

# Characteristics and Improvement Measures of Reader Services in Vocational Undergraduate Colleges' Libraries

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**Abstract:** The heterogeneity of the reader group in vocational undergraduate colleges and the alternating learning pace of engineering have put forward special requirements for library reader services that are different from those of ordinary undergraduate and vocational colleges. Starting from the analysis of reader structural characteristics, this article reveals core issues such as service demand stratification caused by diversified student sources, spatiotemporal service misalignment caused by the alternating mode of work and study, and technical information support gap caused by the dual role of teachers. On this basis, a three in one content optimization system is proposed, which includes course literature support services for the entire learning cycle, real-time job knowledge acquisition services for practical training and internships, and value-added technical intelligence services for industry education collaboration. The article further explores the improvement path of service response mechanism from three dimensions: elastic spatiotemporal configuration, user behavior driven active push mechanism, and service closed-loop under the first inquiry responsibility system. The research aims to provide theoretical reference and practical guidance for the systematic improvement of reader services in vocational undergraduate college libraries.

**Keywords:** Vocational undergraduate colleges; Library reader services; Work-study alternation; Technical information

## 1. Introduction

Vocational undergraduate colleges emphasize the dual attributes of "higher education" and "vocational education" in their talent cultivation goals, and highlight the alternation of engineering and the integration of industry and education in their training models [1]. These particularities put forward differentiated requirements for library reader services that are different from traditional colleges. However, upon examining current practices, the reader services of most vocational undergraduate college libraries still follow the operational model of vocational colleges or simply imitate the service architecture of ordinary undergraduate libraries [2]. This has not effectively responded to the significant differences in knowledge base and learning pace among student groups, nor fully met the composite information needs of teachers in teaching and technology research and development.

From the perspective of the readership, vocational undergraduate students come from diverse

sources, covering three channels: vocational school entrance examination, ordinary college entrance examination, and vocational college to undergraduate program. Their information literacy foundation and study habits differ significantly; From the perspective of training mode, the core educational logic of vocational undergraduate education is the alternation of work study and industry education integration. Students alternate between on campus learning, enterprise practical training, and on-the-job internships, presenting fragmented and remote characteristics of the spatial and temporal demand for library services; From the perspective of service demand, the teacher group not only undertakes teaching tasks but also participates in technology research and development, requiring both academic and practical support for the library. These peculiarities indicate that the reader service of vocational undergraduate college libraries cannot simply apply existing models, but needs to be systematically redesigned. This article aims to deeply analyze the characteristics of the reader group in vocational undergraduate college libraries, propose a technical information service system for the entire learning cycle, practical training and internship scenarios, and industry education collaboration, and explore improvement paths from three levels: flexible spatiotemporal configuration, active push mechanism, and service closed-loop construction, in order to provide reference for the transformation and development of reader services in vocational undergraduate college libraries.

## **2. Analysis of the Structural Characteristics and Service Needs of The Reader Group in Vocational Undergraduate College Libraries**

### ***2.1 Heterogeneity of Student Composition and Hierarchical Service Needs***

The main sources of students in vocational undergraduate colleges are through three channels: vocational school enrollment, regular college entrance examination enrollment, and vocational college to undergraduate programs.

Vocational school students who are enrolled in vocational undergraduate programs are one of the main sources of students. These students have received systematic skill training during their secondary vocational education stage, and have a more intuitive understanding of the operational norms and process requirements in their professional field, with strong hands-on abilities. However, their cultural theoretical foundation is relatively weak, and their information literacy, especially academic literature retrieval ability, is generally insufficient. Therefore, the focus of services for such readers should be on basic training in information literacy and convenient access to skill based literature. Ordinary college entrance examination students are another important source of students. These students have undergone systematic training in ordinary high schools, with a solid foundation in cultural theory, relatively strong reading comprehension ability, and academic norms awareness. In terms of library usage behavior, they are more accustomed to borrowing academic monographs, reading journal articles, and using academic databases, and have a higher sensitivity to theoretical resources. However, their weakness lies in their insufficient understanding of technical literature. To serve these readers, it is necessary to both continue and deepen their ability to use academic literature, as well as guide them to recognize the value of technical literature and master usage skills. Vocational college to undergraduate students are the third type of source, with a relatively small number but distinct characteristics. These students have completed their studies at the vocational level, possess a certain foundation of professional skills, and have also undergone information literacy training at the vocational level. After entering vocational undergraduate programs, their expectations for library services become more clear and pragmatic: they need both literature resources to support course learning and specialized support for graduation projects, technology research and development, or

