only literature resource borrowing services is no longer sufficient to meet the diverse spiritual and cultural needs of readers. In the past, the library was known as the "palace of knowledge", but now, the library is the "living room of the city", and its social service function is becoming increasingly important. Libraries should provide diverse, innovative, and distinctive science popularization services for readers, in order to attract readers to come to the library and use its resources and services, and improve its social value and service efficiency.

The current situation of science popularization services in libraries in China is good, but there are still many problems, which can be summarized as two points: first, the participation of readers is not high, and some science popularization activities have only a few participants; Secondly, even if certain activities have a certain level of reader participation, the response to the activity is mediocre, and readers report that the gains are not significant. The author believes that the key point lies in the lack of compatibility between library science popularization services and readers. Due to the wide range of library readers, the effectiveness of using universal activity plans to address the specific needs of readers is minimal. Therefore, targeting the needs of the reader group and designing library science popularization services in a targeted manner can effectively improve user satisfaction. Maslow's hierarchy of needs theory provides a good guidance and reference for it. Maslow's hierarchy of needs theory is applicable and feasible for library science popularization services, and has an inspiring effect on the design of library science popularization services.

3. The Design Concept and Method of Library Science Popularization Service under Maslow's Theory

3.1 The Design Concept of Library Science Popularization Service under Maslow's Theory

Positioning the library reader group and understanding their needs is an important prerequisite for designing library science popularization services under Maslow's theory. Therefore, the principle of demand orientation is the core concept of library science popularization service design. According to Maslow's hierarchy of needs theory, physiological needs are the fundamental condition for enhancing a good reader experience. Library science popularization services must pay attention to the immediate physical needs of readers and provide them with the most thoughtful and convenient infrastructure, space, and services possible. Guided by security needs, attention should be paid to the order and stability of science popularization services, and the key is to improve readers' sense of security and reduce their sense of crisis. Guided by social needs and targeting the leisure communication and collaborative learning needs of readers, science popularization services need to consider strengthening the emotional connection between readers and the spatial environment, librarians, and other readers [12]. Guided by respecting needs, it is necessary to recognize and highlight the position of readers in science popularization services, and provide readers with opportunities and space for self presentation. Guided by the need for self actualization, it is important to pay attention to the reader's sense of gain and satisfaction, so that they can feel that
the displayed content and their own performance are truly recognized [13]. It is also necessary to provide a platform for readers to explore professional interests beyond their expertise.

The reader groups of different types of libraries have different tendencies, and the demand levels of different reader groups are different. When carrying out the design of library science popularization services, it is necessary to conduct research on the main readership groups targeted, accurately grasp the needs of the main readership groups [14], accurately locate the hierarchy of needs, and based on the characteristics of its own resources, collection, space, etc., personalized design of service content, service forms, reader gains, supporting construction, etc. for different types of people. Tailored science popularization services for different levels of needs are essential to accurately provide them with high-quality services.

### 3.2 The Design Method of Library Science Popularization Services under Maslow's Theory

As a social and cultural institution, library science popularization services need to aim to effectively improve public satisfaction and promote the improvement of public scientific literacy. This article deeply analyzes the various needs of readers according to Maslow's hierarchy of needs theory, and reasonably classifies and configures services, designs services, and constructs supporting facilities in a hierarchical order, forming the AAD design method for library science popularization services under Maslow's theory. The AAD method comprehensively considers the design of the service itself and the construction of its supporting facilities, mapping the physiological needs, safety needs, social needs, respect needs, and self-actualization needs of readers. The design process is generally divided into three stages: investigation, analysis, and design (see Figure 1).

In the early stage of design, it is necessary to conduct a survey on the demand for science popularization services for library readers, which is the primary prerequisite for library science popularization service design and the first stage of AAD design method: the survey stage. In order to accurately grasp the needs of readers for library science popularization services, we can conduct a questionnaire survey targeting the reader group of the library. The survey does not set guiding questions, but designs open-ended questions in two directions: positive and negative. Surveys can be distributed in both paper and electronic formats. In addition to basic information such as age and gender, anonymous responses can be used to dispel readers' concerns, reduce their psychological burden, and enable them to fully allocate and truthfully answer questions. The reliable first-hand information obtained through this survey will have certain representativeness and credibility.

In the analysis stage, in the effective answer sheet, extract effective topic words and sentences from the collected reader demand information, and extract several guiding direction items through comparison, integration, splitting, and de duplication. These guiding directional items inevitably involve various aspects such as service environment, service facilities, communication between readers and librarians, service promotion, activity themes, activity forms, activity conditions, and the gains gained by readers. The needs and expectations of different readers when receiving science popularization services are different. For these key direction items, on the one hand, induction method is used to subdivide according to Maslow's five levels of needs, and on the other hand, centralized management is adopted to subdivide according to the dimensions of service development - "content design," "form design," "reader acquisition," and "supporting design," categorizing reader needs, Provide strong support for subsequent design.

In the design phase, it is necessary to further explore the patterns of the subdivided guiding direction items. By comparing and analyzing the suggestions and expectations reflected by readers in the five levels of physiological, safety, social, respect, and self-realization needs, which services should be focused on, in order to summarize the focus and design focus of science popularization services for Maslow's five levels of needs. Based on the segmented and regularly summarized reader needs, classify and allocate science popularization service resources. In the design of the service itself, comprehensively consider elements such as operability, audience characteristics, and interactivity to design science popularization education activities. The main mapping will be
readers' social needs, esteem needs, and self actualization needs, followed by mapping other levels of needs; In terms of service support, it is necessary to strengthen the construction to support the service itself, ensure the stable and orderly operation of the service, and focus on improving the reader's experience, mainly reflecting the physiological and safety needs of readers, and secondly mapping other levels of needs to ensure that it can guide and apply subsequent design and practice.

Fig. 1 Design method diagram of library science popularization services under Maslow's Theory (AAD Design Method Diagram)

The library utilizes its own and various resources that can be integrated and utilized to provide science popularization services to the public. The AAD design method for library science popularization services under Maslow's theory provides a specific design path and implementation method reference, which helps to strengthen the fit between library science popularization services and the public, making library science popularization services more in line with reader needs. According to the AAD design method proposed in this paper, the Wuhan Document and Information Center of the Chinese Academy of Sciences has carried out the design and practice of library science popularization service under the Maslow theory, fully integrated the science popularization resources inside and outside the academy, built a platform for scientific research institutions to communicate science to the outside world, and planned and designed a series of science popularization service activities, including "Science Lecture", "Science Popularization Theme Exhibition", "National Reading Association", and "Youth Enlightenment", It meets the multi-level needs of readers well and has received widespread praise from readers.
4. Summary

The library is a gathering place for scientific and cultural information resources, and has become one of the most suitable places for the public to engage in science popularization education and knowledge exchange. At present, science popularization services have become one of the core businesses of libraries, and it is also an important manifestation of enhancing social integration and social presence in libraries. We need to further explore the design path and theoretical methods of library science popularization services, and comprehensively create a new situation for library science popularization services.

References


[14] Montag, C; Sindermann, C; Lester, D; Davis, KL. Linking individual differences in satisfaction with each of Maslow's needs to the Big Five personality traits and Panskepp's primary emotional systems [J] HELIYON, 2020,6 (7), 1-9