employment preparation. These readers have relatively mature information literacy and higher requirements for services, often being the most active users of deep services [3].

The coexistence of the three types of students mentioned above means that library reader services cannot adopt a standardized model of "one size fits all". Layered services are an inevitable choice: during the entrance education stage, differentiated training content should be designed for different students, with a focus on information retrieval basics for vocational school students, technical literature recognition for general high school students, and advanced deep service guidance for vocational college students. In daily services, user types should be identified through reader behavior data analysis, and resources and services that match their knowledge background and usage habits should be pushed.

## ***2.2 The fragmented characteristics of the learning rhythm of engineering alternation and service demand***

In addition to the heterogeneity of student composition, another significant feature of the readership of vocational undergraduate colleges is the alternation of learning pace and engineering. The vocational undergraduate talent training program generally adopts an alternating mode of "on campus learning+enterprise practical training+on-the-job internship". The learning status, information needs, and library usage behavior of students during their school and enterprise periods present completely different characteristics [4].

During the school learning stage, students' core tasks are curriculum learning and skill training. The information requirements for this stage mainly include: reference books required to complete course assignments, technical background materials required for project-based learning, standards and specifications required for practical training operations, etc. Students' use of the library is relatively concentrated, and borrowing behavior shows obvious periodicity. The service focus in this stage is on ensuring course literature and supporting information literacy. The library has ample time and space to provide services. The enterprise training stage is usually arranged in the middle of the semester, with a duration ranging from several weeks to several months. At this stage, students enter the enterprise and receive job skills training in a real work environment. At this point, there has been a significant change in information demand: students no longer need systematic academic literature, but require real-time and fragmented "scenario knowledge", such as specific parameters of a certain operation, troubleshooting procedures for a certain type of fault, and the content of a security standard clause. The common feature of these needs is "real-time, precise, and actionable", where students need to obtain answers within minutes or even seconds, rather than spending half a day searching slowly in the library. The on-the-job internship stage is usually arranged in the last academic year, with a long duration and scattered positions. Students participate in the actual production of enterprises as prospective employees and undertake specific work tasks. The information requirements at this stage are more complex: they include real-time knowledge support for job operations, research literature support for graduation projects, and possibly reference materials for vocational qualification exams. Students face complex information needs under the dual identities of "working" and "on campus", and the lack of library services forces them to solve information acquisition problems on their own in their spare time.

## ***2.3 The Dual Roles of the Teacher Group and the Composite Requirements for Service Support***

The teacher group in vocational undergraduate institutions also has unique structural

characteristics. Unlike the single role of teachers in ordinary undergraduate institutions, or the teaching focus of teachers in vocational junior colleges, the teachers in vocational undergraduate institutions usually undertake the dual roles of educators and technical service providers. This characteristic has a profound impact on their library service demands.

As educators, vocational undergraduate teachers need to complete tasks such as curriculum development, classroom teaching, and textbook writing. It is particularly noteworthy that vocational undergraduate institutions have vigorously promoted the development of loose-leaf textbooks and workbooks, which pose different requirements for library literature support compared to traditional textbook writing. When teachers write such textbooks, they need to extensively consult industry standards, technical manuals, process specifications, enterprise cases, and other technical literature, which are precisely the weak links in the current library collection. As technical service providers, vocational undergraduate teachers deeply participate in school-enterprise cooperation and undertake tasks such as horizontal projects, technical consultations, and employee training for enterprises. In these scenarios, the information needs of teachers have a clear "industrial orientation", and they need to understand the latest technological trends in the industry, the patent layout of competitors, the technical parameters of specific products, and the updates in relevant standards in related fields. The composite demands of the teacher group are also reflected in their interaction with students. When guiding students in graduation projects and technological research projects, teachers not only need their own literature support but also need to be able to conveniently guide students to obtain relevant resources. If library services cannot support this "teacher-student" knowledge transmission chain, the effectiveness of teaching guidance will be greatly reduced.

### ***3. Optimization of the Content System of Reader Services in Vocational Undergraduate Libraries***

#### ***3.1 Course Literature Support Services for the Entire Learning Cycle***

The traditional library reader services focus on the "borrowing and returning of books" as the core service unit, and their connection with course teaching mainly lies in the "pushing of course reference books" at the beginning of the semester. This service model assumes that students' learning needs are linear and predictable, while ignoring the dynamic changes in literature needs during the learning process. Course literature support services for the entire learning cycle aim to transform library services from "one-time push at the beginning of the semester" to "continuous accompanying support throughout the course". To achieve this transformation, it is necessary to first establish a deep association mechanism between courses and literature resources. Libraries should actively connect with the educational administration system and course platforms to obtain information such as the teaching schedule, project task lists, and assessment requirements of the courses. Based on this information, subject librarians can design "course literature navigation maps" for each course in advance, clearly specifying the types and specific resources of literature needed at each teaching node. Secondly, a regular collaboration mechanism for the course team needs to be established. The effectiveness of course literature support services is highly dependent on the depth of the library's understanding of teaching content. Subject librarians should be embedded in the teaching team, participate in teaching activities, and jointly identify the core knowledge needs of the course at each stage with the teaching staff. Finally, special support needs for comprehensive learning phases such as graduation projects should be provided. The graduation projects of vocational undergraduate programs are usually combined with actual enterprise projects, and the topics have authenticity and practicality characteristics [5].

### ***3.2 Instant Job Knowledge Acquisition Service for Practical Training and Internship***

If the course literature support service solves the needs of students during their school learning period, then the service for practical training and internship needs to respond to the information acquisition difficulties of students after leaving school. The primary task of building an instant job knowledge acquisition service for practical training and internship is to establish a "job knowledge micro resource library". This resource library is not a large database in the traditional sense, but a series of highly contextualized, lightweight, and quickly retrievable knowledge units. Specifically, the following content should be organized according to professional direction and typical job categories: operation manuals and quick guides for key equipment, troubleshooting flowcharts for common faults, safety regulations and emergency response procedures related to the job, commonly used process parameters and material performance data, summaries of core clauses of relevant standards and regulations, etc. The presentation format of these resources should be easy to read on mobile devices, avoiding providing hundreds of pages of PDF documents directly. Instead, key information should be extracted to form concise entries in a "pocket tool book" style. On the basis of resource construction, it is necessary to develop convenient mobile access channels. The most ideal form is to integrate with the school's internship management platform or commonly used entrances such as enterprise WeChat, so that students can use it without installing additional applications. The query method should support keyword search, directory browsing, and more convenient QR code queries, shortening the path of knowledge acquisition to the extreme and truly achieving "on-demand search". In addition, a mechanism for accumulating and sharing "common internship problems" should be established. The typical problems and solutions encountered by previous students during internships are valuable empirical knowledge. The library can establish a dedicated channel for collecting questions, encouraging interns to submit their encountered problems and found solutions, which will be reviewed and included in the shared knowledge base. This crowdsourcing model can not only expand the content of the resource library at a low cost, but also create a knowledge sharing atmosphere of mutual assistance among internship students.

### ***3.3 Technical Information Value-added Services for Industry-Education Synergy***

The course support and job knowledge services mainly cater to the needs of students, while the technical information value-added services mainly respond to the deep information needs of the teaching staff and the collaborating enterprises. Vocational undergraduate teachers undertake multiple responsibilities such as conducting horizontal research projects, providing technical consultation to enterprises, and conducting employee training. These tasks no longer require general literature search support, but rather require in-depth processing and technical intelligence with decision-making reference value. Upgrading the service from "providing literature" to "providing intelligence" is a crucial step for libraries to transform from cost centers to value centers.

The core product of technical information value-added services can be designed as "Industry Technology Information Bulletins". The library arranges librarians with industrial information analysis capabilities to regularly track the technological dynamics of the related industries of the school's main majors. From patent literature, standard updates, academic frontiers, market reports, and competitor information, they select and refine valuable information for teachers' research and enterprise decision-making, form briefings and send them directly. When the teacher team applies for horizontal research projects or jointly conducts technological research with enterprises, they need to

understand the research status of the technology field, patent barriers, and technical gaps to determine the research direction and avoid infringement risks. The library can undertake this work and provide professional novelty reports and patent trend analysis. Finally, the technical intelligence service should also extend to the collaborating enterprises. Many small and medium-sized enterprises do not have a dedicated intelligence collection department and often lag behind in understanding industry dynamics and technological trends. The library can direct these Industry Technology Information Bulletins to the collaborating enterprises as an additional value-added service content for school-enterprise cooperation. This "service feedback" not only deepens the school-enterprise relationship but also transforms the library from an internal support department to an information hub serving regional industries, with its value contribution exceeding the traditional functions of libraries.

#### **4. Improvement of Spatiotemporal Configuration and Response Mechanism for Reader Services in Vocational Undergraduate College Libraries**

##### ***4.1 Flexible Configuration of Service Space and Time to Adapt to the Alternating Pace of Engineering and Technology***

The primary principle for the spatiotemporal configuration of vocational undergraduate reader services is to break the traditional equation of "library opening hours equal service hours, and library physical space equal service space". Students have vastly different spatial and temporal demands for services during their school, practical training, and internship periods, and service configurations must be dynamically adjusted accordingly.

During the school learning stage, students' library usage exhibits a clear "peak to off peak" fluctuation characteristic. Mid semester and final exam weeks are peak usage periods, during which students have a strong demand for extending opening hours. Although many libraries implement the policy of extending the opening hours during exam weeks, they often only extend the closing time from 21:00 to 22:00, which is difficult to meet actual needs. A more flexible approach for libraries is to implement a "tiered opening" strategy: maintain regular opening hours during off peak periods, and open the main reading area until late at night or even 24 hours during peak periods. At the same time, dynamically adjust the size of the open areas based on real-time entry data to avoid energy consumption and manpower waste caused by the opening of the entire library. The service configuration during the training and internship stages needs to break through the limitations of physical space. During their stay at the training base, students may need to study courses and search for materials when they return to their residence at night, even though they work in the company during the day. At this point, what they need most is accessible remote access to digital resources. However, many digital resources in libraries are currently restricted by copyright agreements and can only be used within the IP range of the campus network. Students often encounter technical barriers even when accessing them through VPN after leaving the campus. Libraries should optimize the remote access experience at the technical level and negotiate more flexible usage authorization methods with resource providers to ensure that students can use core resources "just like on campus" outside of school [6].

##### ***4.2 Active Push and Demand Prediction Based on User Behavior Data***

The temporal and spatial flexibility configuration has solved the problem of "accessibility" of services. However, reader satisfaction is not only determined by "whether the service can be

obtained", but also by "whether the service is convenient and effortless to obtain". Vocational undergraduate students, especially those who have transferred from secondary vocational schools, have relatively weak information literacy. They often "do not know what they do not know" or know their needs but do not know that the library can provide assistance. Therefore, another important direction for improving the service mechanism is to shift from "passive response" to "active prediction", sending appropriate services to readers before they realize their needs or when the needs arise. The prerequisite for achieving active push is to establish a system for collecting and analyzing reader behavior data. During the daily operation of the library, a large amount of reader behavior data has been accumulated: borrowing records reflect the reading preferences of readers, digital resource access logs reflect the trajectory of changes in research interests, search keywords reflect the current focus of information needs, and reference consultation records reflect common problem types. After integrating and analyzing these data, a "knowledge demand profile" of each reader can be drawn. It should be noted that data collection and use must follow the principles of legality, compliance, and minimum necessity, clearly inform readers of the data usage and provide an exit mechanism to avoid falling into the ethical controversy of "excessive monitoring". Based on the demand profile, multiple levels of active push strategies can be designed. The most basic one is "similar reader recommendation", that is, based on the reading preferences of reader groups with similar borrowing behaviors, recommending resources that may be of interest to the readers. The middle level is "scenario-triggered push", that is, triggering corresponding services based on the behavioral signals of readers. The highest level is "learning cycle prediction push", that is, predicting the needs that readers may have at various learning stages based on the school calendar and course arrangements, and sending relevant resources in advance.

#### ***4.3 One Stop Problem Response and Cross Departmental Collaboration Service Loop***

Even if the spatiotemporal configuration and active push mechanism are optimized, there will still be a large number of reader questions that require manual response. The current problem with many libraries is that readers do not know who to turn to when they encounter problems - for borrowing and returning issues, they turn to the circulation desk; for retrieval issues, they turn to the consultation desk; for resource suggestions, they turn to the editorial department; and for technical support, they turn to the technical department. Readers are shuttling between multiple windows, resulting in a very poor experience. Even if the right person is found, they often fall into a situation of "kicking the ball" or "sinking into the sea" due to the need for cross departmental coordination for problems. The core of solving this problem is to establish a "one-stop problem response" mechanism, which is based on the "first inquiry responsibility system". Regardless of the channel through which readers raise questions to any librarian, the librarian becomes the "first person responsible" for the issue and is responsible for following up throughout the process until the problem is resolved. Firstly, librarians do not necessarily have to solve all problems on their own, but they must be responsible for coordinating internal resources, tracking processing progress, and providing feedback to readers on the results. The key to this system lies not in technology, but in awareness and processes - it requires clear boundaries of first inquiry responsibility, response time, and upgrade mechanisms. The effective operation of the first question responsibility system requires the standardization of the "cross departmental collaboration process" in the library. A unified work order system should be established within the library, and all reader questions should be automatically assigned, tracked, and processed after entering the system. For cross departmental issues, the work order system should support inter

departmental assignments and collaboration to avoid readers being "transferred back and forth". A 'service coordinator' role should be established to handle issues with unclear boundaries or unclear attribution, as well as to supervise overall service timeliness.

The final step of the service loop is result feedback and satisfaction evaluation. After each issue is resolved, timely feedback on the handling results should be provided to readers, and readers should be invited to evaluate the service. These evaluation data should be regularly summarized and analyzed to identify common problems and weak links in the service, as input for process optimization and librarian training. When readers see their opinions taken seriously and actual improvements made, their trust and satisfaction with the library will significantly increase. This complete closed loop of "demand acceptance service execution result feedback evaluation improvement" transforms reader services from one-way "provision" to two-way "co construction". Readers are not only recipients of services, but also evaluators of service quality and drivers of improvement.

## 5. Conclusion

The transformation of reader services in vocational undergraduate college libraries is essentially a deep shift in service paradigm from a "collection center" to a "reader center". This study suggests that this transformation needs to be based on a precise understanding of the characteristics of the reader group: the heterogeneity of student sources requires a layered service strategy, the alternating learning pace of work and study requires breaking the boundaries of time and space, and the composite role of teachers requires upgrading from literature services to information services. The integrated content system, flexible configuration, proactive push, and closed-loop response mechanism improvement together constitute a systematic solution for vocational undergraduate reader services. It should be emphasized that reader service improvement is a dynamic iterative process, rather than a one-time result. With the deepening of vocational undergraduate education practice and the changing needs of readers, the service content and mechanism also need to be continuously adjusted. Future research can further explore the application of artificial intelligence technology in demand forecasting and intelligent response, as well as the construction of a quantitative evaluation system for service effectiveness.

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